Other
More than Just for Cardiac Imaging: Practical Applications of Balanced Steady-state Free-precession (bSSFP) Imaging in the Abdomen and Pelvis

All Day Location: MS Community, Learning Center

Participants
Nicola Schieda, MD, Ottawa, ON (Presenter) Nothing to Disclose
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Maneesh Khanna, MBBS, Doha, Qatar (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
1. bSSFP is rapidly acquired and offers several advantages in abdominal and pelvic MRI. 2. bSSFP is a balanced GRE with very high signal-to-noise ratio that can be acquired using 2D or 3D techniques with higher spatial resolution and lower image blur compared to single-shot FSE. 3. bSSFP provides ‘bright-blood’ effects which can be helpful for the diagnosis of vascular conditions, particularly when gadolinium is contraindicated. 4. bSSFP is relatively insensitive to the flow artifacts observed with FSE and is a critical adjunct in MRCP and MR Enterography. 5. The combination of T2/T1 weighting and opposed phase acquisition provides some tissue characterization with bSSFP.

TABLE OF CONTENTS/OUTLINE
1. Review the fundamentals of bSSFP imaging. 2. Review the importance of bright-blood imaging for assessment of vascular structures in the body. 3. Discuss advantages of bSSFP during MRCP compared to FSE. 4. Review bSSFP in MR enterography (MRE) including the importance of cine-MRE. 5. Highlight the concept that bSSFP is a T2/T1 weighted opposed phase GRE sequence and can be used to characterize fat containing processes, spinal pathologies and show fat/water interfaces. 6. Review common artifacts that are encountered with bSSFP imaging in the body.
Retained Surgical Foreign Bodies: Cadaveric Radiographic and CT Correlation

All Day Location: MS Community, Learning Center

Participants
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TEACHING POINTS
Review the epidemiology, outcomes, medicolegal implications, and methods of preventing retained surgical foreign bodies. Demonstrate the radiographic and CT appearance of commonly used surgical materials as they appear in situ utilizing a human cadaver.

TABLE OF CONTENTS/OUTLINE
Introduction Epidemiology Outcomes Medicolegal implications Methods of prevention Methods Pictoral review Needles and instruments Sponges Absorbable hemostatic material
Contrast Enhanced Ultrasound Images: Hepatic, Splenic and Renal Infarcts Fast, Easily and Cheap!

All Day Location: MS Community, Learning Center

Participants
Demosthenes D. Cokkinos, MD, Athens, Greece (Presenter) Nothing to Disclose
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TEACHING POINTS
To review the commonest pathologic entities that cause infarcts of the liver, spleen and kidneys. To outline the basic steps for performing a Contrast Enhanced Ultrasound (CEUS) examination for these indications. To explain normal haemodynamic behaviour post injection of the contrast agent. To compare baseline US to CEUS images. To explain CEUS advantages relating to feasibility, short performance time and low cost.

TABLE OF CONTENTS/OUTLINE
Review of underlying pathophysiology for the formation of infarcts in the liver, spleen and kidneys. Explanation of findings of infarcts on US pre and post injection of contrast agents. Presentation of cases with hepatic, splenic and renal infarcts, with findings on baseline US and CEUS. Comparison of images pre and post US contrast agent injection in order to appreciate the value (diagnosis setting or confirmation of baseline findings) of CEUS. Comparison of CEUS findings to CT or MR when these were performed.
The Nail Unit Ultrasound: Normal and Pathologic Findings

All Day Location: MS Community, Learning Center

FDA Discussions may include off-label uses.

Participants
Felipe Aluja, MD, Bogota, Colombia (Presenter) Nothing to Disclose
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TEACHING POINTS

- Ultrasound imaging offers an accurate method for diagnosis of the nail diseases may be used for presurgical evaluation and follow up.
- The nail unit is composed of the nail plate and the periungual tissues. The nail matrix, the nail bed, the proximal nail fold and the hyponychium compose the different units of the nail plate. The periungual zone consists in the proximal fold, the lateral folds and the distal fold.
- The different diseases of nail unit produce alterations principally in the nail plate or in the nail bed.
- In onychomycosis there is thickening of the nail plates with fusion of the plates and thickening of the nail bed that is wider compared to the one seen in psoriasis. In psoriasis there is thickening of the nail bed, increasing vascularity, hyperechoic foci in the ventral plate with acoustic shadow and deformation of the nail plates.
- Tumors of the nail unit are usually hypoechoic (subungual warts, melanoma) or mixed echogenicity, may be hypervascular or hypovascular and may affect the surrounding structures such as the nail plates, the distal phalanx or both.

TABLE OF CONTENTS/OUTLINE

- Introduction
- Anatomy of the nail unit in ultrasound
- Technique of nail unit ultrasound
- Signs of disease
- Ultrasound findings of nail unit diseases
- Conclusions
iQuiz for Computed Body Tomography: Over 600 Interesting Cases with Individual Audio Discussion and Imaging Pearls

All Day Location: MS Community, Learning Center

Participants
Elliot K. Fishman, MD, Owings Mills, MD (Presenter) Research support, Siemens AG Advisory Board, Siemens AG Research support, General Electric Company Advisory Board, General Electric Company Co-founder, HipGraphics, Inc
Sara Raminpour, BS, Baltimore, MD (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
The exhibit present a series of 600 questions on Body CT in 15 categories where the user can review the case presented and then make a diagnosis and have feedback whether they have provided the correct diagnosis or not. Each case has a audio discussion and a series of "pears" or vignettes are also presented with each case. After reviewing the cases the user; 1. will have a better knowledge of some of the classic diagnosis in CT. 2. have an improved knowledge of many of the pearls and pitfalls of body CT. 3. have a better understanding of key points that are used in clinical diagnosis.

TABLE OF CONTENTS/OUTLINE
The CT Quiz has 15 categories which include Adrenal, Cardiac, Liver and Pancreas to name but four categories. In each category between 20 and 50 cases are available and a set of 2 images with 4 possible answers are provided. After the user choses an answer they can select the correct answer for the case. For each case a 30-60 second audio is provided discussing the case and the possible answers. In addition a series of 3-10 pearls or vignettes is provided with each case. The cases chosen are from state of the art CT scanner and are a mix of classic as well as less common diagnosis. The program is available on either an Apple iPad or iPhone. The program is easy to use with essentially no learning curve.

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Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at:
https://www.rsna.org/Honored-Educator-Award/

Elliot K. Fishman, MD - 2012 Honored Educator
Elliot K. Fishman, MD - 2014 Honored Educator
Restriction Spectrum Imaging: Cellular Architecture at Eye Level

Awards
Certificate of Merit

Participants
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Anders M. Dale, PhD, La Jolla, CA (Abstract Co-Author) Scientific Advisory Board, CorTechs Labs, Inc Founder, CorTechs Labs, Inc Stockholder, CorTechs Labs, Inc Consultant, CorTechs Labs, Inc Shareholder, CorTechs Labs, Inc
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TEACHING POINTS
Diffusion weighted imaging (DWI) and resultant ADC quantifies impedance of water diffusion. Restriction Spectrum Imaging (RSI) is an advanced DWI technique acquired with multiple b-values and multiple diffusion directions at each b-value. Post-processing of acquired RSI data can isolate volume fractions of restricted water, hindered water, isotropic water and anisotropic water. RSI for oncologic imaging makes use of the volume fractions of isotropic, restricted water (such as in cancer cells). Applications of RSI in breast cancer, cervical cancer, prostate cancer, and GBM are currently being explored.

TABLE OF CONTENTS/OUTLINE
Section 1: Diffusion weighted imaging
Diffusion of water via Brownian motion Generating signal in DWI b-value and ADC
Section 2: Restriction Spectrum Imaging
RSI spectrum Isolating intracellular water in cancer
Section 3: RSI in glioblastoma
Increased conspicuity for intracranial neoplasms Bevacizumab-related necrosis v recurrence
Section 4: RSI in prostate cancer
Distortion correction / extracapsular extension Z score / tumor histology
Section 5: Future Directions
Cervical cancer - Parametrial invasion / surgical candidacy - Early treatment response Breast Cancer Malignant lymph nodes
HHT from HTT: Hereditary Hemorrhagic Telangiectasia from Head to Toe

Participants
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TEACHING POINTS
1. Hereditary Hemorrhagic Telangiectasia (HHT) manifests as multiple arteriovenous malformations (AVMs) without intervening capillaries in many organs of the body. 2. HHT is an autosomal dominant genetic condition resulting from mutations in the TGF-B/BMP signaling cascade. 3. Common clinical manifestations include epistaxis, mucocutaneous telangiectasias, GI bleeding, intracranial hemorrhage, and complications related to hepatic and pulmonary AV shunting including high output heart failure, portal hypertension, cerebral abscesses, and embolic strokes. 4. Clinical and imaging manifestations of HHT increase with age and a coordinated team approach to diagnosis, screening and treatment is needed. Radiology is uniquely positioned to lead this coordinated care.

TABLE OF CONTENTS/OUTLINE
We present a state of the art review of HHT including clinical cases from our institution's HHT Center of Excellence. Outline is as follows: 1. Review the clinical manifestations of HHT and clinical criteria for diagnosis. 2. Review the genetics of HHT and recommendations for molecular genetic testing. 3. Review the recommendations for screening/surveillance. 4. Head to toe, complete organ system case-based review highlighting the imaging and clinical findings, treatment options, and indications.
Illustrated Pictorial Review of Regional Lymphatic Metastasis from Pelvic Tumors
All Day Location: MS Community, Learning Center

Participants
Kari L. Visscher, MD, London, ON (Presenter) Nothing to Disclose
Mousumi Bhaduri, MD, Toronto, ON (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
Pelvic tumors metastasize to regional lymph nodes, which are specific groups of nodes for each tumor type. Regional lymph nodes are classified according to the TNM system as N-stage disease. Once spread is outside the defined regional nodes, the disease is upstaged to M-stage disease thereby affecting patient treatment options. To formulate an effective search strategy for evaluation of cross-sectional imaging studies, it is important to be aware of potential sites of regional nodal metastasis, and to be familiar with N-stage classification for pelvic tumors. The purpose of this exhibit is to: Review pelvic lymph node groups. Depict regional nodal spread for carcinomas of the vulva, vagina, cervix uteri, corpus uteri, fallopian tube, ovary, testis, penis, prostate, urethra, and bladder using a simplified illustrated reference. Correlate regional nodal spread with N-stage classification according to the 2012 Cancer Staging Atlas from the American Joint Committee on Cancer.

TABLE OF CONTENTS/OUTLINE
The outline of this exhibit is: Learning objectives. Overview of regional lymph node groups. Pictorial review of regional nodal spread with N-stage classification for carcinomas of the vulva, vagina, cervix uteri, corpus uteri, fallopian tube, ovary, testis, penis, prostate, urethra, and bladder.
Totally RAD! A Pictorial Review on BI-RADS, PI-RADS, LI-RADS, and the Many RADS in RADiology Today

All Day Location: MS Community, Learning Center

Participants
Erick S. Hollanda, Rio de Janeiro, Brazil (Presenter) Nothing to Disclose
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Guilherme M. Cunha, MD, San Diego, CA (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
Review different types of Reporting and Data Systems (RADS) for common neoplasms, through illustrative images. Provide practical algorithms and decision trees for the most common reporting systems. Describe the main features, differences and similarities between each ‘RADS’. Discuss the available clinical evidence and applicability of each reporting system in daily practice. Based on extensive experience already accumulated by the literature from BI-RADS, we will adress the current gaps, challenges and future opportunities for each reporting system.

TABLE OF CONTENTS/OUTLINE
- Why should we adopt standardized data systems? BI-RADS: where it all began. Brief history of the many versions MQSA and the adoption to clinical practice
- Current standards and clinical evidence
- Everybody got jealous: other reporting and data systems: LI-RADS, PI-RADS, GI-RADS, TJ-RADS, Lung-RADS, C-RADS
- What do they mean? What are the specific objectives? What are the rationales? Algorithms and decision trees for each reporting system
- Table of comparison between each reposting system
- Clinical evidence, knowledge gaps, challenges and future opportunities for each data system.
Size of lymph nodes is not an accurate predictor for metastasis. However, size can be utilized in monitoring response to therapy. The ratio of the longitudinal to short axis (L/S) is 1.5 to 2 in benign nodes and less than 1.5 in malignant nodes. The stringent criteria for malignancy are round shape and absence of echogenic hilum. Benign nodes have sharp margins and malignant nodes usually have blurred/irregular margins due to extracapsular spread. Necrosis, calcifications, focal cortical nodes, reticulation and matting are common indicators of malignancy. Benign lymph nodes have central or hilar vascularity while malignant lymph nodes have peripheral/capsular flow or mixed hilar and peripheral flow pattern. Benign nodes portray a single vascular pedicle in contrast to malignant nodes which show multiple vascular pedicles with chaotic flow. No single feature distinguishes benign from malignant in but a constellation of ultrasonographic signs aid in their differentiation.

TABLE OF CONTENTS/OUTLINE
Portray the normal grayscale and color Doppler anatomy of lymph nodes. Illustrate the sonographic features of benign and malignant lymph nodes including size, shape, echogenicity, margins, structural changes and Doppler criteria. Demonstrate the unique characteristics of inflammatory, lymphomatous and metastatic lymph nodes.
**Multimodality Approach to Cystic Lesions in the Pelvis: What to Do and When**

All Day Location: MS Community, Learning Center

**Participants**
Carrie K. Gomez, DO, Rochester, NY (Presenter) Nothing to Disclose
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Katherine A. Kaproth-Joslin, MD, PhD, Rochester, NY (Abstract Co-Author) Nothing to Disclose

**TEACHING POINTS**

1. Simple and hemorrhagic cysts may require no follow-up, while larger or more complex cystic lesions require follow up imaging or surgical consultation.
2. Ovarian or paraovarian torsion requires prompt surgical intervention.
3. GI cystic lesions are usually managed conservatively, with the exception of mucocele which requires resection.
4. GU lesions are treated if symptomatic.
5. Lymphoceles represent sequelae of lymphadenectomy. Treatment may be conservative, surgical or percutaneous drainage.
6. Neural lesions may need further imaging to confirm their origin.

**TABLE OF CONTENTS/OUTLINE**
The following cystic lesions will be presented emphasizing multimodality imaging and clinical management:

- Ovarian: simple/hemorrhagic cysts, cystic neoplasms and metastasis.
- Adnexal: hydrosalpinx, paratubal/broad ligament cysts and abscess.
- GI: mesenteric cysts, appendiceal mucocele and Meckel's diverticulum.
- GU: urethral diverticulum, Gartner and Bartholin cyst.
- Peritoneal: Peritoneal inclusion cyst, lymphocele, mesothelioma, carcinomatosis.
- Neural: Arachnoid cysts, perineural cysts, meningocele, cystic schwannoma and sacrococcygeal teratoma.
MS106-ED-X

Intra-abdominal Sarcomas: Diagnosis and Surgical Planning

All Day Location: MS Community, Learning Center

Awards
Certificate of Merit

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TEACHING POINTS

Intraabdominal sarcomas encompass a wide variety of pathologic subtypes. Imaging plays an important role in the diagnosis, treatment, and staging of intraabdominal sarcomas. This exhibit will focus on anatomic locations, subtypes, and imaging findings of intraabdominal soft tissue sarcomas. Because the mainstay of treatment is surgical resection, specific preoperative imaging findings that are crucial to surgical resection will be discussed.

TABLE OF CONTENTS/OUTLINE

Abdominal anatomy/Frequencies of sarcoma by locationIntraperitonealRetroperitonealExtraperitoneal pelvisImaging findings of various subtypes of soft tissue sarcoma that permit diagnosis and differentiation from non-sarcomatous lesionsLiposarcomaLeiomyosarcomaGISTChondrosarcomaOther sarcomas such as undifferentiated sarcoma and alveolar soft part sarcomaDifferential diagnosis by locationIntraperitoneal masses: lymphoma, metastatic disease, mesenteric fibromatosis, abscessRetroperitoneal masses: metastatic disease, lymphoma, hemorrhage, retroperitoneal fibrosisExtraperitoneal pelvis: endometriosis, metastatic disease, neurogenic tumorPre-operative planning: what the surgeon needs to knowWhen is biopsy indicated?Definition of R0 resectionAnatomic information for surgical planning: vascular encasement, visceral, bowel, and abdominal wall involvement
**TEACHING POINTS**

1. Understand the components of normal spectral Doppler waveforms of the neck vessels.
2. Become familiar with altered hemodynamics from flow-altering devices such as left ventricular assist devices and intra-aortic balloon pumps.
3. Recognize uncommon pathologies altering flow dynamics of the neck vessels.
4. Diagnose trauma related injuries of the neck vessels as demonstrated on ultrasound.
5. Recognize post-surgical and post-irradiation changes of the neck.
6. Diagnose incidental soft tissue lesions of the neck.

**TABLE OF CONTENTS/OUTLINE**

1. Indications for carotid ultrasound examination
2. Normal grayscale appearance and spectral Doppler waveforms of the neck vessels
3. Flow-altering devices such as left ventricular assist devices and intra-aortic balloon pumps
4. Various pathologies altering flow dynamics as demonstrated on spectral Doppler analysis
5. Vascular injuries
6. Expected post-surgical and post-irradiation changes of the neck
7. Soft tissue lesions of the neck
8. References
**Imaging of the Lymphatic Disorders of the Abdomen**

All Day Location: MS Community, Learning Center

**Participants**

Aruna R. Patil, MD, FRCR, Bangalore, India (*Presenter*) Nothing to Disclose  
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**TEACHING POINTS**

- To get familiar with the multimodality imaging spectrum of the various abdominal lymphatic disorders including congenital (lymphangiomas, venolymphatic malformations), infective, traumatic and post therapy related.  
- To get acquainted with the differentials and mimics of these conditions.

**TABLE OF CONTENTS/OUTLINE**

Extra-Osseous Ewing Sarcoma: Spectrum of Disease With Pathologic Correlation

Awards
Certificate of Merit

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TEACHING POINTS
Review epidemiology, clinical presentation and treatment. Compare tumor characteristics and prognosis to osseous Ewing sarcomas. To review the cross-sectional imaging findings of extra-osseous Ewing's sarcoma.

TABLE OF CONTENTS/OUTLINE

SUMMARY: Ewing sarcoma is a small round blue cell tumor composed of regular-sized, primitive appearing cells. It is the second most common childhood primary bone cancer that can also arise from soft tissue. Extra-osseous Ewing sarcomas differ in patient demographics, clinical features and prognosis. The purpose of this exhibit is to illustrate the key imaging features of extra-osseous Ewing sarcoma and how they compare to the osseous form.

Honored Educators
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Christine O. Menias, MD - 2013 Honored Educator
Christine O. Menias, MD - 2014 Honored Educator
Christine O. Menias, MD - 2015 Honored Educator
Amy K. Hara, MD - 2015 Honored Educator
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Meghan G. Lubner, MD - 2014 Honored Educator
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Extrapleural Solitary Fibrous Tumors; An Imaging Review

All Day Location: MS Community, Learning Center

Participants
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Alison C. Harris, MBChB, Vancouver, BC (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
· To discuss the epidemiology of extrapleural solitary fibrous tumors.
· To appreciate the potential sites of occurrence of extrapleural solitary fibrous tumors.
· To understand the multimodality imaging features of solitary fibrous tumors within the various extrapleural/pulmonary systems.
· To discuss the potential differential diagnosis associated with extrapleural solitary fibrous tumors.
· To discuss the features that may allow differentiation from other lesions.
· To discuss the syndromes associated with extrapleural solitary fibrous tumors e.g. Doege Potter syndrome.

TABLE OF CONTENTS/OUTLINE

Solitary fibrous tumours (SFT) are rare mesenchymal tumours that can be classified as pleural and extrapleural tumours. On retrospective review of a local pathology database within a tertiary referral teaching hospital, 68 cases of histologically proven extrapleural SFT were identified extending over a period of 15 years. Multiple systems and locations were involved including the gastrointestinal tract (liver, small bowel, pancreas), genitourinary and retroperitoneum, neurological, head and neck and musculoskeletal. A mixture of malignant and benign lesions was present. Using a pictorial approach, we demonstrate the examples encountered and discuss their imaging features within the modalities of plain film imaging, ultrasound, CT, MRI and PET.
TEACHING POINTS

About 10% of latent mycobacterium tuberculosis infections will progress to active disease, which when left untreated has a 50% mortality rate. Worldwide 2-3 million will die from TB this year. Tuberculosis can have numerous extrathoracic presentations which are often the first indications of the disease. Understanding the typical appearance of extrapulmonary TB can lead to appropriate inclusion in differentials and timely diagnosis. This is of growing importance locally as world travel is increasingly accessible to those in endemic regions. Sarcoidosis, fungal infections, and inflammatory disease are among the chief differential considerations.

TABLE OF CONTENTS/OUTLINE

General Format: 1: Describe Findings / Sequences 1B (some cases) What would you do next? 1C (some cases) Findings / Sequences 2: TB or not TB? Why? 3: Dx / discussion

Section 1: Review Pulmonary TB
- Epidemiology
- Ghon and Ranke
- Reactivation / Miliary

Section 2: Osseous structures
- Pott disease
- Osteomyelitis

Section 3: Intracranial
- Tuberculoma + Tuberculous meningitis
- Neurosarcoidosis

Section 4: Abdomen
- Terminal Ileitis: IBD with fat halo
- Terminal Ileitis: TB with lung nodules
- Necrotic Mesenteric LNs
- Perihepatic seromas in TB patient
- More

Section 5: Pelvis
- TB salpingitis
- TB abscess in epididymus
Anatomy the Radiology Resident Needs to Know: A Novel Interactive App

All Day Location: MS Community, Learning Center

Participants
Gavin M. Sugrue, MBCh, Dublin, Ireland (Presenter) Nothing to Disclose
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Peter J. MacMahon, MD, Dublin, Ireland (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
1. To allow delegates to test their level of clinically relevant anatomical knowledge in the form of interactive multiple choice questions on their smartphone or tablet device.
2. To highlight that integration of this app as a revision tool for residents could help identify areas of weakness and enhance examination preparation.
3. To appreciate that a detailed understanding of anatomy by radiology residents is fundamental to their practice in radiology.
4. To demonstrate that educational smartphone and tablet apps have considerable potential to become a feature of radiological training in the future.

TABLE OF CONTENTS/OUTLINE
The app 'Anatomy the radiology resident needs to know' can be downloaded free of charge and without advertisement. The App will be readily available from November 2015. Delegates can test themselves with over 1000 multiple-choice and true-false questions pertaining to diagnostic anatomy, normal variants and radiological techniques. These questions address clinically relevant anatomy along with questions that focus on anatomy required for in-training examinations. Each question is supported with a detailed answer, labeled radiological images and references to further online reading material. Ease of use of this app is supported by its simple user interface and systems based anatomical approach.
Superficial Palpable Masses: Are They Lipomas or Something Else? The Role of Sonography

All Day Location: MS Community, Learning Center

Awards
Cum Laude

Participants
Dinushi S. Perera, MD, Philadelphia, PA (Presenter) Nothing to Disclose
Kheng L. Lim, MD, Philadelphia, PA (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
Despite a few published literature cautioning the sonographic diagnosis of superficial lipomas, accurate diagnosis can be rendered when combining clinical history with common sonographic features of lipomas. Lack of color Doppler flow does not exclude malignant neoplasm. However, the presence of substantial color Doppler flow within a mass should warrant further work up. If the mass can be visualized but is indeterminate by ultrasound, ultrasound-guided biopsy can be performed relatively safely.

TABLE OF CONTENTS/OUTLINE
Discuss the increasing role of sonography as the initial and potentially the sole diagnostic imaging modality in solving clinical conundrum. Discuss the pathophysiology of superficial lipomas. Emphasize the common sonographic features of palpable superficial lipomas which can render an accurate diagnosis. Present sonographic features and teaching points of other palpable superficial lumps. Examples include hernias containing bowel and fat, soft tissue hematomas, pseudoaneurysms, vascular malformations, epidermal inclusion cysts, abscesses, endometrial implants, malignant masses, and tendinopathy. Discuss radiologic-pathologic correlation of these palpable masses and MRI or CT correlation where appropriate. Review available literature of the role of sonography as the sole imaging modality in diagnosis superficial masses.
State-of-the-art Diagnosis and Treatment of Metastatic Melanoma: MDCT Protocol Optimization to Identify Metastases in Unusual Locations and Review of Innovative Therapeutic Agents

All Day Location: MS Community, Learning Center

Awards
Certificate of Merit

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Elliot K. Fishman, MD, Owings Mills, MD (Abstract Co-Author) Research support, Siemens AG Advisory Board, Siemens AG Research support, General Electric Company Advisory Board, General Electric Company Co-founder, HipGraphics, Inc

TEACHING POINTS
Melanoma has a propensity to metastasize to locations not frequently involved by other malignancies. Identification of subtle recurrence in uncommon locations is critical for devising the optimal treatment plan, but hinges on high quality MDCT technique and a comprehensive search pattern. Management algorithms and outcomes have been dramatically altered by innovative therapies. This exhibit reviews—MDCT appearance of melanoma metastases in uncommon locations Importance of IV contrast, multiplanar review and high contrast displays to identify subtle metastatic disease. New therapeutic approaches tailored to genetics mutations and immunotherapeutic agents Potential complications of novel therapeutics that may be identified on MDCT

TABLE OF CONTENTS/OUTLINE
MDCT Technique IV contrast protocol (single vs dual phase acquisition) High contrast display for increasing lesion conspicuity of muscle metastases MPRs facilitate lesion detection (bowel, mesentery, gallbladder, soft tissues, spinal canal)Case review: unusual sites of metastatic disease Heart Gallbladder Pancreas Small bowel Mesentery Perinephric space Spinal canal Intramuscular Subcutaneous Treatment Therapy tailored to BRAF mutations Immunotherapies Complications that may be identified on body CT (pneumonitis, colitis)

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Elliot K. Fishman, MD - 2012 Honored Educator
Elliot K. Fishman, MD - 2014 Honored Educator
The Common Pattern of Postmortem Changes on Whole Body CT Scans; Measuring Organ Volumes and Radiodensity

All Day Location: MS Community, Learning Center

Participants
Willemijn M. Klein, MD, PhD, Nijmegen, Netherlands (Presenter) Nothing to Disclose
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Karlijn Hermans, Nijmegen, Netherlands (Abstract Co-Author) Nothing to Disclose
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Mathias Prokop, PhD, Nijmegen, Netherlands (Abstract Co-Author) Speakers Bureau, Bayer AG Speakers Bureau, Bracco Group Speakers Bureau, Toshiba Corporation Speakers Bureau, Koninklijke Philips NV Research Grant, Toshiba Corporation

TEACHING POINTS
You will learn that the body has a regular pattern of physiological postmortem changes that are visible on CT scans and predictable with the time since death; with increasing postmortem interval, the radiodensity of the cerebrospinal fluid increases; the lung and liver volumes decrease and the radiodensity of these organs increases; the bowel distension increases; the intravascular gas increases; these postmortem changes are in good correlation to the postmortem interval; the knowledge of the normal postmortem changes will result in a better interpretation of premortem pathology and postmortem physiology.

TABLE OF CONTENTS/OUTLINE
This exhibit will demonstrate the hourly total body CT scans of bodies (that are donated to science by the persons themselves). We will show timelapse movies of the postmortem changes per slice, as well as 3D reconstruction timelapse movies, to visualize the organ changes. The visible changes will be accompanied by study data of in-hospital death to support the educational emphasis in graphs of organ radiodensity and organ volume plotted to the postmortem time. Special focus on brain volume and CSF density-lung volume and density-liver volume and density, as well as portal gas-bowel distention and mesenteric venous gas.
IMAGING SPECTRUM OF ERDHEIM CHESTER DISEASE

All Day Location: MS Community, Learning Center

Participants
Maryam Gul, Mineola, NY (Abstract Co-Author) Nothing to Disclose
Ammar A. Chaudhry, MD, Corona, CA (Presenter) Nothing to Disclose
Abbas A. Chaudhry, BSc, Westbury, NY (Abstract Co-Author) Nothing to Disclose
Mubashir Sheikh, Corona, CA (Abstract Co-Author) Nothing to Disclose
Lev Bangiyev, DO, Stony Brook, NY (Abstract Co-Author) Nothing to Disclose
Annapurneswara R. Chimpiri, MD, Oklahoma City, OK (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
Review clinicopathologic spectrum of Erdheim Chester disease. Discuss spectrum of imaging and pathologic findings in Erdheim Chester disease. Review mimics with emphasis on key findings differentiating these entities.

TABLE OF CONTENTS/OUTLINE
Pictorial (cartoon and/or radiographic) depiction of anatomic areas of disease involvement. Discussion of characteristic imaging findings (ultrasound, CT and MRI) of Erdheim Chester disease. Review primary treatment options (including surgical and interventional radiology guided), imaging follow-up and prognosis. Review differential diagnosis including inflammatory (langerhan cell histiocytosis, hemophagocytic lymphohistiocytosis, sarcoidosis etc), infectious (TB, fungal, etc), and neoplastic (lymphoma, leukemia, metastasis, etc ) conditions Flow chart highlighting key imaging features that can narrow the differential diagnosis.
A Fungus Among Us-The Imaging Spectrum of Invasive Fungal and Fungus-Like Infections

All Day Location: MS Community, Learning Center

Participants

Vincent M. Mellnick, MD, Saint Louis, MO (Presenter) Nothing to Disclose
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Christine O. Menias, MD, Scottsdale, AZ (Abstract Co-Author) Nothing to Disclose
Perry J. Pickhardt, MD, Madison, WI (Abstract Co-Author) Co-founder, VirtuoCTC, LLC; Stockholder, Cellectar Biosciences, Inc; Research Consultant, Bracco Group; Research Consultant, KIT ; Research Grant, Koninklijke Philips NV
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Meghan G. Lubner, MD, Madison, WI (Abstract Co-Author) Grant, General Electric Company; Grant, NeuWave Medical, Inc; Grant, Koninklijke Philips NV

TEACHING POINTS

I. Fungal and fungus-like organisms can cause invasive infection in a variety of organ systems, particularly in an immunocompromised host. II. The imaging findings of these infections can be problematic and may mimic malignant processes. III. Radiologists guide management of these infections not only by describing their extent, but also by suggesting these organisms in the appropriate clinical scenario.

TABLE OF CONTENTS/OUTLINE

I. Epidemiology, classification, clinical features and natural history of infections with invasive fungal and fungus-like organisms, including aspergillus, mucormycosis, actinomycosis, nocardia, candida, cryptococcusII. Common imaging findings with emphasis on CT/MR using an organ based approach through the central nervous system, chest, abdomen, and pelvis. III. Treatment of these conditions and the radiologist’s role in determining management.

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Christine O. Menias, MD - 2014 Honored Educator
Christine O. Menias, MD - 2015 Honored Educator
Perry J. Pickhardt, MD - 2014 Honored Educator
Sanjeev Bhalla, MD - 2014 Honored Educator
Meghan G. Lubner, MD - 2014 Honored Educator
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It’s Not Easy Being Green: The Various Imaging Presentations of Myeloid Sarcoma

Participants
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Christine O. Menias, MD, Scottsdale, AZ (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS

Myeloid sarcomas are rare but important, as they may be the first or only sign of a de novo or relapsed hematologic malignancy. These neoplasms can have a diverse and distinct appearance based on which organ system they affect. A clear understanding of the appearance, available therapeutic options, and post treatment complications of these tumors is essential for any imager, particularly those consulting on a population at risk for recurrent myelogenous malignancy.

TABLE OF CONTENTS/OUTLINE

1. Introduction to the prevalence, pathophysiology, and non-radiologic associations of granulocytic sarcoma
2. Demonstration of the computed tomographic and magnetic resonance imaging appearance of granulocytic sarcoma as it affects various locations, including the central nervous system, chest, abdomen and pelvis
3. Consideration of the therapeutic options available by organ system
4. Presentation of the possible complications of treatment as seen on follow up imaging

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Christine O. Menias, MD - 2014 Honored Educator
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Sanjeev Bhalla, MD - 2014 Honored Educator
Perry J. Pickhardt, MD - 2014 Honored Educator
Meghan G. Lubner, MD - 2014 Honored Educator
Meghan G. Lubner, MD - 2015 Honored Educator
Multi-system Imaging Features of Cystic Fibrosis in Adults

All Day Location: MS Community, Learning Center

Awards
Magna Cum Laude

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TEACHING POINTS
- Common pulmonary manifestations of cystic fibrosis include upper lobe bronchiectasis, lymphadenopathy and recurrent superimposed infections.
- Extrapulmonary manifestations include sinus disease, fatty replacement of the pancreas, distal intestinal obstruction syndrome, intussusception, appendicitis, fibrosing colopathy, bile duct abnormalities, pancreatic cystosis, nephrolithiasis.
- Awareness of these manifestations may aid detection on imaging.

TABLE OF CONTENTS/OUTLINE
- Pathophysiology, epidemiology and natural history of CF
- Pulmonary Manifestations of CF
- Extrapulmonary Manifestations of CF including sinus, hepatobiliary, pancreatic, GI, renal disease.
- Case examples with imaging findings on radiograph, CT, US and MRI.

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Sanjeev Bhalla, MD - 2014 Honored Educator
**Imaging Findings of Non-cutaneous Melanoma**

All Day Location: MS Community, Learning Center

**Awards**

Certificate of Merit

**Participants**

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**TEACHING POINTS**

- Review primary non cutaneous sites of melanoma (choroidal/ocular, anorectal, biliary, esophageal, urethra).
- Discuss epidemiology, natural history and multimodality imaging appearance of non cutaneous melanoma with case examples.

**TABLE OF CONTENTS/OUTLINE**

- Non-cutaneous sites of melanoma throughout the body
  - Head/Neck: Choroidal, sinonasal
  - Abdomen/pelvis: Bowel (esophagus, anorectal), biliary, GU (urethral)
- Epidemiology, clinical presentation and natural history of non-cutaneous melanoma
- Arise from melanocytes derived from neural crest cells which can be found throughout the body. Melanin producing cells migrate from neural crest to endodermal derivatives including esophagus, rectum, vagina, biliary tree/gallbladder
- Non cutaneous primary sites may be difficult to detect and present differently than cutaneous melanoma.
- Imaging features of non-cutaneous melanoma
- Multimodality (CT, MR, US, PET)
- May be T1 hyperintense on MRI
- Can be hypervascular on CT
- FDG avid on PET
- Case examples

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Awards
Certificate of Merit

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Marjorie W. Stein, MD, New Rochelle, NY (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
1. Not all hyperechogenic foci are calcifications.
2. Differentiating clear from dirty shadowing helps distinguish calcifications from gas.
3. Twinkle artifact, often associated with calcifications, can be seen with bowel gas, stents, and biliary hamartomas.
4. Analysis of the morphology of the echogenic focus helps establish structure.

TABLE OF CONTENTS/OUTLINE
Beyond the Thyroid: Three Dimensional Ultrasound Evaluation of the Cervical Lymph Nodes, the Salivary Glands, and the Parathyroid Glands

All Day Location: MS Community, Learning Center

Participants
Susan J. Frank, MD, Bronx, NY (Presenter) Nothing to Disclose
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David Gutman, MD, Bronx, NY (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
Ultrasound imaging is helpful in evaluation of the neck in many clinical situations. The potential benefits of three-dimensional ultrasound (3D US) when added to two-dimensional ultrasound (2D US) will be explored in the following situations:

1. Cervical lymph node evaluation, including but not limited to post thyroidectomy lymph node evaluation
2. Parathyroid gland evaluation in patients with primary and secondary hyperparathyroidism
3. Salivary gland evaluation for small masses, sialolithiasis
4. Evaluation of palpable/visible abnormalities

TABLE OF CONTENTS/OUTLINE
1. 3D ultrasound appearance of normal cervical lymph nodes; both grayscale and color Doppler
2. 3D ultrasound appearance of the salivary glands
3. 3D appearance of the parathyroid glands
6. Atlas of 3D US of various salivary gland abnormalities, including but not limited to: sialolithiasis, and assorted benign and malignant lesions
All in One: Tumor Response Evaluation with MRI

All Day Location: MS Community, Learning Center

Participants
Roberto Garcia Figueiras, MD, Santiago de Compostela, Spain (Presenter) Nothing to Disclose
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Ambros J. Beer, MD, Munich, Germany (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
The evaluation of tumor response to oncologic treatments has traditionally been made according to response criteria based on morphologic imaging. Recent developments in magnetic resonance imaging (MRI) have improved the ability of MRI to evaluate tumor response. Multiparametric tumor assessment using MRI combines the information from different anatomical, functional and molecular imaging techniques, thus allowing an improved understanding of responses to therapeutic interventions. The aim of this exhibit is:

- To emphasize the added information of MRI for understanding of the biological effects of therapies, including novel biologic targeted agents.
- To learn about the MRI findings of tumor response based on different imaging techniques: dynamic contrast-enhanced MRI (DCE-MRI), dynamic susceptibility MRI (DSC-MRI), diffusion-weighted MRI (DWI-MRI), MR spectroscopy imaging (MRSI), BOLD, or PET-MRI.

TABLE OF CONTENTS/OUTLINE
1. Cancer hallmarks and oncologic therapies
2. Assessment of oncologic therapies by MRI - Chemotherapy - Radiation therapy techniques - Antiangiogenic and antivascular therapies - Target therapies blocking tumor proliferation - Hormonal therapy - Immunotherapy - Interventional techniques - Other tumor pathways (ubiquitin-proteasome, MET, etc.)
3. MRI in the development of new therapeutic agents in cancer
4. Conclusions

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Anwar R. Padhani, MD, FRCR - 2012 Honored Educator
Tumor Markers: Myths and Facts Unfolded

All Day Location: MS Community, Learning Center

Awards
Certificate of Merit
Identified for RadioGraphics

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Silvana C. Faria, MD, Houston, TX (Presenter) Nothing to Disclose
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Chandana G. Lall, MD, Orange, CA (Abstract Co-Author) Nothing to Disclose
Priya R. Bhosale, MD, Houston, TX (Abstract Co-Author) Nothing to Disclose
Aliya Quyyam, MD, Surrey, United Kingdom (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS

Tumor markers may be used to help diagnose cancer, to monitor a patient’s response to treatment, or be used to restage malignancy. Examples of tumor markers are: CA 19-9 is used to follow pancreatic cancer, CA125 is used to follow ovarian malignancy, alpha-fetoprotein is used to follow liver and germ cell tumors, CEA is used to follow colon cancer, and prostate-specific antigen is used to follow prostate cancer, among others. However, these tumor markers can also be increased in benign conditions. In this exhibit, we will discuss the common tumor markers used for staging and restaging of common cancers and used to evaluate recurrence. The facts and myths about the tumor markers will be discussed. We will also discuss the sensitivity and specificity of these tumor markers in the setting of any given cancer. We will show images of how these markers can be used in clinical settings while interpreting images. At the end of this exhibit, the observer will be able to use the tumor markers in the context of the disease and will be able to apply it to optimally take care of the patient.

TABLE OF CONTENTS/OFFLINE


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Chandana G. Lall, MD - 2013 Honored Educator
Priya R. Bhosale, MD - 2012 Honored Educator
**Marginal Zone Lymphoma: Spectrum of Disease**

All Day Location: MS Community, Learning Center

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**Participants**
Constance de Margerie-Mellon, Paris, France (Presenter) Travel support, Guerbet SA
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Alexandre Coffin, PhD, Paris, France (Abstract Co-Author) Nothing to Disclose
Stephanie Cohen-Zarade, Paris, France (Abstract Co-Author) Nothing to Disclose
Eric De Kerviler, MD, Paris, France (Abstract Co-Author) Research Consultant, Galil Medical Ltd; Speaker, Guerbet SA

---

**TEACHING POINTS**

The purpose of this exhibit is: To understand the pathophysiology of marginal zone lymphoma (MZL) and its classification in three different forms To discuss imaging indications in MZL (CT, MRI, PET-CT) To review imaging findings, especially in the various locations of MALT lymphoma. The major teaching points of this exhibit are: Marginal zone lymphomas are a group of indolent B cell lymphoma. There are three types of MZL: MALT (mucosa-associated lymphoid tissue) lymphoma, nodal MZL and splenic MZL. MALT lymphoma is the most common form and mostly occurs in the stomach, small intestine, lung, orbit and salivary glands. Imaging may vary according to tumor location (CT and MRI) and aggressiveness (PET).

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**TABLE OF CONTENTS/OUTLINE**

Pathophysiology and classification of MZL MALT lymphomas - Epidemiology, clinical characteristics and imaging indications Review of imaging findings in its different locations Splenic MZL - Epidemiology, clinical characteristics and imaging indications Review of imaging findings Nodal MZL - Epidemiology, clinical characteristics and imaging indications Review of imaging findings Take home messages Quizz
What is Inside? Contrast-enhanced Ultrasound for Abdominal Fluid-containing Structures

All Day Location: MS Community, Learning Center

Participants
Francisco J. Padilla-Palomo, MD, Malaga, Spain (Presenter) Nothing to Disclose
Maria Mar Molinero-Casares, Malaga, Spain (Abstract Co-Author) Nothing to Disclose
Josefa Vicente-Romo, Malaga, Spain (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS

Conventional ultrasound (US) is usually the first imaging modality used to assess abdominal disease. When echogenic content is detected in fluid-containing structures (gall bladder, biliary tree, cysts, urinary tract...), ultrasound imaging cannot always establish whether it is sludge, clot, debris, or if it is perfused viable tissue. Contrast-enhanced ultrasound (CEUS) is very sensitive to detect blood flow within parenchymal tissue (microvasculature), allowing the differential diagnosis, that cannot be demonstrated by Doppler US. CEUS may eliminate the need for CT or MRI. The purpose of this exhibit is:- To describe the technique, pearls and pitfalls of CEUS.- To illustrate the value of CEUS in the diagnosis of the content of abdominal fluid-containing structures.

TABLE OF CONTENTS/OUTLINE

Description of the technique, performance tips and artifacts Sample cases from local experience in which CEUS was used to achieve the diagnosis, in the following: - Gall bladder - Biliary tree - Renal cysts - Urinary tractThis exhibit aims to encourage radiologists in the utilization of CEUS in the assessment of abdominal fluid-containing structures.
Protect Yourself: Occupational Health for Diagnostic Radiologists

All Day Location: MS Community, Learning Center

Participants
Jennifer L. Favinger, MD, Seattle, WA (Presenter) Nothing to Disclose
David L. Lamar, MD, PhD, Seattle, WA (Abstract Co-Author) Nothing to Disclose
Aaron M. Rutman, MD, Seattle, WA (Abstract Co-Author) Nothing to Disclose
Michael L. Richardson, MD, Seattle, WA (Abstract Co-Author) Nothing to Disclose
Gregory Kicska, MD, PhD, Seattle, WA (Abstract Co-Author) Nothing to Disclose
Gautham P. Reddy, MD, Seattle, WA (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
1. Understand key occupational health issues facing diagnostic radiologists.
2. Discuss possible interventions for improvements in work environment and ergonomics.
3. Discuss strategies to improve occupational health.

TABLE OF CONTENTS/OUTLINE
1) Ergonomics and repetitive motion
   a. What are common injuries?
   b. Common offenders: chair, mouse, keyboard, dictation microphone
   c. How to minimize risk? Possible interventions
2) Sedentary Job
   a. Cardiovascular and longevity impact
   b. Possible interventions
   i. For example: how often to get up and move
3) Altered workstations: seated, standing, treadmill, bicycle
4) Vision
   a. Eyesight
   b. Headaches and migraines
   c. Room lighting, brightness and positioning of monitors
5) Needle stick injuries
   a. Infection, blood-borne pathogens
6) Workstation hygiene
   a. Fomites and spread of infection from shared workstations
7) Mental Health
   a. Stress of working in medicine
   b. Light-related issues: low vitamin D, seasonal affective disorder, circadian rhythm alterations
8) Radiation exposure
   a. When performing procedures
   b. When not performing procedures
   c. How to protect yourself - remote fluoroscopy suite, lead, lead glasses

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Gautham P. Reddy, MD - 2014 Honored Educator
Michael L. Richardson, MD - 2013 Honored Educator
Michael L. Richardson, MD - 2015 Honored Educator
Angiosarcoma from Head to Toe: Imaging Features with Pathologic Correlation

All Day Location: MS Community, Learning Center

Participants
Sarah M. Palmquist, MD, Houston, TX (Presenter) Nothing to Disclose
Corey T. Jensen, MD, Houston, TX (Abstract Co-Author) Nothing to Disclose
Gregory H. Broering, MD, Houston, TX (Abstract Co-Author) Nothing to Disclose
Alper Duran, MD, Houston, TX (Abstract Co-Author) Nothing to Disclose
Khaled M. Elsayes, MD, Ann Arbor, MI (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
Review epidemiology and pathology of angiosarcoma in various organ systems. Illustrate characteristic multimodality imaging features, clinical presentation, and differential diagnoses of angiosarcoma as well as specific significance and prognostic features in each location. Correlate imaging features with pathological findings. Describe potential pitfalls associated with the diagnosis of angiosarcoma.

TABLE OF CONTENTS/OUTLINE
IntroductionEtiologyEpidemiologyHepatic AngiosarcomaAngiosarcoma of the Head and NeckSoft Tissue AngiosarcomaAngiosarcoma of the BreastCardiac AngiosarcomaOsseous AngiosarcomaSpleenic AngiosarcomaEpitheloid Angiosarcoma (subtypes)Differential DiagnosesPotential Mimics and PitfallsConclusion Summary:Angiosarcoma is a rare, aggressive subtype of sarcoma from endothelial-cell, lymphatic or vascular origin with a propensity for local recurrence and metastasis. Due to its origin from endothelial cells, angiosarcoma can occur in any organ. We present a spectrum of pathologically proven cases of angiosarcoma in multiple organ systems, including very rare tumor locations. Key imaging features of angiosarcoma across multiple organ systems will be described. Special emphasis will be placed on prognostic features for specific locations with pathologic correlation.

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Khaled M. Elsayes, MD - 2014 Honored Educator
Extrahepatic Hydatid Disease

All Day Location: MS Community, Learning Center

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Alvaro Huete Garin, MD, Santiago, Chile (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
1) Describe the epidemiology and life cycle of Echinococcus granulosus. 2) Review the spectrum of imaging findings of extrahepatic hydatid disease on US, CT and MRI. 3) Discuss cystic congenital, infectious and neoplastic that can mimic hydatid disease.

TABLE OF CONTENTS/OUTLINE
1) Hydatid epidemiology. 2) Echinococcus granulosus biology and life cycle. 3) Clinical presentation, diagnosis and treatment of hydatid disease. 4) Extrahepatic hydatid disease imaging findings on US, CT and MR: Spleen - Kidneys and Adrenal glands - Retroperitoneum - Peritoneal cavity - Pleura - Lungs - Pericardium - Heart - Mediastinum - Others. 5) Imaging markers suspicious of hydatid disease. 6) Relevant differential diagnosis of extrahepatic hydatid cyst according to location.

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Christine O. Menias, MD - 2013 Honored Educator
Christine O. Menias, MD - 2014 Honored Educator
Christine O. Menias, MD - 2015 Honored Educator
Awards
Magna Cum Laude
Identified for RadioGraphics

Participants
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Eric E. Williamson, MD, Rochester, MN (Abstract Co-Author) Research Grant, General Electric Company
Nikkole Weber, Rochester, MN (Abstract Co-Author) Nothing to Disclose
Cynthia H. McCollough, PhD, Rochester, MN (Abstract Co-Author) Research Grant, Siemens AG
Joel G. Fletcher, MD, Rochester, MN (Abstract Co-Author) Grant, Siemens AG

TEACHING POINTS
1. Understand the latest technical advances for third-generation dual-source CT. 2. Learn how these advances can be applied in clinical practice including CT angiography (CTA), CT venography (CTV), renal stone composition, radiation optimization and iodinated contrast dose reduction. 3. Review clinical cases where third-generation dual-source CT has benefited patient care.

TABLE OF CONTENTS/OUTLINE
BACKGROUND: Understand the development of dual-source CT and improvements in the third-generation scanner including: Improved x-ray tubes permitting higher and lower tube potentials Improved material characterization Smaller focal spot at low kV improving spatial resolution CT detector enhancements with longer coverage and improved spatial resolution Dynamic CTA acquisition APPLICATION TO CLINICAL PRACTICE: CTA CTV Renal stone composition Decreased radiation dose Iodinated contrast reduction CLINICAL EXAMPLES: Dynamic CTA including depiction of AV malformation flow for preoperative planning. Lower IV contrast volume for patients with decreased renal function after endovascular repair. Improved dual energy CTA subtraction for treatment planning of vascular stenoses. Improved spatial resolution of fine arterial detail. Iodine accentuation at low kV allowing improved low contrast imaging such as split bolus CTV.
Imaging Features of the Ectopic Glands and Related Disorders

All Day Location: MS Community, Learning Center

Participants
Hidefumi Fujisawa, MD, Yokohama, Japan (Presenter) Nothing to Disclose
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Sho Funaki, Yokohama, Japan (Abstract Co-Author) Nothing to Disclose
Norihiro Hashizume, Yokohama, Japan (Abstract Co-Author) Nothing to Disclose
Tamio Kushihashi, MD, Yokohama, Japan (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
The purpose of this exhibit is: To review the CT/ MRI images of the ectopic gland including pituitary gland, thyroid, parathyroid, thymus, pancreas, adrenal, mammary gland and gastric gland. To know the clue imaging findings for precious diagnosis as each of the ectopic gland. To learn the imaging features of many disorders related with each of the ectopic gland.

TABLE OF CONTENTS/OUTLINE
1. Embryology and the cases of the each og the ectopic gland
2. Review of the CT/ MRI findings of each of the ectopic gland
3. Learn for the sample cases of CT/ MRI features of the ectopic gland related disorders. Ectopic pituitary gland related pituitary dwarfism Ectopic thyroid gland related thyroglossal duct cyst Mediastinal tumor arising from the ectopic parathyroid Ectopic thymomas from the cervix and the middle mediastinum Pancreatitis arising from the gastric ectopic pancreas Ectopic adrenal tumors Carcinoma arising from accessory mammary gland Gastrointestinal hemorrhage and obstruction from the heterotopic gastric gland
4. Summary Radiologist should recognize the ectopic gland to avoid misdiagnosis and inappropriate treatment. CT and MRI are useful for a precise diagnosis in the ectopic gland and related diseases associate with each of the ectopic gland.
Erdheim-Chester Disease: Spectrum of Imaging Findings

All Day Location: MS Community, Learning Center

Participants
Aitor Lasarte Izcue, MD, Mendaro, Spain (Presenter) Nothing to Disclose
Teodoro Martin, MD, Jaen, Spain (Abstract Co-Author) Nothing to Disclose
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Mikel Beristain, San Sebastian, Spain (Abstract Co-Author) Nothing to Disclose
Enrique Marco de Lucas, Santander, Spain (Abstract Co-Author) Nothing to Disclose
Raul D. Pellon, MD, Santander, Spain (Abstract Co-Author) Nothing to Disclose
Silvia Bague, Barcelona, Spain (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
Introduce and raise awareness among radiologists of this poorly known entity. Illustrate its distinctive imaging features and many faces of presentation using a multimodality approach. Describe the importance of multidisciplinary management in Erdheim-Chester disease and the role of the radiologist. Discuss briefly the differential diagnoses according to the imaging presentation, treatment options and disease surveillance.

TABLE OF CONTENTS/OUTLINE
Introduction Diagnosis and clinical features: First consensus guidelines Multimodality imaging findings in Erdheim-Chester disease: Osseous manifestations Cardiovascular manifestations Pulmonary manifestations Central nervous system and orbital manifestations Retroperitoneal manifestations Other localisations Treatment options and disease surveillance Conclusions
The Edge of Tomorrow: Cross-Modality Problem-Solving in PET and MR Oncologic Imaging

All Day Location: MS Community, Learning Center

Participants
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Onofrio A. Catalano, MD, Napoli, Italy (Abstract Co-Author) Nothing to Disclose
Ciprian Catana, MD, PhD, Charlestown, MA (Abstract Co-Author) Nothing to Disclose
Bruce R. Rosen, MD, PhD, Charlestown, MA (Abstract Co-Author) Research Consultant, Siemens AG
Michael S. Gee, MD, PhD, Jamaica Plain, MA (Abstract Co-Author) Nothing to Disclose
Umar Mahmood, MD, PhD, Charlestown, MA (Abstract Co-Author) Research Grant, Sabik Medical Inc; Advisory Board, Blue Earth Diagnostics Limited;

TEACHING POINTS
18F-FDG PET/CT imaging for oncologic applications can yield findings of ambiguous significance; Even in the oncologic imaging setting, not every FDG-avid finding is necessarily neoplastic; MR imaging can be of use in the evaluation of uncertain FDG-PET/CT findings; Example cases are shown where PET and MR imaging provided complementary diagnostic information, providing justification for hybrid PET/MR imaging.

TABLE OF CONTENTS/OUTLINE
Overview of indications for PET imaging in clinical oncology Lesion detection/Staging Treatment response/Response to Therapy Review of PET limitations Spatial resolution Tissue contrast Brown fat activity Post-treatment changes Sample cases whereby indeterminate PET findings were resolved by MRI Sample cases whereby indeterminate MRI findings were resolved by PET Overview of hybrid PET/MRI imaging, in theory and practice
TEACHING POINTS

To review the fundamentals of diffusion weighted imaging. Normal structures which restrict diffusion. Highlight common benign pathologies that restrict diffusion on body MRI.

TABLE OF CONTENTS/OUTLINE

Basics of Diffusion Weighted Imaging. Physics of DWI Examples of normal anatomy that restrict diffusion. Endometrium, spleen, red marrow, lymph nodes Examples of common benign entities that restrict diffusion. Acute hepatitis, liver hemangioma, liver adenoma, liver focal nodular hyperplasia, liver abscess Mesenteric abscess in patients with Crohn’s disease Crohn’s disease active small bowel inflammation Focal pyelonephritis with renal abscess Autoimmune pancreatitis Pelvic inflammatory disease Discussion/Conclusion: Understanding which normal structures and benign pathologies restrict diffusion is imperative in order to be able to identify both benign and malignant pathology and to aid in formulating a concise differential diagnosis.
Participants
Christine Azzopardi, MD, Birkirkara, Malta (Abstract Co-Author) Nothing to Disclose
Gabriel Galea, MD, Msida, Malta (Abstract Co-Author) Nothing to Disclose
Kelvin Cortis, MD, FRCR, Msida, Malta (Presenter) Nothing to Disclose
Adrian Mizzi, MD, Glasgow, United Kingdom (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
Review of the radiological appearance of gas on different imaging modalities in different organs To distinguish between pathological and non pathological extra-anatomical gas

TABLE OF CONTENTS/OUTLINE
Table of contents:A. Gas secondary to infectionB. Gas secondary to ischaemia/ infarctionC. Gas introduced secondary to traumaD. Iatrogenically introduced gasOutlineIntroduction: The presence of gas in tissues and organs may be innocuous and inconsequential. However, more often than not, gas in the wrong anatomical location may lead to significant pathology often with dire clinical consequences. For instance, the presence of a pneumocephalus may have serious consequences for the patient, as well as a pneumoperitoneum or pneumomediastinum. This elusive gas does not spare any of the organs. There are a wide range of pathologies that can produce gas in the wrong anatomical location. The etiology is varied and ranges from infection and trauma to iatrogenic causes. Conclusion: Each of these pathologies demonstrate characteristic imaging features, the identification of which may be life saving. Immediate recognition will therefore allow for a rapid diagnosis and management plan. Familiarity with the appearance and significance of pathology-related-gas on different imaging modalities is therefore crucial in these situations.
Secondary Hypertension: Role of Imaging: Diagnosis and Management

All Day Location: MS Community, Learning Center

Participants
Pardeep K. Mittal, MD, Atlanta, GA (Presenter) Nothing to Disclose
Courtney A. Coursey Moreno, MD, Atlanta, GA (Abstract Co-Author) Nothing to Disclose
Peter A. Harri, MD, Atlanta, GA (Abstract Co-Author) Nothing to Disclose
Juan C. Camacho, MD, Atlanta, GA (Abstract Co-Author) Nothing to Disclose
Raghuveer K. Haikar, MD, Atlanta, GA (Abstract Co-Author) Research Grant, General Electric Company Research Grant, Gilead Sciences, Inc Royalties, General Electric Company
Brent Little, MD, Atlanta, GA (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
1. Demonstrate various common causes of secondary hypertension identifiable at imaging
2. To educate participants regarding detail imaging characteristics and techniques used to identify and evaluate causes of secondary hypertension such as renal, adrenal, thyroid, parathyroid, vascular and various syndromes.
3. To describe sequelae of hypertension and management

TABLE OF CONTENTS/OUTLINE
Hypertension (HT) is one of the most common worldwide diseases affecting humans and a major risk factor for stroke, myocardial infarction, vascular disease, and CKD. Secondary causes of HT may account for up to 10-12% of cases. Timely diagnosis makes a significant impact on the prognosis of patient’s ailment as many conditions are amenable to surgical or medical management. Hence we will discuss various etiologies of HT discoverable at imaging (US, CT, MRI and NM) along with their imaging characteristics:
- Adrenal lesions (pheochromocytoma, cortical carcinoma and adenoma)
- Vascular pathology (renal artery stenosis, vasculitides, coarctation of aorta)
- Post-traumatic (Page kidney)
- Syndromes (ADPKD, von Hippel-Lindau)
- Thyroid and parathyroid causes (hyper and hypothyroid, parathyroid adenoma)

Summary: Imaging plays an invaluable role in evaluation of secondary hypertension, leading to timely management preventing significant morbidity and mortality.
Table of Contents/Outline

Carcinoid tumors are a type of neuroendocrine tumors that arise from the enterochromaffin cells and can affect any organ in the body. However, not all neuroendocrine cell tumors are carcinoids. The concept of a carcinoid in the gastrointestinal tract with lung and liver metastasis is well known in radiology literature. Involvement of the head, neck, mediastinum, heart, breast, kidneys, genitourinary, and musculoskeletal system although rare, is occasionally seen. This exhibit discusses current WHO classification of carcinoid tumors and describes the characteristic imaging features of carcinoid tumors in the body. The concept of synchronous and metachronous carcinoids will be discussed.

Aims/Objectives
Introduction, taxonomy and WHO classification
Pathology and systems involved
Synchronous and metachronous tumors
Spectrum of radiological appearances in common and uncommon sites with differential diagnosis
Role of radiology in the diagnosis and follow-up imaging including Octreotide scan
Differential diagnosis
Conclusion
Teaching points

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Sonia L. Betancourt Cuellar, MD - 2014 Honored Educator
Carlos S. Restrepo, MD - 2012 Honored Educator
Carlos S. Restrepo, MD - 2014 Honored Educator
Participants
Anitha James, MBBS, Newcastle Under Lyme, United Kingdom (Presenter) Nothing to Disclose

TEACHING POINTS

1. Indications and advantages of MRI in acute abdomen in the young population
2. Proposed pathway for selecting patients suitable for MRI over CT
3. Technique and Sequences that can be used for various clinical scenarios

TABLE OF CONTENTS/OUTLINE

Indications suitable for MRI in the setting of acute abdomen
Proposed algorithm for patient selection for MRI
MRI sequences in the setting of acute abdomen especially in view of unwell patients and children who may not tolerate prolonged scanning time
Imaging finding with examples of various acute intraabdominal and pathologies presenting as acute abdomen. This will include a range of pathologies including intraabdominal collections, bowel obstruction, appendicitis, ovarian and adnexal lesions and abdominal wall abscess secondary to anterior superior iliac spine osteomyelitis
Advantages of MRI over CT in addition to minimising ionising radiation
TEACHING POINTS

The TNM staging system is based on the primary tumor, whether cancer cells have spread to nearby lymph nodes, and/or metastasis to other parts of the body. The N stage is crucial for an accurate diagnosis of early disease progression that could make possible a prognostic value and an early and correct choice of therapy. The key to successful interpretation of imaging for nodal diseases requires a thorough understanding of the normal nodal anatomy, pathways of dissemination, clinical and pathological features of the disease. Identify the correct N stage of TNM classification reviewing the lymph node involvement of the 10 most common neoplasias according the World Health Organization.

TABLE OF CONTENTS/OUTLINE

Introduction Lymph nodes anatomy and physiology. N stage of TNM classification reviewing the 10 most common malignancies according the World Health Organization. A schematic review of lung, liver, stomach, colorectal, breast, esophageal, prostate, cervix uteri, bladder and pancreatic cancer pattern of nodal spread. Using PET-CT as primary method for appropriate staging system, emphasizing on primary nodal pathways for an accurate and systematic study review.
A hamartoma is a benign tumor-like nodule or mass composed of a disorganized overgrowth of mature cells and tissue present in the organ in which it arises. The purpose of this exhibit is:

1. To review, system by system, the clinical and imaging findings of hamartomas in different organs.
2. To discuss the current role of multiple imaging modalities in the evaluation of these lesions.
3. To review the clinical syndromes that present with multiple hamartomatous lesions.

**TABLE OF CONTENTS/OUTLINE**

1. Hamartoma: definition and pathological findings
2. System by System Review
   a. Central Nervous System
      i. Hamartoma of the tuberculum
         - Cortical tubers
         - Subependymal nodules
      ii. Head and Neck
         - Respiratory epithelial adenomatoid hamartoma
         - Nasal chondromesenchymal hamartoma
         - Cardiothoracic
         - Pulmonary hamartoma
         - Cardiac rhabdomyoma
   b. Digestive System
      i. Esophageal hamartoma
         - Gastric hamartoma
         - Colonic hamartoma
      ii. Hepatic
         - Hepatic mesenchymal hamartoma
         - Biliary hamartoma (von Meyenburg complexes)
      iii. Spleen
         - Splenic hamartoma
   c. Genitourinary System
      i. Renal angiomyolipoma
         - Adrenal hamartoma
         - Uterine hamartoma
      ii. Testicular hamartoma
      iii. Breast hamartoma
3. Syndromes with multiple hamartomas
   a. Carney triad
   b. Tuberous sclerosis complex
   c. Cowden syndrome

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Carlos S. Restrepo, MD - 2012 Honored Educator
Carlos S. Restrepo, MD - 2014 Honored Educator
The Shortest Route to Identifying Pathology is the Straight Line: A Brief Tutorial

All Day Location: MS Community, Learning Center

Participants
Thomas F. Flood, MD, PhD, Aurora, CO (Presenter) Nothing to Disclose

TEACHING POINTS

Straight lines in radiology may be normal, however, the majority indicate pathology. Therefore, recognizing and understanding the significance of straight lines in radiology is important for accurately diagnosing pathological processes. This exhibit will exposes radiologists to a series of challenging cases in order to help improve recognition and understanding of the pathological significance of straight lines in radiology. The science behind straight lines in radiology is also reviewed.

TABLE OF CONTENTS/OUTLINE

Learn the pathological significance of a fluid-fluid and a fluid-fat straight line through 2 case reviews (each using multi-modal imaging techniques). Learn the basic science behind the development of straight lines in radiology. Learn, via examples, that there are instances when straight lines in radiology can be normal. Learn that the majority of straight lines in radiology represent pathology. Review, in quiz format, 12-15 straight lines in radiology, which indicate pathology (fluid-fluid, fluid-fat, fluid-gas, gas-debris).
**TEACHING POINTS**

To illustrate spectrum of uncommon lower genitourinary tumors on CT and MRI
To review pathogenesis
To discuss typical and atypical imaging appearances with differential diagnosis

**TABLE OF CONTENTS/OUTLINE**

Knowledge of imaging appearance of uncommon lower genitourinary tumors is important. Though similar in radiological appearance, they differ in epidemiology, clinical outcome and management from common genitourinary malignancies. Given the potential morbidity, it is crucial to recognize for proper treatment. Cross sectional imaging is important to assess location, size, mass effect/invasion and for calcification, enhancement and metastasis. Increased awareness contributes to optimized patient care.

Aims/Objectives

Introduction to Pathology, imaging findings of uncommon tumors of Uterus/cervix- Adenosarcoma, Leiomyosarcoma, clear-cell carcinomas, carcinosarcomas, lymphoma Vagina- Rhabdomyosarcoma Ovary- Leukemia, Lymphoma, Granulosa, Stromal and Theca cell tumor, fibroma, dysgerminoma, Inflammatory myofibroblastic tumor and rhabdomyosarcoma Fallopian tube- Undifferentiated, Clear cell and Transitional carcinoma Bladder- Rhabdomyosarcoma, small cell carcinoma, epidermoid carcinomas, adenocarcinomas and sarcoma Prostate- central gland tumor, rhabdomyosarcoma, solitary fibrous tumor Ureter- Leiomyosarcoma Differential diagnosis Conclusion Teaching points
Composite Tumors in the Abdomen and Pelvis: Radiological Findings with Pathologic Correlation

All Day Location: MS Community, Learning Center

Participants
Chandana G. Lall, MD, Orange, CA (Presenter) Nothing to Disclose
Roozbeh Houshyar, MD, Sturbridge, MA (Abstract Co-Author) Nothing to Disclose
Temel Tirkes, MD, Indianapolis, IN (Abstract Co-Author) Nothing to Disclose
Priya R. Bhosale, MD, Houston, TX (Abstract Co-Author) Nothing to Disclose
Silvana C. Faria, MD, Houston, TX (Abstract Co-Author) Nothing to Disclose
Christine O. Menias, MD, Scottsdale, AZ (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
1. Definition of composite and collision tumors and differentiation between the two entities
2. Genetics of composite malignancies in the abdomen and pelvis: De-differentiation along two different cell lines
3. Importance of making an accurate diagnosis on imaging to guide appropriate biopsy and management
4. Illustration of specific examples in the liver, spleen, kidney, ovary among others

TABLE OF CONTENTS/OUTLINE
1. Understanding what differentiates composite and collision tumors in the abdomen and pelvis
2. Genetics and molecular differentiation of composite tumors
3. Imaging tips: How can we diagnose these tumors accurately
4. Specific examples of composite lesions in the abdomen and pelvis

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Priya R. Bhosale, MD - 2012 Honored Educator
Temel Tirkes, MD - 2013 Honored Educator
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Abdominal Neoplasms Containing Mucinous Component; Radiologic-pathologic Correlation

All Day Location: MS Community, Learning Center

**Participants**
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Nagaaki Marugami, Kashihara, Japan (Abstract Co-Author) Nothing to Disclose
Takahiro Itoh, MD, Kashihara, Japan (Abstract Co-Author) Nothing to Disclose
Kimihiko Kichikawa, MD, Kashihara, Japan (Abstract Co-Author) Nothing to Disclose

**TEACHING POINTS**

**PURPOSE/AIM**
1. To learn the histopathological classification of mucinous tumors, based on the pooling type of mucus.
2. To understand characteristic radiologic features of mucinous tumor correlated with histopathological features.

**TABLE OF CONTENTS/OUTLINE**

**CONTENT ORGANIZATION**
- Gastrointestinal tract: mucinous gastric carcinoma, signet ring cell carcinoma, mucinous colorectal carcinoma, appendiceal mucinous neoplasms
- Hepatobiliary system: intrahepatic papillary mucinous neoplasm, mucinous cystic neoplasm of the pancreas, intraductal papillary mucinous tumor of the bile duct, mucinous adenocarcinoma of gall bladder
- Urogenital organs: Urachal carcinoma, ovarian mucinous carcinoma, uterine cervical mucinous adenocarcinoma, uterine leiomyoma with myxomatous degeneration
- Non-organic tumor: Miscellaneous, Myxomatous liposarcoma, Neurogenic tumors (Schwannoma)

**SUMMARY**
The major teaching points of this exhibit are:
1. On CT and MRI, Mucinous tumors often present characteristic features that can be the key to the proper diagnosis.
2. To understand characteristic features of mucinous tumor, it is important to classify them by the type of mucinous pooling.
A Pictorial Review of Amyloidosis

All Day Location: MS Community, Learning Center

Awards
Certificate of Merit

Participants
Sei Nakao, Ube, Japan (Presenter) Nothing to Disclose
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Etsushi Iida, MD, Ube, Japan (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS

The purpose of this exhibit is: 1. To understand the clinical overview of amyloidosis. 2. To review the characteristic imaging finding of CT, MRI. 3. To make a comparison between imaging and pathological findings.

TABLE OF CONTENTS/OUTLINE

1. Brief overview of Classification
2. Clinical features - epidemiology, clinical symptoms and prognosis
3. CT and MR imaging findings
4. Key points in the differential diagnosis.
Multiparametric Imaging of the Bone Marrow in Cancer

All Day Location: MS Community, Learning Center

Participants
Amish Lakhani, FRCR, London, United Kingdom (Presenter) Nothing to Disclose
Anwar R. Padhani, MD, FRCR, Northwood, United Kingdom (Abstract Co-Author) Advisory Board, Siemens AG; Speakers Bureau, Siemens AG; Researcher, Siemens AG; Speakers Bureau, Johnson & Johnson
Giuseppe Petralia, MD, Milan, Italy (Abstract Co-Author) Nothing to Disclose
Andrew Gogbashian, MD, FRCR, London, United Kingdom (Abstract Co-Author) Nothing to Disclose
Noorulhuda Jawad, MBBS, London, United Kingdom (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
1. Multiparametric bone imaging with CT, MRI, PET and Bone Scans (BS) provides insights into the cellular interactions between tumor, bone and bone marrow.
2. Enables the understanding of the biologic mechanisms responsible for osteolysis/osteoblastic lesions.
3. Allows informed choices on therapy assessment methods on an individual basis.

TABLE OF CONTENTS/OUTLINE
1. Explore the benefits of different modalities in the assessment of bone marrow, bone and tumor. For example, how DW-MRI demonstrates cellularity, FDG-PET demonstrates glucose metabolism and CT/BS is able to demonstrate osteoblastic and osteolytic activity.
2. To review, with examples, the cellular and molecular mechanisms of bone formation and bone resorption regulation and how these result in distinct imaging phenotypes.
3. How to relate multiparametric MRI findings to the effects of treating with bone targeting agents (bisphosphonates), bone marrow effecting agents (hormones), and anti-tumor therapies (chemo-/radiotherapy).

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Anwar R. Padhani, MD, FRCR - 2012 Honored Educator
Extramedullary Hematopoiesis - A Complicated Compensation Cross Sectional Imaging Review Of Common And Uncommon Presentations

All Day Location: MS Community, Learning Center

FDA

Discussions may include off-label uses.

Participants
Sandhya Nair, MD, San Antonio, TX (Presenter) Nothing to Disclose
Carlos S. Restrepo, MD, San Antonio, TX (Abstract Co-Author) Nothing to Disclose
Vijayanadh Ojil, MD, San Antonio, TX (Abstract Co-Author) Nothing to Disclose
Daniel Vargas, MD, Aurora, CO (Abstract Co-Author) Nothing to Disclose
Santiago Martinez-Jimenez, MD, Kansas City, MO (Abstract Co-Author) Author, Reed Elsevier; Author, Oxford University Press
Daniel Ocazionez, MD, Houston, TX (Abstract Co-Author) Nothing to Disclose
Daniel Lamus, MD, San Antonio, TX (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
Discuss the pathogenesis and clinical manifestations of Extramedullary hematopoiesis (EMH) from head to toe. Review the cross sectional imaging of common and uncommon presentations of EMH and imaging of resulting complications. Narrow the differential and reach an accurate diagnosis, thereby preventing unnecessary interventional procedures.

TABLE OF CONTENTS/OUTLINE
EMH is a physiological compensatory mechanism which results in the production of normal blood cells outside the bone marrow due to bone marrow insufficiency. It is seen in conditions such as myelofibrosis and hemoglobinopathies like thalassemia and sickle cell disease. EMH is commonly seen in thoracic paraspinal regions and microscopically in liver /spleen but can virtually involve any organ. Rare presentations include focal lesions in abdominal viscera, lymph nodes, adrenal glands, kidneys, uterus and intracranial structures. This educational exhibit emphasizes that uncommon presentations of EMH pose a diagnostic challenge even though the common manifestations are usually straightforward. Given the widespread involvement of organs in EMH, a comprehensive review of its uncommon imaging appearances helps resolve the diagnostic dilemma encountered by radiologists.

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Carlos S. Restrepo, MD - 2012 Honored Educator
Carlos S. Restrepo, MD - 2014 Honored Educator
Santiago Martinez-Jimenez, MD - 2014 Honored Educator
Santiago Martinez-Jimenez, MD - 2015 Honored Educator
It’s a Tumor?, It’s an Inflammation?, No Its Amyloid! Amyloidosis - An Organ Based Analysis from the Cellular Level to Imaging Correlates

All Day Location: MS Community, Learning Center

FDA Discussions may include off-label uses.

Participants
Sandhya Nair, MD, San Antonio, TX (Presenter) Nothing to Disclose
Carlos S. Restrepo, MD, San Antonio, TX (Abstract Co-Author) Nothing to Disclose
Vijayanadh Ojili, MD, San Antonio, TX (Abstract Co-Author) Nothing to Disclose
Fernando R. Gutierrez, MD, Saint Louis, MO (Abstract Co-Author) Nothing to Disclose
Daniel Vargas, MD, Aurora, CO (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
Describe pathophysiology, genetic factors and general overview of various forms of systemic/localized amyloidosis at the cellular level. Identify the clinical and imaging manifestations of this problematically diverse nonspecific disease compounded by its coexistence with other chronic diseases. Discuss the challenges encountered in its evaluation.

TABLE OF CONTENTS/OUTLINE
Amyloidosis refers to a cluster of diseases characterized by the extracellular tissue deposition of an insoluble fibrillar protein and its derivatives. It has two clinical forms - common diffuse/systemic and rare localized (amyloidoma). The systemic amyloidosis is sub-classified as primary/idiopathic associated with plasma cell dyscrasias and secondary/reactive associated with chronic inflammatory diseases. Clinical manifestations become apparent with multisystem organ dysfunction in the diffuse form or mass effect by the localized form. Amyloidosis mimics both inflammatory and infiltrative processes on cross sectional imaging involving single and/or multiple organs thus challenging the radiologist. Definitive diagnosis requires biopsy for confirmation. This educational exhibit emphasizes that by combining knowledge of pathogenesis, clinical and imaging findings, an incisive radiologist can help decrease the delay in helping patient care and management.

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Carlos S. Restrepo, MD - 2014 Honored Educator
**TEACHING POINTS**

- Review the technical basis and adjustments necessary to acquire a diffusion tensor image study. Resume all the quantitative parameters that can be derived from a DTI acquisition and their role as potential tissue biomarkers.
- Detail the reconstruction methods of DTI data to obtain a 3D fiber representation (tractography).
- Analyse the utility of all these parameters and 3D reconstruction in several clinical scenarios and diverse anatomical areas from head to toe.

**TABLE OF CONTENTS/OUTLINE**

1. Introduction
2. Technical basis and adjustments for DTI
   a. Sequence design
   b. 1.5 T vs 3.0 T
3. Quantification and postprocessing
   a. Quantification: fractional Anisotropy, Mean Diffusivity, Axial and radial diffusivity
   b. Tractography
4. Clinical applications
   a. Brain and spinal cord: tumors and metastases, ischemia and multiple sclerosis, cognitive impairment and epilepsy.
   b. Peripheral nervous system: brachial plexus, lumbar plexus and peripheral nerves: tumors, inflammatory and traumatic conditions.
   c. Muscle
   d. Abdominal viscera: kidney, uterus and prostate
5. Conclusions
Features and Mimics of Extranodal Lymphoma in Abdominal Imaging: A Practical Guide

All Day Location: MS Community, Learning Center

Awards
Certificate of Merit

Participants
Joao Paulo C. Coelho, MD, Rio De Janeiro, Brazil (Presenter) Nothing to Disclose
Paula Gentile, MD, Niteroi, Brazil (Abstract Co-Author) Nothing to Disclose
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TEACHING POINTS
- Lymphoma is well known as a great mimicking disorder, commonly being part of differential diagnosis of a vast number of lesions, especially when masses or infiltrative disorders are detected.
- Lymphoma usually grows without deforming, spreads without notice and narrows without obstructing.
- Signs that prompt this diagnose: adjacent nodal disease, expansile formation with functional preservation, the "sandwich sign" (vascular structures cross without occlusion) and aneurysmal dilatation of intestinal loops.
- Extranodal lymphoma can be further categorized as primary or secondary, with 'primary' indicating that the lymphoma first presented itself in an extranodal site.
- Other sites for extranodal lymphomas are: bone, breast, eye, oral, skin, etc.

TABLE OF CONTENTS/OUTLINE
- Brief overview of extranodal lymphoma and its subtypes in abdominal imaging.
- Most common appearance and the mimics by organ distribution, featured on CT e MR imaging.
- When lymphoma is the "pitfall": Tricky cases.
- Summary and conclusion.
Desmoid-Type Fibromatosis: A Multi-Modality Review and Update of Treatment Strategies

All Day Location: MS Community, Learning Center

Participants
Sofia Otero, MBCh, FRCR, London, United Kingdom (Presenter) Nothing to Disclose
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TEACHING POINTS
1. To provide an overview of the different forms of desmoid-type fibromatosis (extra-abdominal, abdominal wall, and abdominal) and their epidemiology.
2. To describe the imaging characteristics of desmoid-type fibromatosis, focusing on MRI signal characteristics, including longitudinal and post-treatment changes.
3. To provide an update on the treatment strategies for the different forms of desmoid-type fibromatosis and the role of follow-up imaging.

TABLE OF CONTENTS/OUTLINE
1. Epidemiology: Age and sex distribution for the different forms of fibromatosis (extra-abdominal, abdominal wall, abdominal)-Pathogenesis and risk factors2. Histopathology3. Imaging characteristics: Ultrasound- CT- MRI - including imaging protocols and changes in imaging characteristics following treatment4. Guidelines for imaging, biopsy and specialist referral5. Management- Tumor site as a prognostic indicator- Surgical ('watch and wait' versus primary radical surgery depending on surgical site)- Systemic- Radiotherapy
Tumor Thrombus in Vascular Drainage Pathways: Beyond Hepatocellular and Renal Cell Carcinomas

All Day Location: MS Community, Learning Center

Participants
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TEACHING POINTS
Tumor thrombus in the venous drainage pathways is well known in renal cell carcinoma, hepatocellular carcinoma, hepatoblastoma, adrenal cortical carcinoma, gastrointestinal adenocarcinomas and neuroendocrine tumors. Tumor thrombus is also identified in other malignancies that can spread hematogenously including sarcomas, melanomas, thyroid cancer, squamous cell carcinoma of the head and neck. Tumor thrombus in venous drainage pathways is not just seen with primary tumors, but also seen with local recurrences and distant metastases and may be underrecognized. Identifying tumor thrombus improves understanding the pattern of spread of malignancies and improve staging accuracy.

TABLE OF CONTENTS/OUTLINE
Review well known and less well known malignancies associated with tumor thrombus. Illustrate the spectrum of imaging findings on various imaging modalities (US, CT, MRI and PET/CT). Discuss how to differentiate between tumor thrombus and bland thrombus. Illustrate the role of spectral Doppler as well as PET/CT in confirming the malignant nature of tumor thrombus. Illustrate how identification of tumor thrombus in vascular drainage pathways aids in predicting the pattern of spread of malignancy.
TEACHING POINTS

The goal of this exhibit is to assist viewers in: Recognizing the many "ring signs" encountered across different imaging modalities. Understanding their significance, key features, relevant differential diagnoses, level of urgency, and next best management step.

TABLE OF CONTENTS/OUTLINE

First, each entity will be displayed with its typical appearance and a brief history. The viewer will be asked to "name that ring sign." This will be followed by annotated images, applicable multimodality imaging correlation, associated findings and a discussion of relevant information about prevalence, causes, pathophysiology, treatment, outcome, and key teaching point(s) for each entity.

- Choledochal ring sign of acute biliary pancreatitis (CT)
- Hyperattenuating ring sign in epiploic appendagitis (CT)
- Fat halo ring sign of inflammatory bowel disease (CT)
- FLAIR ring sign of dysembryoplastic neuroepithelial tumors (MRI)
- Nerve tumor’s ring sign of peripheral nerve tumors (US)
- Open ring sign of demyelinating disease (MRI)
- Papillary necrosis ring sign of renal papillary necrosis (CT Urography)
- Ring around the artery sign of pneumomediastium (xray and CT)
- Scaphoid cortical ring sign of scapholunate dissociation (xray)
- Signet ring sign of bronchiectasis (CT)
- Tubal ring sign of tubal ectopic pregnancy (US)
- Wimberger’s ring sign of scurvy (xray)
The Imaging Features of IgG4-related Disease with Pathologic Correlation

All Day Location: MS Community, Learning Center

Participants
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Toshifumi Gabata, MD, Kanazawa, Japan (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS

The purpose of this presentation is To review the current condition of IgG4-related disease as a "systemic disease". To demonstrate the imaging findings of IgG4-related disease in systemic organs with pathologic correlations. To discuss the role of imaging examinations in the diagnostic process of IgG4-related disease.

TABLE OF CONTENTS/OUTLINE

1. Introduction 2. Current condition and diagnostic problems of IgG4-related disease. 3. Imaging findings of systemic manifestations of IgG4-related disease with pathological backgrounds. 4. Prospects of diagnostic process of IgG4-related disease. 5. Summary
Flouroscopy, an Outdated Tool? Experiences at a Tertiary Cancer Center

All Day Location: MS Community, Learning Center

Awards
Certificate of Merit

Participants
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James L. Fuqua III, MD, New York, NY (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
In an era of advanced endoluminal imaging techniques, facilitated by multislice CT and modern endoscopy, there is declining use and reliance on fluoroscopic imaging. Using a case-based approach, the learner will acquire an understanding of how fluoroscopy remains a pivotal tool and vital accompaniment to other diagnostic modalities in the care of the oncologic patient. Teaching points will include: 1) Indications for fluoroscopy in oncology and its relative utility compared to and in conjunction with other diagnostic modalities. 2) Technical considerations during fluoroscopic evaluation of the gastrointestinal and genitourinary systems. 3) Diagnostic features of both common and unusual disease entities imaged at a cancer referral center, as well as, the myriad complications related to oncologic treatment (surgery, radiation, and chemotherapy) that may be diagnosed by fluoroscopy, yet remain occult on other diagnostic modalities.

TABLE OF CONTENTS/OUTLINE
Cases will be provided with the related findings and learning objectives demonstrated and discussed. Sample cases will include: esophageal strictures, esophageal perforation, tracheoesophageal fistula, CT occult large bowel obstruction, unusual fistulas...
**3D Print Clinical Applications for Today: From the Obvious to the Unusual Examples**

All Day Location: MS Community, Learning Center

FDA  Discussions may include off-label uses.

**Participants**
Bruno A. Rocha, MD, Sao Paulo, Brazil *(Presenter)* Nothing to Disclose
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Ronaldo H. Baroni, MD, Sao Paulo, Brazil *(Abstract Co-Author)* Nothing to Disclose

**TEACHING POINTS**

1) To learn the basics of 3D Print including image segmentation, 3D printers types and materials options.
2) To understand the great variety of possibilities for 3D print clinical applications through the illustration of cases varying from obvious and well-known applications to unusual examples of clinical practice enhanced by this technology.

**TABLE OF CONTENTS/OUTLINE**

A. Introduction - 3D Print: what is it?
B. Steps: from Dicom to Physical Model
C. 3D printers and materials options: for all pockets
D. Clinical applications:
   D1. Genitourinary System: Kidney tumors and adrenal gland examples
   D2. Stomach: intragastric balloon placement planning and training; vertical gastroplasty revision surgery planning
   D3. Orthopaedics: trauma, tumor and corrective osteotomies (fibrous dysplasia and malunion)
   D4. Congenital heart disease: aorta coarctation, anomalous pulmonary venous return and septal defects
Fat Containing Lesions in the Abdomen and Pelvis: A Fat-tastic Resident Primer

All Day Location: MS Community, Learning Center

Participants
Lakshmi Ananthakrishnan, MD, Dallas, TX (Presenter) Nothing to Disclose
Gaurav Khatri, MD, Dallas, TX (Abstract Co-Author) Nothing to Disclose
John R. Leyendecker, MD, Dallas, TX (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
1. Fat can be seen in both benign and malignant lesions in the abdomen and pelvis. 2. Prior surgical intervention can result in fat deposition in unexpected locations. 3. Chemical shift imaging on MRI allows for differentiation of macroscopic fat from microscopic fat. 4. Presence of fat within a lesion has both diagnostic and and prognostic implications.

TABLE OF CONTENTS/OUTLINE
Principles of fat detection CT - Hounsefield units MRI - various techniques for fat suppression Ultrasound Organ and compartment based review of fat containing lesions Differential diagnosis Potential complications Management Conclusion
Cross Sectional Imaging Spectrum of Plasma Cell Dyscrasias

All Day Location: MS Community, Learning Center

Participants
Behrang Amini, MD, PhD, Houston, TX (Abstract Co-Author) Nothing to Disclose
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Raghunandan Vikram, MBBS, FRCR, Houston, TX (Presenter) Nothing to Disclose

TEACHING POINTS
After completing this educational exhibit, the learner will: Have a comprehensive understanding of the protean, multisystem manifestations of plasma cell dyscrasias and their diagnostic criteria Understand the salient radiologic features of plasma cell dyscrasias to facilitate accurate diagnosis and management

TABLE OF CONTENTS/OUTLINE
Overview of plasma cell dyscrasias including Epidemiology, patient demographics, clinical presentation, histopathological hallmarks, Classification and Imaging features Monoclonal Gammopathies of Undetermined Significance (MGUS), Malignant Monoclonal Gammopathies and their subcategories including Multiple Myeloma, Plasmacytoma, Plasmacell Leukemia, IgD myeloma, Osteosclerotic myeloma and Waldenström macroglobulinemia (WM) common and uncommon associated syndromes, including POEMS, Bing-Neil syndrome, Schnitzler syndrome, among others. Plasma cell dyscrasias is a disease caused by abnormal proliferation of a monoclonal population of plasma cells that may or may not secrete detectable levels of a monoclonal immunoglobulin or immunoglobulin fragment. MGUS, solitary plasmacytoma of bone and multiple myeloma may represent a natural progression of the same disease.

Honored Educators
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Raghunandan Vikram, MBBS, FRCR - 2012 Honored Educator
Eric M. Rohren, MD, PhD - 2015 Honored Educator
Teaching Points

Sickle cell disease (SCD) is one of the most common hereditary diseases, occurring in about 1 out of every 500 African-American births. Although SCD is primarily a hematologic disorder that is characterized by abnormally shaped red blood cells, it affects multiple organ systems. The objective of this exhibit is to provide a multimodality presentation of the spectrum of radiographic findings of abdominal and pelvic manifestations of SCD, including how the radiologist must differentiate sequelae of SCD from mimics.

Table of Contents/Outline

Paraneoplastic Syndromes: When to Suspect, How to Confirm, and How to Manage

All Day Location: MS Community, Learning Center

Participants
Vinayak Thakur, MD, New Haven, CT (Presenter) Nothing to Disclose
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TEACHING POINTS
To increase radiologist awareness of paraneoplastic syndromes (PNS). Emphasis will be placed on the related physiology and various clinical presentations, as well as a review of the imaging findings that will lead to a correct diagnosis.

TABLE OF CONTENTS/OUTLINE
The most commonly encountered PNSs will be reviewed based on their classification, with emphasis on causative mechanisms, clinical presentation, and radiological findings. PNS will be divided into 4 major classes based on their mechanism of action and effect on a specific system:1. Endocrine disorders (Cushing, Zollinger-Ellison, carcinoid syndromes, SIADH, hypercalcemia, hypoglycemia, hyperaldosteronism)2. Neurological (limbic, anti-NMDA receptor and brain stem encephalitis, cerebellar degeneration, myelitis)3. Mucocutaneous (dermatomyositis, Sweet's syndrome)4. Hematological (Trousseau sign, nonbacterial thrombotic endocarditis, polycythemia, hypercoagulation)The most common causative neoplasms will be discussed in a case based format, including hepatocellular, renal cell, bronchogenic carcinoma, colorectal cancer, carcinoid tumor, neuroendocrine tumors of the pancreas (gastrinoma, glucagonoma, insulinoma), adrenal adenoma, small cell lung cancer, teratoma, mixed cell germ tumor, lymphoma, thymoma. Management and available treatment options of the discussed PNS will be outlined.
String of Pearls Sign: A Radiologist’s Treasure

All Day Location: MS Community, Learning Center

Participants
Francisca Furnaro Lobos, MD, Santiago de Chile, Chile (Abstract Co-Author) Nothing to Disclose
Cesar N. Cristancho Rojas, MD, Mexico City, Mexico (Abstract Co-Author) Nothing to Disclose
Luis A. Landeras, MD, Cleveland, OH (Presenter) Institutional Grant support, Koninklijke Philips NV

TEACHING POINTS
The string of pearls sign is a relatively commonly used term to describe different radiological findings and frequently suggest a specific pathological diagnosis depending on the organ of the body that is referred to. Improve understanding of the term String of Pearls sign. Become familiar with the different pathological etiologies that the string of pearls sign is used for according to specific body parts

TABLE OF CONTENTS/OUTLINE
1. Introduction
2. Definition
3. Clinical pathological entities: Small Bowel Obstruction Fibromuscular Displasia Chronic Pancreatitis Adenomyomatosis Primary sclerosing cholangitis Varicose Bronchiectasis Lung sarcoidosis Polycystic Ovarian Syndrome Ovarian Torsion Tuberculous salpingitis. CPPD Arthropathy
Participants
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Manjiri K. Dighe, MD, Seattle, WA (Abstract Co-Author) Research Grant, General Electric Company

TEACHING POINTS
The aim of this educational poster is to review the importance of simulated training for radiologists, and evaluate the cost and effectiveness of using ready-made vs home-made ultrasound phantoms. Simulated procedures for radiologists is an important part of both training and continuing education. Ultrasound phantoms for procedural practice can be purchased or created using common store bought ingredients. While both can be useful, a cost analysis can reveal the most appropriate phantom for your practice.

TABLE OF CONTENTS/OUTLINE
1. Review the importance of simulated training. 2. Review the ready-made phantoms available for use. 3. Review the alternatives to traditional phantoms. 4. Describe the pros and cons each. 5. Instructions of how to make your own phantom.
Where Does it Start and Where Does it Go? Unearthing the Hidden Secrets of Merkel Cell Carcinoma

All Day Location: MS Community, Learning Center

Participants
Kiran Gangadhar, MD, Seattle, WA (Abstract Co-Author) Nothing to Disclose
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Sooah Kim, MD, New York, NY (Abstract Co-Author) Nothing to Disclose
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TEACHING POINTS
The learner will obtain the following from this exhibit: Review the etiology and pathogenesis of Merkel cell carcinoma (MCC) Overview of the role of imaging in initial staging and restaging Review the imaging spectrum of primary, locoregional and distant metastatic disease Review current updates regarding imaging and management, particularly targeted therapies and the potential for unique imaging response

TABLE OF CONTENTS/OUTLINE
Overview of the pathogenesis of MCC with specific attention to the role of the Merkel cell polyomavirus and immunosuppression (e.g. B-cell malignancies, solid organ transplant, HIV) Role of imaging in staging and restaging Incidence of MCC is increasing, resulting in increased imaging, though consensus for modality and timing is lacking Modalities that may be utilized include CT, FDG-PET, OctreoScan, US, and lymphoscintigraphy Selected cases demonstrating examples of primary lesions, locoregional disease, metastatic disease, and recurrence (local and distant) Specific attention to uncommon manifestations of distant metastatic disease Relative frequency by site based on a retrospective review of patients with MCC in our institution from 2000-2010 Therapeutic options, including increasing utilization of adjuvant chemoradiation, as well as novel targeted and immunotherapy
Proteus syndrome is a rare multi systemic congenital disorder result of genetic mosaicism causing asymmetric tissue overgrowth such as bone and skin, among other manifestations. Given the variable phenotypical presentation, recognition of typical and atypical imaging findings is essential. The purpose of this exhibit is to assess the viewer's ability to differentiate Proteus syndrome from other confounding entities and, to illustrate and discuss key imaging findings associated with this syndrome and some rare manifestations such as splenic lymphangiomatosis.

TEACHING POINTS

This presentation will illustrate with MRI, CT and radiograph images different manifestations of Proteus syndrome through an initial quiz, followed by an answer slide with key teaching points and a final summary including pertinent information about Proteus syndrome diagnostic criteria and common and uncommon radiological presentations. The quiz will include imaging illustrating: skeletal findings (macrodactyly, limb length discrepancies, vertebral body abnormalities, calvarial thickening and hyperostosis); visceral findings (splenic lymphangiomatosis, lung scarring and emphysematous or cystic lung changes); soft-tissue findings (soft-tissue masses and abnormal fat distribution); central nervous system findings (cerebral AVMs and abnormal gray-white differentiation).
Oncogenic Infections: A Review

TEACHING POINTS

1. Review the spectrum of oncogenic viruses
2. Discuss the spectrum of malignancies associated with viruses
3. Review imaging findings of viral-induced malignancies

TABLE OF CONTENTS/OUTLINE

1. Definition and epidemiology of oncogenic viruses
2. General pathogenesis of carcinogenesis caused by viruses
3. Case-based review: Oncogenic viruses and cancers
   a. EBV-related neoplasms
      i. Burkitt lymphoma
      ii. Hodgkin lymphoma
      iii. PTLD
   b. Nasopharyngeal cancer
   c. Gastric cancer
   d. HBV and HCV-related HCC
   e. Human T-lymphotropic virus type related T-cell lymphoma/leukemia
   f. Human Herpes Virus 8
   g. Kaposi's sarcoma
   h. HPV-related malignancies
      i. Cervical cancer
      ii. Anal cancer
      iii. Penile cancer
      iv. Oropharyngeal cancer
   i. HIV-related malignancy
      a. Kaposi sarcoma
      b. Anal cancer
      c. Non-Hodgkin's lymphoma

SUMMARY

Infectious agents constitute 15-20% of causes of malignancy. A wide spectrum of cancers can be caused by viruses. The majority of the oncogenic infectious agents are oncoviruses. Because infections can be prevented or treated by anti-microbial agents, the possibility of preventing malignancy has become of increased concern. The purpose of this exhibit is to illustrate and review the neoplasms caused by oncogenic viruses and the imaging findings of these malignancies.

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: https://www.rsna.org/Honored-Educator-Award/

Amy K. Hara, MD - 2015 Honored Educator
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TEACHING POINTS
Awareness of visceral situs anomalies is important to interpret US and X-ray signs that can otherwise be misleading. Second-line exams are necessary to study the whole anatomy

TABLE OF CONTENTS/OUTLINE
Abnormal position of organs include a wide spectrum of pathologies falling into the category of disorders of laterality, caused by ciliary dysfunction in the node, a structure required for left-right patterning during embryogenesis. Common is the association with other congenital anomalies and with a broad spectrum of lung pathologies due to Primary Ciliary Dyskinesia. Such anomalies can sometimes be misinterpreted when unexpected at first-line examination such as US or X-ray, especially if symptoms are blurred. Detailed description of anatomy is pivotal for any medical or surgical planning in these patients, so second-line examination such as CT or MRI should always be used to identify all anomalies. Cardiac CT and angiography CT are useful to assess heart defects and vessel abnormalities, as well as sinus CT for sinusitis. The exhibit will be organized ad follows: Section 1-Pathophysiology Section 2-Role of imaging Section 3-Multiple cases of complete and incomplete situs anomalies
Intravenous iodinated contrast agents are indispensable in radiology. It is imperative for radiologists to be familiar with the different contrast agents which are available and the rationale for selecting a particular agent for intravenous use. It is also important to understand methods of contrast administration, including optimal intravenous administration rates and volumes for commonly performed protocols. We will discuss the standard automatic injector, which has become ubiquitous in CT imaging and additional recent technological advances, which have improved the performance and safety profile of power injection. While contrast media are generally safe, it is critical to recognize the potential adverse events and interactions, and how to prevent and minimize the risk to the patient.

**TABLE OF CONTENTS/OUTLINE**

We will discuss frequently asked questions and safety considerations of iodinated intravenous contrast. We will provide a comparison of the different types of automated injectors. We will explain the rationale for use of different contrast injection rates/volumes and types of access required using practical clinical scenarios. The concepts of iodine flux and iodine mass will be reviewed along with commonly used techniques for optimizing the temporal window and peak enhancement during CT. Low kV CT scanning techniques will also be described.
Multiple Endocrine Neoplasia, type 2 (MEN2) is a group of syndromes with seemingly disparate findings. MEN2 is further subdivided into two forms, MEN2A and MEN2B. The overlapping and singular findings of both MEN2A and MEN2B will be reviewed. Medullary thyroid carcinoma (MTC) and pheochromocytoma are found in both MEN2A and 2B; parathyroid hyperfunction (hyperplasia and/or adenoma) are most common in MEN2A; mucosal neuroma and Marfanoid body habitus distinguish MEN2B.

**TABLE OF CONTENTS/OUTLINE**

Multiple Endocrine Neoplasia Type 2: Differentiating Type 2A and 2B
Clinical Presentation and Imaging Characteristics (as applicable):
- Medullary Thyroid Carcinoma
- Pheochromocytoma
- Parathyroid hyperplasia
- Mucosal neuromas
- Marfanoid body habitus
Role of the radiologist in MEN2A and MEN2B: Discovery and Surveillance
X Producing Tumors in the Abdomen: The Effects on Clinical and Radiological Features and Differential Diagnosis

All Day Location: MS Community, Learning Center

Participants
Shota Tatsumoto, Kashihara, Japan (Presenter) Nothing to Disclose
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Junko Takahama, MD, Kashihara, Japan (Abstract Co-Author) Nothing to Disclose
Aki Takahashi, MD, Kashihara, Japan (Abstract Co-Author) Nothing to Disclose
Kimihiko Kichikawa, MD, Kashihara, Japan (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
1) To understand the effect of the abdominal tumor production (X) on the clinical and radiological features. 2) To clarify the multimodality imaging approach to X producing tumors in the abdomen

TABLE OF CONTENTS/OUTLINE
1) Case presentation Erythropoietin producing tumor (renal cell carcinoma), G-CSF producing tumor (bile duct carcinoma), Insulin-like growth factor(IGF)-2 producing tumor (retroperitoneal solitary fibrous tumor), Alfa-fetoprotein producing non-hepatic tumor (gastric cancer), Insulin producing tumor (pancreatic neuroendocrine tumor), Gastrin producing tumor (pancreatic neuroendocrine tumor), Catecholamine producing tumor (pheochromocytoma and paraganglioma), Estrogen producing tumor (ovarian GCT), hCG producing tumor (Choriocarcinoma), Mucin producing tumor (IPMN, IPNB, MCN and urachal cancer, et al) 2) Clinico-radiological key findings in differential diagnosis 3) Summary: Although X producing tumor is relatively rare entities, clinico-radiological key findings may help us to lead correct diagnosis.
TEACHING POINTS

1. Osseous lesions can be found in the axial skeleton in addition to the metaphyseal segments of the limbs. Therefore, close review of the spine is warranted in patients with ECD.
2. 53% of our patient cohort showed evidence of cardiac involvement and 36% with vascular involvement. Therefore, dedicated cardiovascular imaging may be warranted in this patient population.
3. 51% of our patient cohort had evidence of pulmonary pleural and interstitial disease, which refutes the commonly held belief that pulmonary involvement is uncommon in ECD.

TABLE OF CONTENTS/OUTLINE

I. Introduction- Erdheim-Chester Disease (ECD) is a rare form of non-Langerhans cell histiocytosis characterized by an immunohistochemical signature distinct from Langerhans cell histiocytosis, relative absence of Birbeck granules, strong association with a BRAF V600E mutation in affected tissues, and near exclusive clinical presentation in adulthood. We present the broad catalog of multi-systemic imaging findings in body imaging and review the radiologic trends within this cohort of 47 patients seen in one institution, the largest reported in the radiology literature.
II. Review of imaging findings and radiographic trends of ECD in thoracoabdominal imaging
   A. Skeletal
   B. Pulmonary
   C. Vascular
   D. Cardiac
   E. Additional body systems demonstrating lower prevalence rates
Optimizing MRI Pelvis in Oncology: Tips, Tricks and Traps

All Day Location: MS Community, Learning Center

Participants
Ashita Rastogi, MBBS, MD, Mumbai, India (Presenter) Nothing to Disclose
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Supreeta Arya, MD, Mumbai, India (Abstract Co-Author) Nothing to Disclose
Prashant M. Gite, MBBS, Mumbai, India (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
To define utility of various conventional MR sequences in staging pelvic malignancies. To discuss the technical parameters that affect image quality. To describe the incremental value of functional MRI sequences in detecting and staging various malignancies.

TABLE OF CONTENTS/OUTLINE
'What does this image reveal?' - Conventional sequences in MR imaging of pelvis and their relevance in Carcinoma rectum, prostate, cervix and endometrium. 'How the image reveals what it should?' - Parameters which affect and improve diagnostic quality of conventional MR sequences. 'Which functional MR sequence to do and when?' - To suggest the appropriateness criteria for a Multiparametric MRI. The study aims to revisit the utility of various conventional MR sequences in the evaluation of pelvic malignancies and to define the parameters which affect diagnostic image quality for correct staging of disease. Tips and tricks to improve image quality will be discussed. Various functional MR sequences are available for evaluation of neoplastic disease such as diffusion weighted imaging, perfusion imaging and MR spectroscopy. The study also aims to discuss the utility and incremental value of multiparametric MRI in accurate detection and staging of these malignancies.
NIH SBIR/STTR Programs To Support Innovative Commercial Product Development By Small Businesses and Academic Partners

Saturday, Nov. 28 1:00PM - 5:00PM Location: E350

AMAPRA Category 1 Credits™: 4.00
ARRT Category A+ Credit: 0

Participants
Greg Evans, PhD, Rockville, MD (Presenter) Nothing to Disclose
Deepa Narayanan, MS, Rockville, MD (Presenter) Nothing to Disclose
Todd Merchak, Bethesda, MD (Presenter) Nothing to Disclose
Jennifer Shieh, PhD, Bethesda, MD, (nhbi_sbir@mail.nih.gov) (Presenter) Nothing to Disclose
Chris Sasiela, PhD, Bethesda, MD, (chris.sasiela@nih.gov) (Presenter) Nothing to Disclose
Steve Flaim, PhD, Bethesda, MD (Presenter) Founder, CardioCreate, Inc; Director, CardioCreate, Inc; Stockholder, CardioCreate, Inc; Director, OncoFluor Inc; Stockholder, OncoFluor Inc; Director, Pivotal BioSciences, Inc; Stockholder, Pivotal BioSciences, Inc; Director, Leading BioSciences Inc; Stockholder, Leading BioSciences Inc; Director, AnaBios Corporation; Stockholder, AnaBios Corporation; Stockholder, InflammaGen, LLC; Stockholder, Verdezyne, Inc; Stockholder, Solulink, Inc; Spouse, Employee, Isis Pharmaceuticals, Inc
Ram Aiyar, PhD, MBA, Bethesda, MD (Presenter) Advisor, BeneVir BioPharm; Advisor, Corvidia Corporation

LEARNING OBJECTIVES
1) Gain understanding of the SBIR/STTR programs at NIH and the resources available to translate your technology into the clinic. 2) Learn how to develop a successful SBIR grant application. 3) Understand the importance of a commercialization strategy including regulatory pathway and/or investment and partnerships. 4) Learn more about non-funding resources available at NIH to help commercialize your technology.

Handout: Deepa Narayanan

Handout:
Opening Session

Sunday, Nov. 29 8:30AM - 10:15AM Location: Arie Crown Theater

PS10A Presentation of the Outstanding Educator Award

Participants
Ronald L. Arenson, MD, San Francisco, CA (Presenter) Nothing to Disclose
John M. Boone, PhD, Sacramento, CA (Presenter) Research Grant, Siemens AG Research Grant, Hologic, Inc Consultant, Varian Medical Systems, Inc
Kenneth L. Pierce, MD, Oak Lawn, IL (Presenter) Nothing to Disclose

PS10B Presentation of the Outstanding Researcher Award

Participants
Kay H. Vydareny, MD, Tucson, AZ (Presenter) Nothing to Disclose

PS10C President’s Address: Going Boldly into Radiology’s Technological Future: Why Our Profession Must Embrace Innovation

Participants
Ronald L. Arenson, MD, San Francisco, CA (Presenter) Nothing to Disclose
William P. Dillon, MD, San Francisco, CA (Presenter) Nothing to Disclose

Abstract

With growing populations of patients in need of care and rapid increases in recent years in the availability and utilization of imaging, health systems around the world are turning more and more to radiology as a key component of the services they deliver. Coupled with growth in demand is stunning technological innovation in radiology. With radiologists now busy as ever and working on the cusp of one of the most exciting eras ever in the development of information technology, we must ask ourselves: Are we harnessing our capacity for innovation and technology development in the right ways? As health systems look to us increasingly for answers, what will our profession deliver to them? From PACS to advanced image processing to reduce radiation dose, information technology (IT) has been critical to the advance of radiology. Now we are experiencing new developments in IT, including clinical decision support, computer aided radiology and advanced systems for improved workflow and efficiency. Soon, resources we once thought of as “futuristic” will appear, including expanded artificial intelligence, sophisticated extraction of information (data mining) from the medical record and dramatic improvements in image quality and usage. Exciting new concepts in radiology, such as hyperpolarized carbon 13, steerable catheters and the use of intraluminal filters, will radically change the way we view our work. All the promise of medicine as practiced in “Star Trek” seems headed our way. The potential positive impact of all of this on patients is immense, but achieving it means embracing innovation in new ways, and working as a profession to ensure that technological change is managed effectively.

PS10D Dedication of the Special Lecture to the Memory of Joseph N. Gitlin, DPH (1927-2014)

Participants
Darrell G. Kirch, MD, Washington, DC (Presenter) Nothing to Disclose
Ronald L. Arenson, MD, San Francisco, CA (Presenter) Nothing to Disclose

PS10E Special Lecture: Radiology, Medicine, and Healthcare: Will Inaction or Innovation Determine Our Future?

Participants
Darrell G. Kirch, MD, Washington, DC (Presenter) Nothing to Disclose
Ronald L. Arenson, MD, San Francisco, CA (Presenter) Nothing to Disclose

Abstract

Today’s political, economic, and health realities present significant opportunity to shape the United States health care system so it achieves the triple aim-providing better care for individuals and populations at reasonable cost. The U.S. health care system has entered a period of massive transformation, and national approaches to patient care, education, and research will need to adapt to the changing health care landscape. This plenary session will highlight the political and economic realities facing U.S. health care, including shifts away from fee-for-service toward population-based payments in health care financing, reductions in clinical revenue, stagnant research funding, and a demand for new approaches in medical education. In a time of enormous change in health care, physicians are challenged to provide sufficient leadership to manage changing practices. Unfortunately, many physicians today are embedded in a traditional culture of medicine—one that is hierarchical, autonomous, competitive, individualistic, and expert-centric. Evidence is beginning to demonstrate that this culture, which conflicts directly with the health care desires of patients in the 21st century, can have negative outcomes for patient care. Unless a major cultural shift can occur, this traditional approach will have serious repercussions for the future of health care. Successful transformation will require both innovation and a new kind of leader. This plenary session will highlight the critical success factors for health care leaders in this transformative
period. Clinical care in the 21st century requires new leaders who will foster a culture that is collaborative, team-based, service-based, mutually accountable, and patient-centered. Tomorrow's physicians will need to adapt to-and even create-disruptive innovations in operating models, clinical care, education, and technology. Whether in independent group practice or as part of a large health system, radiologists, other health care providers, and their institutions will need to develop innovative and forward-thinking operating models for cost and quality performance to ensure long-term sustainability. Physicians of tomorrow must accept that they are stewards and leaders of this transformation.
Multisystem/Special Interest Sunday Poster Discussions

Sunday, Nov. 29 12:30PM - 1:00PM Location: MS Community, Learning Center

AMA PRA Category 1 Credit ™: .50

Teaching Points

Imaging Spectrum of Graft-versus-Host-Disease

2. Discuss spectrum of imaging and pathologic findings in acute and chronic GVHD.
3. Review mimics with emphasis on key findings differentiating these entities.

TABLE OF CONTENTS/OUTLINE

1. Pictorial (cartoon and/or radiographic) depiction of anatomic areas of disease involvement.
2. Discussion of characteristic imaging findings (ultrasound, CT and MRI) of GVHD involving CNS, thoracoabdominal viscera, hepatobiliary tree, and musculoskeletal system.
3. Review primary treatment options (including surgical and interventional radiology guided), imaging follow-up and prognosis.
4. Flow chart highlighting key imaging features that can narrow the differential diagnosis.

Gastrointestinal Neuroendocrine Tumors: Imaging features with Radiologic-Pathologic Correlation

Teaching Points

Gastrointestinal (GI) neuroendocrine tumors are well-differentiated neoplasms that represent about 2% of all gastrointestinal tumors and the most common small bowel malignancy. Radiographic and pathologic findings are complementary in the diagnosis and management of patients with GI neuroendocrine tumors.

TABLE OF CONTENTS/OUTLINE

Goals

This exhibit aims to: Enhance familiarity with GI neuroendocrine tumors through a case-based pictorial review featuring multimodality imaging with pathologic correlation Highlight the utility of imaging in diagnosing, staging, and assessing treatment response in GI neuroendocrine tumors GI neuroendocrine tumors Epidemiology Histopathological features Imaging characteristics Anatomic and functional imaging Primary and metastatic disease Treatment response Imaging pitfalls Clinical presentation Paraneoplastic syndromes Associated syndromes (multiple endocrine neoplasia, neurofibromatosis) Staging Treatment and prognosis

Cases:

Neuroendocrine tumors involving different sites of the GI tract highlighting radiologic features with pathologic correlation

Summary and future directions
Multisystem/Special Interest Sunday Poster Discussions

Sunday, Nov. 29 1:00PM - 1:30PM Location: MS Community, Learning Center

AMA PRA Category 1 Credit ™: .50

Participants

Sub-Events

**MS113-ED-SUB1**  
**Spectrum of IgG4-related Sclerosing Disease: Imaging Features and Mimics**

Station #1

Participants

Akram M. Shaaban, MBCh, Salt Lake City, UT (Presenter) Nothing to Disclose
Maryam Rezvani, MD, Salt Lake City, UT (Abstract Co-Author) Nothing to Disclose
Christine O. Menias, MD, Scottsdale, AZ (Abstract Co-Author) Nothing to Disclose
Bryan R. Foster, MD, Portland, OR (Abstract Co-Author) Nothing to Disclose
Marc Tubay, MD, Pueblo, CO (Abstract Co-Author) Royalties, Reed Elsevier
Khaled M. Elsayes, MD, Ann Arbor, MI (Abstract Co-Author) Nothing to Disclose

**TEACHING POINTS**

The aim of this exhibit is to: 1. Review the pathology, clinical presentation and diagnostic criteria of IgG4 sclerosing disease 2. Review the imaging features of IgG4 sclerosing disease in various organs 3. Discuss other conditions that may mimic IgG4 sclerosing disease in different organs

**TABLE OF CONTENTS/OUTLINE**

I. Overview of IgG4 sclerosing disease including pathology, clinical features and diagnostic criteria 2. Review the imaging features of IgG4 sclerosing disease in various organs. Pancreasb. Biliary system (sclerosing cholangitis)c. Gallbladder (cholecystitis)d. Kidneys: Tubulointerstitial Nephritis e. Salivary glands (sclerosing sialadenitis "Kuttner tumor")f. Orbit (orbital pseudotumor)g. Lungs (inflammatory pseudotumors, interstitial pneumonia)h. Thyroid (throiditis): Abdominal aorta (lymphoplasmacytic aortitis)i. Retropertitoneum (retroperitoneal fibrosis)j. Prostate (prostatitis) l. Lymph node (lymphadenopathy)m. Hypertrophic Pachymeningitis

3. Discuss other conditions that may mimic IgG4 sclerosing disease in different organs

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: https://www.rsna.org/Honored-Educator-Award/

Akram M. Shaaban, MBCh - 2015 Honored Educator
Christine O. Menias, MD - 2013 Honored Educator
Christine O. Menias, MD - 2014 Honored Educator
Christine O. Menias, MD - 2015 Honored Educator
Maryam Rezvani, MD - 2015 Honored Educator
Khaled M. Elsayes, MD - 2014 Honored Educator

**MS184-ED-SUB2**  
**Cross-sectional Imaging Spectrum of Extra-pulmonary Inflammatory Myofibroblastic Tumors**

Station #2

Participants

Raghunandan Vikram, MBBS, FRCR, Houston, TX (Presenter) Nothing to Disclose
Venkata S. Katabathina, MD, San Antonio, TX (Abstract Co-Author) Nothing to Disclose
Sooyoung Shin, MD, Houston, TX (Abstract Co-Author) Nothing to Disclose
Behrang Amini, MD, PhD, Houston, TX (Abstract Co-Author) Nothing to Disclose
Naoki Takahashi, MD, Rochester, MN (Abstract Co-Author) Nothing to Disclose
Srinivasa R. Prasad, MD, Houston, TX (Abstract Co-Author) Nothing to Disclose

**TEACHING POINTS**

Understand histogenesis, pathophysiology, clinical presentation and imaging spectrum of extra-pulmonary inflammatory myofibroblastic tumors (IMTs) Understand different subtypes of IMTs and their imaging features Understand the differences between IgG4 related sclerosing pseudotumor and IMT

**TABLE OF CONTENTS/OUTLINE**

Overview of Inflammatory myofibroblastic tumors, Introduction, definition, etiopathogenesis, Natural history and management Review imaging manifestations of IMTs in various extra-pulmonary locations Head and Neck Liver, Spleen, Gallbladder Gastro intestinal tract Urinary bladder Uterus Retropertitoneum Inflammatory myofibroblastic tumors (IMTs) typically manifest as slow growing masses that may locally invade / recur or rarely metastasize. A subset of IMTs with characteristic ALK-1 gene arrangements may demonstrate sarcomatous degeneration. MDCT/MR/PET-CT characteristics of this rare neoplasm are presented. Current controversies and the role of imaging in diagnosis/management and surveillance of disease will be discussed.

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educational content in their field of study. Learn how you can become an honored educator by visiting the website at: https://www.rsna.org/Honored-Educator-Award/

Raghunandan Vikram, MBBS, FRCR - 2012 Honored Educator
Srinivasa R. Prasad, MD - 2012 Honored Educator
Venkata S. Katabathina, MD - 2012 Honored Educator
Naoki Takahashi, MD - 2012 Honored Educator
Participants
Alexander Yule, DSc, Cardiff, United Kingdom (Moderator) Nothing to Disclose
Susan Crowley, MEd, RT, Toronto, ON (Moderator) Nothing to Disclose

Sub-Events

**MSAS21A  Challenges of Medical Imaging in Resource Limited Communities**

Participants
Melissa Culp, MEd, RT(R)(MR), Chevy Chase, MD, (mculp@rad-aid.org) (Presenter) Nothing to Disclose

**LEARNING OBJECTIVES**

1) The participant will learn about challenges related to working in a resource limited community. 2) The participant will understand differences in radiology workflow that result from imaging in a resource limited community. 3) The participant will comprehend the importance of working with and recognizing partners involved in a radiology global health initiative to address challenges and have successful outcomes.

**ABSTRACT**

Radiology enterprises in low-resource settings often have unique challenges as a result of limited infrastructure and funding, difficulty obtaining service and maintenance for equipment, and the need for human resource and capacity building. Successful radiology global health initiatives in resource limited environments require an objective analysis of site Radiology Readiness and open communication with partners bilaterally. As a 501(c)(3) non-profit with United Nations affiliation and official relations with the World Health Organization, RAD-AID International is uniquely positioned to work with local stakeholders, professional organizations, and volunteers to address these needs and have successful outcomes.

**MSAS21B  Role of Medical Imaging on Global Health**

Participants
Miriam N. Mikhail, MD, Geneva, Switzerland (Presenter) Nothing to Disclose

**LEARNING OBJECTIVES**

1) Participants will learn about the role of the WHO in radiology-related public health initiatives, including support of imaging referral guidelines and the launch of AFROSAFE (African counterpart of Image Gently/Image Wisely and EUROSAFE). 2) Participants will learn about the potential for continued and greater collaboration of the WHO and radiology entities: synergies in dealing with priority public health trends.

**ABSTRACT**

The World Health Organization (WHO), a U.N. agency with a mandate as the directing and coordinating authority of international public health work, facilitates collaboration to promote global health in a strategic, harmonized fashion concordant with specific core functions. With radiology in mind, this presentation provides an overview of some priority public health issues and trends, the increase in global non-communicable diseases and the proportionate need for greater availability of medical imaging, governance and the importance of WHO interaction with radiology-related professional societies and organizations, recurrent problems encountered during medical equipment donations, priority design needs for imaging equipment for use in low-resource settings, radiation protection initiatives, and a few words on the Ebola epidemic and personal protective equipment.

**Active Handout:Miriam Niveen Mikhail**


**MSAS21C  Organizational Support for Global Imaging Needs**

Participants
Jonathan Mazal, MS, RRA, Bethesda, MD (Presenter) Nothing to Disclose

**LEARNING OBJECTIVES**

1) The participant will learn about the role of radiology-specific professional societies in global health. 2) The participant will understand the strategy for seeking and lending expert opinion on global imaging guidelines from an international membership base. 3) The participant will comprehend the importance of having professional societies present to advocate on behalf of imaging professionals on an international level.

**ABSTRACT**

National radiology-specific professional societies often work with their local governments, representing the perspectives and needs of their members to ensure they are provided with the necessary tools and working conditions required to provide optimal care to their patients. The same proves true on the international level in regards to development and dissemination of guidelines impacting the practice of radiology within a global health perspective. As one of the leading organizations advocating on behalf of imaging...
professionals in over 90 countries worldwide, the International Society of Radiographers and Radiologic Technologists (ISRRT) holds official relations with the United Nations and routinely convenes with their key health related agencies on matters affecting the field of radiology.
**LEARNING OBJECTIVES**

1) Appraise the contribution which Population-based Imaging can make to radiological knowledge. 2) Differentiate between classical, prospective double-blind studies and the epidemiological, non-interventional approach to generate radiological knowledge. 3) Assess information regarding normal findings, normal range and the like as generated by Population-based Imaging studies.

**ABSTRACT**

The „SHIP“ (Study of health in Pomerania, Germany) has allowed to do more than 2000 whole-body MR scans in normal subjects in the setting of an on-going epidemiological study during several years. An body of knowledge regarding the organization of Population MR Imaging, the handling of incidental findings, the range of normal imaging findings and of imaging-related biomarkers has been generated. The course presents information about normal contrast enhancement patterns in the breast generated in a large group (> 500); about MR findings both pathological and non-pathological that may be made in individuals in the absence of disease; about the distribution of quantitative parameters in cardiac imaging (plain and enhanced) in subjects in the absence of overt heart disease. The success of the SHIP has encouraged to perform a similar, nation-wide study in Germany on an even larger scale. 5 centers have started to perform whole-body MRI in study participants. A large body of information on health status of the participants is generated by epidemiologists. Follow-up will be performed on a regular base in the frame of the so-called „National Cohort“: Information on the value of radiological methods will be generated by epidemiological methods, namely long-time follow up.

**URL**

Sub-Events

**SPCP21A Opening Remarks**

Participants
Norbert Hosten, MD, Greifswald, Germany (Moderator) Institutional research agreement, Siemens AG; Institutional research agreement, Bayer AG; Stockholder, Siemens AG
Gabriele A. Krombach, MD, Aachen, Germany (Moderator) Nothing to Disclose

**LEARNING OBJECTIVES**

1) Appraise the contribution which Population-based Imaging can make to radiological knowledge. 2) Recommend Population based MR Imaging as a valuable part of Population based epidemiological studies.

**ABSTRACT**

"Population-based MR Imaging" was chosen as the topic for this year's RSNA "Germany presents:" session. In Germany, whole-body MRI is performed both in a regional study (Study of Health in Pomerania - "SHIP") and in the "National Cohort" which just started. The session explains (1) how normal ranges for contrast enhancement can be established in very large numbers of healthy subjects; (2) what "incidental" (or in the case of MRI patients) "unexpected" findings may be found on whole body MRI, (3) how whole-body MRI may be set up in epidemiological population-based studies.

**SPCP21B Roentgen - An X-Ray Journey**

Participants
Ronald L. Arenson, MD, San Francisco, CA (Presenter) Nothing to Disclose
Norbert Hosten, MD, Greifswald, Germany (Presenter) Institutional research agreement, Siemens AG; Institutional research agreement, Bayer AG; Stockholder, Siemens AG

**LEARNING OBJECTIVES**

1) How population-based data are used to establish reference values for clinical diagnostics. 2) Which methods and procedures are necessary for standardized analysis of large amounts of image data. 3) Which reference values have been developed so far from the population-based Study of Health in Pomerania and what clinical significance they have.

**SPCP21C What Is Normal? Reference Values Derived from Population-Imaging and Their Role in Clinical Practice**

Participants
Katrin Hegenscheid, MD, Greifswald, Germany (Presenter) Research Grant, Bayer AG; Research Grant, Siemens AG; Research Grant, XERA 3 Deutschland GmbH

**LEARNING OBJECTIVES**

1) How population-based data are used to establish reference values for clinical diagnostics. 2) Which methods and procedures are necessary for standardized analysis of large amounts of image data. 3) Which reference values have been developed so far from the population-based Study of Health in Pomerania and what clinical significance they have.
ABSTRACT
Prospective, population-based studies investigate the interaction between genetic predisposition for a disease, exposure to environmental factors and disease risk. They are a prerequisite for the development of prevention strategies. In the last decades due to its non-ionizing, examiner-independent, and high-resolution nature MRI has been implemented increasingly in epidemiological research. In 2008, the Study of Health in Pomerania (SHIP) was the first prospective population-based cohort study that offered a standardized whole-body MRI protocol for 3,772 participants aged 21 to 90 years. The primary objective of epidemiologic whole-body MR imaging is to phenotype a large subset of participants and to establish a comprehensive morphologic and functional imaging bio-repository. In this presentation we describe how this bio-repository is used to derive reference values from Population-Imaging and their role in clinical practice. Since manual segmentation of a three dimensional organ is a laborious, time-consuming, and examiner-dependent process, it was necessary to develop automated methods for 3D analysis of a large set of data and organs, e.g. the lungs, the liver, and the breasts. Supported by these automated segmentation methods first studies on reference values were conducted. For example reference values for the ascending and descending aortic wall thickness were provided its association with age was investigated. Reference values for the gray and white matter brain volume were provided and the influence of genes, exogenous noxae, or diseases were described. We not only describe how organ volumes but also tissue analyzes based on population-based data are performed. Methods for MR based fat quantification of the liver and the pancreas were developed and the prevalence of fatty organ degeneration and its causes was investigated in the normal population. In women the influence of anthropometric measures and menopausal status on the contrast enhancement of normal breast parenchyma was investigated and how it influences image analysis. Finally, we will show how reference values for the anterior chest wall thickness are used for the optimal design of protective devices and personal body armor and influence established trauma guidelines for decompression of tension pneumothorax.

SPCP21D  Why Population-Imaging may Help in Advancing Radiology: The German National Cohort

Participants
Fabian Bamberg, MD, MPH, Munich, Germany, (fbamberg@post.harvard.edu) (Presenter) Speakers Bureau, Bayer AG; Speakers Bureau, Siemens AG; Research Grant, Bayer AG; Research Grant, Siemens AG;

LEARNING OBJECTIVES
View learning objectives under main course title.

SPCP21E  No Need to Look for Incidental Findings? Role in Clinical and Research Settings

Participants
Sabine Weckbach, MD, Heidelberg, Germany (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Will be able to define “Incidental Finding (“IF”). 2) Will understand the underlying ethical problematic of IFs. 3) Will be aware of possible consequences of IF. 4) Will know about differences between imaging modalities in detecting IFs. 5) Will understand and be able to describe the categorization of IFs. 6) Will be able to differentiate between IFs in clinical setting and research environment and understand the different roles of radiologist and researcher. 7) Will be shortly informed about different approaches to IFs in different population based studies. 8) Will be provided a summary of management recommendations of IFs in clinical and research setting.

ABSTRACT
All findings which arise in the context of radiological diagnostics, potentially affect the health of a subject and without intention to detection of the corresponding finding are considered as radiological incidental findings (IF). The prevalence of IFs is worldwide increasing due to the wider usage of modern imaging techniques such as MRI and CT in routine clinical practice as well as due to include imaging such as whole-body MRI in large population-based cohorts. From medical perspective, there is a need to report IFs in cases of potentially clinically relevant findings that need further workup or therapy. However, it is generally known that IFs may have a direct influence on life of the affected patient/participant. The reporting of radiological IF may lead to further (even invasive) diagnostics and treatment and cause severe anxiety of patients and study participants. Possibly, there might also result insurance and occupational issues from the reporting of IFs. Therefore, subjects must especially be protected from consequences of false-positives findings. This highlights why a very responsible approach to the reporting of IFs is warranted. The management of IFs in clinical routine is regulated by the guidelines of the different academic societies. The management of IFs in the setting of research studies differs depending on various factors such as study design, health status of enrolled subjects, etc. So far, wide differences in approaches to IFs in different population based studies are observed. The course will illustrate why in general IFs should be disclosed to the imaged subject if they are potentially clinically relevant. It will demonstrate the differences between IFs in clinical setting and research environment and highlight the different roles of radiologist and researcher.

URL

SPCP21F  Biomarkers of Cardiac Function in Population-Based Studies

Participants
Marc Dewey, MD, Berlin, Germany (Presenter) Research Grant, General Electric Company; Research Grant, Bracco Group; Research Grant, Guerbet SA; Research Grant, Toshiba Corporation; Research Grant, European Commission; Research Grant, German Research Foundation; Speakers Bureau, Toshiba Corporation; Speakers Bureau, Guerbet SA; Speakers Bureau, Bayer AG; Consultant, Guerbet SA; Author, Springer Science+Business Media Deutschland GmbH; Editor, Springer Science+Business Media Deutschland GmbH; Institutional research agreement, Siemens AG; Institutional research agreement, Koninklijke Philips NV; Institutional research agreement, Toshiba Corporation; ; ; ; ; ; ;

LEARNING OBJECTIVES
View learning objectives under main course title.

SPCP21G  Discussion and Closing Remarks
Participants
Gabriele A. Krombach, MD, Aachen, Germany (Presenter) Nothing to Disclose
James P. Borgstede, MD, Colorado Springs, CO (Presenter) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.
Demystifying Behçet’s Syndrome: Imaging Markers of Life Threatening Complications

Participants
Santosh K. Selvarajan, MD, Philadelphia, PA (Presenter) Nothing to Disclose
Jeffrey F. Chick, MD, MPH, Philadelphia, PA (Abstract Co-Author) Nothing to Disclose
Babitha Asha, MBBS, MD, Philadelphia, PA (Abstract Co-Author) Nothing to Disclose
Rashmi Balasubramanya, MD, Darby, PA (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
1. Review the multisystem radiologic manifestations of Behçet’s Disease.
2. Illustrate the frequently fatal complications and emphasis on the imaging markers for these complications.

TABLE OF CONTENTS/OUTLINE
Behçet’s Syndrome is a multisystem perivasculitis characterized by recurrent oral and genital ulcers, uveitis, and skin lesions as well as persistent inflammation of the large vasculature, gastrointestinal tract, and central nervous system. We will discuss the complications as follows:

Vascular:
- Central arterial and venous thromboses
- Periaortic pseudoaneurysms
- Coronary artery aneurysms
- Endomyocardial fibrosis

Neurologic:
- Meningitis
- Multiple cerebral infarctions (both venous and arterial)
- Diffuse brainstem lesions which simulate malignancy
- Cerebral artery thromboses and dissections

Gastrointestinal:
- Enteric fistula formation
- Pancreatitis
- Pulmonary:
- Hemorrhage secondary to vasculitis or ruptured aneurysm
- Pulmonary embolism
- Pulmonary artery aneurysms

Although common in Asia and Middle eastern region, the low prevalence and the unfamiliarity with the varied disease manifestations often leads to delayed diagnoses, increased morbidity, and often death in Western societies.

Painting the Whole Picture: Whole Body MRI in a Tertiary Cancer Center - Past, Present and Future

Participants
Jyothi Priya Jagannathan, MD, Boston, MA (Abstract Co-Author) Nothing to Disclose
Abhishek R. Keraliya, Boston, MA (Presenter) Nothing to Disclose
Sreeharsha Tirumani, MBBS, MD, Boston, MA (Abstract Co-Author) Nothing to Disclose
Norman Farrar, RT,ARRT, Boston, MA (Abstract Co-Author) Nothing to Disclose
Atul B. Shinagare, MD, Brookline, MA (Abstract Co-Author) Nothing to Disclose
Nikhil H. Ramaiya, MD, Jamaica Plain, MA (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS
Whole body MRI (WB-MRI) is a relatively new concept that has become increasingly popular in oncological imaging. Although early WB-MR images were primarily composed of Coronal STIR, advances in MRI systems currently enable a choice of sequences (for e.g. STIR, T1, T2,) and scanning techniques (with or without Gadolinium contrast). Personalization of WB-MRI with protocols optimized based on the pathology and expected clinical findings Functional imaging such as DWI adds incremental value without compromising scan time. Multiparametric whole body imaging, fusion imaging, and PET-MRI are some of the promising tools in future.

TABLE OF CONTENTS/OUTLINE
- Introduction, general concepts and technical aspects of WB MR imaging, including DWI
- Illustration of representative WB-MR images in various scenarios commonly performed at a tertiary cancer center, highlighting the protocols, clinical utility, pitfalls and false positives - a. Imaging of marrow pathologies e.g. myeloma
- Evaluation of occult marrow metastases e.g. myxoid liposarcoma
- Staging and Follow-up of common malignancies e.g. lung cancer, lymphoma
- Screening in patients with inherited risk of multiple malignancies e.g. Li Fraumeni syndrome, hereditary paraganglioma
- Pregnant patients
- Future directions discussing fusion imaging and PET-MRI whole body imaging
Table of Contents/Outline

Mobilizing the Troops: irRC in Cancer Immunotherapy Response Assessment

Immunotherapy is a relatively new type of anticancer therapy that works by upregulating an individual’s immune system to fight the tumor. Tumor response patterns to immunotherapy can be different from those associated with traditional cytotoxic chemotherapy. The concept of pseudoprogression is incorporated into immunotherapy response criteria Radiologists must be familiar with the new response assessment criteria for immunotherapy, immune related Response Criteria (irRC), in the context of cancer therapeutics. irRC differs from established tumor response assessment classification systems, including the size and number of measurable lesions, the treatment of new lesions, the calculation of tumor burden and the categorization of response to therapy.

TABLE OF CONTENTS/OUTLINE

Immunotherapy basic mechanisms (cell-based, monoclonal antibody and cytokine therapy) Immune related Response Criteria (irRC) Measurement criteria Tumor burden calculation Response categorization Contrasts between irRC, RECIST 1.1 and modified WHO Case illustrations using irRC in the assessment of treatment response

Honored Educators

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Sonia L. Betancourt Cuellar, MD - 2014 Honored Educator
Brett W. Carter, MD - 2015 Honored Educator

3D Printed-Anatomical Models based on Multi-modality Images for Pre-operating Planning and Surgical Decision: What is the Primary Role of 3D Printing in Radiology?

Hardcopy Backboard

Participants

Sang Joon Park, PhD, Seoul, Korea, Republic Of (Presenter) Nothing to Disclose
Doohee Lee, Gwangmyeong-Si Gy, Korea, Republic Of (Abstract Co-Author) Nothing to Disclose
Sang Youn Lee, Seoul, Korea, Republic Of (Abstract Co-Author) Nothing to Disclose
Jung Hoon Kim, Seoul, Korea, Republic Of (Abstract Co-Author) Nothing to Disclose
Jin Wook Chung, MD, Seoul, Korea, Republic Of (Abstract Co-Author) Research Grant, BTG International Ltd
Jin Mo Goo, MD, PhD, Seoul, Korea, Republic Of (Abstract Co-Author) Research Grant, Guerbet SA;

TEACHING POINTS

The major teaching points of this exhibit are: To understand how to segment the 3D human anatomies with multi-modality images (liver, airway, kidney, bone, etc). To understand how to segment and compose the internal structures of human organ in 3D printed models (mass, nodule, vessel, etc). To understand how 3D printing-anatomical models are applied for in-house hospital system from radiological viewpoint.

TABLE OF CONTENTS/OUTLINE

This exhibit consists of major three parts: 1) Explanation of the making process of 3D printed models. How to segment 3D human organ and internal structures with multi-modality images. How to perform pre- and post-processing of segmentation for accurate 3D printed models. How to select from simple to complex 3D printing models. 2) Utilization of 3D printed models for in-house hospital system: How to apply 3D printed models for radiological process. How to apply 3D printed models for pre-operating planning and surgical decision. 3) Demonstration of making process for 3D printing models: Movie display of segmentation and pre- and post- processing software Movie display of 3D printing and post-processing process Movie display of clinical usage in the hospital
Participants
David B. Nicholson, Charlottesville, VA (Moderator) Nothing to Disclose
Kathleen Kath, Livonia, MI (Moderator) Nothing to Disclose
Marcus Engel, Orlando, FL, (Marcus@MarcusEngel.com) (Presenter) Nothing to Disclose

LEARNING OBJECTIVES

1) Convey the foundation of compassionate care: human presence Utilize "I'm Here" to offer security and empathy to vulnerable patients Recognize that many times, the healing power of human presence is the best (and sometimes only) thing a health care professional can do for a patient. 2) Demonstrate an understanding of individual patient and family needs in a clinical setting Effective communication requires using language and terminology that can be easily processed by the patient and family Interpret patient and family interactions with an understanding of individual backstories. 3) Implement best practices in patient communication Instill patient confidence by managing up (complimenting co-workers, sharing accolades of the institution, and positive reinforcement regarding excellence in PC.

ABSTRACT

Participants of the session will be reminded of the vital role they play in the healing process of patients. The lecture details the experience of a young patient during hospitalization, the care and compassion shown by health care professionals and the importance of health care professionals to be safe, secure, and appreciated in their role within this sacred field. Participants will also come away with an understanding of each patient and co-workers individuality, unique differences, and appreciation for the role every health care employee plays in the healing of patients and their families. The patient and family experience is absolutely vital in quality, competent, compassionate health care.
Participants
Ronald L. Arenson, MD, San Francisco, CA (Presenter) Nothing to Disclose

Sub-Events

PS20A Presentation of the Alexander R. Margulis Award for Scientific Excellence

Participants

PS20B Presentation of Honorary Membership

Participants
Lorenzo Bonomo, MD, Rome, Italy (Presenter) Nothing to Disclose
Chamaree Chuapetcharasopon, MD, Bangkok, Thailand (Presenter) Nothing to Disclose
Jung-Gi Im, MD, PhD, Seoul, Korea, Republic Of (Presenter) Nothing to Disclose

PS20C Dedication of the New Horizons Lecture to the Memory of Ferenc A. Jolesz, MD (1946-2014)

Participants

PS20D New Horizons Lecture: Redefining Innovation

Participants
Jeffrey R. Immelt, Fairfield, CT (Presenter) Employee, General Electric Company
Ronald L. Arenson, MD, San Francisco, CA (Presenter) Nothing to Disclose

Abstract

For the last hundred years innovation has been synonymous with technological advancements. In the healthcare space we saw innovation in the creation of the first x-ray machine, first multi-slice CT scanner and first silent MRI. Yet as the world becomes increasingly interconnected, innovation has begun to mean different things and seemingly simple things such as a low cost infant warmer have become the future of innovation.

As we look towards the future, how will innovation change? We must be thoughtful about our investments and move away from creating technology just because we can. This is why it is critical for companies to work together with customers, governments, communities and NGOs, to innovate around what is needed to improve the health of millions around the world. GE and GE Healthcare are invested partners with our customers, working to innovate and drive the outcomes necessary for the future of healthcare. Together, we will continue to innovate and create the right technology that advances Radiology and healthcare for the next 100 years.
Participants
Alicia K. Waltenberger, Saint Louis, MO (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Fundamentals of conventional estate planning for any financial situation. 2) Planning strategies for income and estate taxes, and charitable giving. 3) Sophisticated strategies to leverage taxable gifts and transfer wealth to lower generations.

ABSTRACT
It is important to understand the fundamentals of estate planning and the importance of having a solid plan in place regardless of your financial situation. The desire to be tax efficient and keep up with the changing tax environment can sometimes feel like an insurmountable feat. In this seminar, we will explore a number of issues in the financial and tax planning arena including: o Income and Estate Tax Updates - understanding the impact of the recent income and estate tax legislation on your planning, as well as exploring strategies that may reduce your tax exposure; o Estate Planning Basics - a review of estate planning fundamentals, including a look at conventional estate planning strategies and how the changes in the estate tax laws may impact that conventional planning; o Sophisticated Planning Strategies - there are various planning techniques available to leverage taxable gifts, allowing wealth to be funneled to lower generations on a tax-advantaged basis both during lifetime and at death; o Non-Tax Related Planning - a look at how family dynamics, asset protection and state tax issues may impact the estate plan; and o Charitable Planning - identifying the types of gifts and giving techniques that offer the greatest tax benefit to donors both during lifetime and at death. In addition to comprehensive discussion outlined above, the session will include ample opportunity for QandA.
Participants
Mary C. Mahoney, MD, Cincinnati, OH (Moderator) Nothing to Disclose
Jennifer L. Kemp, MD, Denver, CO, (jkemp@divrad.com) (Presenter) Nothing to Disclose
James V. Rawson, MD, Augusta, GA (Presenter) Nothing to Disclose
Christine Zars, MS, Saint Charles, IL (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) To understand the mission and goals of RSNA’s Radiology Cares: The Art of Patient-centered Practice and ACR’s Imaging 3.0 campaigns. 2) To assess your radiology practice model and realign it to focus on value over volume. 3) To learn tactics to put the concepts of patient-centeredness and value vs. volume into practice. 4) To understand your patients’ perspectives as they navigate through the healthcare continuum, especially as it relates to radiology.

ABSTRACT
In many healthcare facilities and institutions, the culture and actual practice of radiology have marginalized the patient. Today the call to practice patient-centered care is one of the primary drivers of change within the radiology community. The benefits include improved patient care, improved communication between radiologists and their patients and referring physicians, and greater awareness of the essential role that radiologists play in patients’ overall healthcare. The RSNA’s Radiology Cares and ACR’s Imaging 3.0 campaigns were launched to provide tools to move the radiology profession to focus on patient-centeredness and to help transform the way radiology is practiced. This session will offer insights into the radiology patient mindset and describe tools to bring the concept of patient-centeredness into practice.
LEARNING OBJECTIVES

1) Describe the rationale and historical perspective and ethical basis of medical entrepreneurship, the role of patents, and the effect of the Bayh Dole legislation. 2) Describe the areas of greatest opportunity for innovation in radiological sciences, how to pick the right problems to solve, to translate ideas to prototype, and to prove the clinical value of prototype technology. 3) Describe practical aspects of commercializing medical technology, licensing, start-up companies, finding help, setting realistic goals, and appropriate roles for inventors.
Participants
Herbert Y. Kressel, MD, Boston, MA (Moderator) Royalties, Bayer AG
Jeffrey S. Klein, MD, Burlington, VT, (jklein@rsna.org) (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Discuss the similarities and differences in the peer review process for the RSNA journals. 2) Discuss the functions of the reviewer in the peer review process. 3) Enumerate the desired elements for peer review of a manuscript 4) Detail how a reviewer can receive AMA PRA Category 1 CME credit for manuscript review

ABSTRACT
Peer review is, in a major way, responsible for the quality of the manuscripts published in a given journal. In this refresher course, the Editors of both of the peer-reviewed journals published by the RSNA will discuss the peer review processes of their respective journals. The Editors will also emphasize the important functions served by the peer reviewers and will indicate the types of information which they would like the peer reviewers to consider when the peer reviewers review a given manuscript. Benefits and responsibilities of the peer review process will be detailed. There will be ample time for questions and answers.
LEARNING OBJECTIVES

1) Explain some of the problems of the 52 university postgraduate programs in radiology, and also the need of more academic radiologists. 2) To describe the different needs of radiology education through the nation as well as the need of more academic radiologist to teach the present and future generations in the upcoming radiological knowledge. 3) To recognize for this purpose the support of international societies, RSNA, ARRS, ACER, CIR, ESR, SERAM.

ABSTRACT

Mexico has 52 university radiology programs. For a country of one hundred million inhabitants there are no more than six thousand radiologists. More radiologists are needed and for that purpose more academic radiologists are needed. We also consider that there must be a standardization of radiology programs and our radiology institutions, Federation, Societies, Board and College of Radiology are working together for this unification. We have had for many years the academic support of many international radiology institutions, specially by RSNA, we will mention in the presentation what results have been obtained. There will be also information of Mexico and the health system.

URL

Handout: Jose Rene Manuel Anguiano-Martinez

http://abstract.rsna.org/uploads/2015/15000046/Presentacion Dr. Anguiano RSNA 2015.pptx

Sub-Events

SPCP31A Opening Remarks

Participants
Ronald L. Arenson, MD, San Francisco, CA (Presenter) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.

SPCP31B Closing Remarks

Participants
James P. Borgstede, MD, Colorado Springs, CO (Presenter) Nothing to Disclose

LEARNING OBJECTIVES

View learning objectives under main course title.
Multisystem/Special Interest Tuesday Poster Discussions

Tuesday, Dec. 1 12:15PM - 12:45PM Location: MS Community, Learning Center

AMA PRA Category 1 Credit ™: .50

Participants

Infected "Mycotic" Aneurysms: Pathophysiology and Imaging

Station #1

MS140-ED-TUA1

Participants
Daniel Lamus, MD, San Antonio, TX (Presenter) Nothing to Disclose
Carlos S. Restrepo, MD, San Antonio, TX (Abstract Co-Author) Nothing to Disclose
Ameya J. Baxi, MBBS, DMRD, San Antonio, TX (Abstract Co-Author) Nothing to Disclose
Daniel Vargas, MD, Aurora, CO (Abstract Co-Author) Nothing to Disclose
Daniel Ocazionez, MD, Houston, TX (Abstract Co-Author) Nothing to Disclose
Roy Riascos, MD, Houston, TX (Abstract Co-Author) Nothing to Disclose
Sandhya Vinu-Nair, San Antonio, TX (Abstract Co-Author) Nothing to Disclose
Santiago Martinez-Jimenez, MD, Kansas City, MO (Abstract Co-Author) Author, Reed Elsevier; Author, Oxford University Press

TEACHING POINTS

Define and discuss taxonomy, epidemiology and etiopathogenesis of mycotic aneurysms (MA). Illustrate characteristic multimodality imaging findings and atypical presentations of MA in the head, neck, chest, abdomen, and extremities.

TABLE OF CONTENTS/OUTLINE

Taxonomy: Although the incidence of infectious aneurysms in the post-antibiotic era has decreased, immunosuppression, endovascular medical devices and IV drug abuse are still highly prevalent risk factors. The term Mycotic Aneurysm was introduced by Osler to describe the mushroom shaped aneurysms secondary to arterial wall infection and is utilized today to describe all aneurysms of infectious origin, which do not necessarily share the originally described pathogenesis. This name can result misleading as it may be associated to a fungal etiology while the majority of these lesions have bacterial origin. The term Infected Aneurysm has been proposed to more accurately describe these lesions that can involve multiple pathophysiological mechanisms. Pathogenesis: Bacteremia Contiguous spread of a localized infection Superimposed infection of a known atherosclerotic penetrating ulcer or aneurysm Infected post-traumatic pseudoaneurysm Role of multimodality imaging for MA in various anatomical locations. Differential diagnosis. Treatment planning. Post-treatment follow up.

Honored Educators

Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: https://www.rsna.org/Honored-Educator-Award/

Carlos S. Restrepo, MD - 2012 Honored Educator
Carlos S. Restrepo, MD - 2014 Honored Educator
Santiago Martinez-Jimenez, MD - 2014 Honored Educator
Santiago Martinez-Jimenez, MD - 2015 Honored Educator

Imagin Cancer Immunotherapies: Toward a New Paradigm for Revolutionary Drugs

Hardcopy Backboard

Participants
Laurent Dercle, MD, Villejuif, France (Presenter) Nothing to Disclose
Samy Ammari, Villejuif, France (Abstract Co-Author) Nothing to Disclose
Matthieu Texier, Villejuif, France (Abstract Co-Author) Nothing to Disclose
Emile Lanoy, Villejuif, France (Abstract Co-Author) Nothing to Disclose
Cyril Jaudet, PhD, Brussel, Belgium (Abstract Co-Author) Nothing to Disclose
Jean-Charles Soria, Villejuif, France (Abstract Co-Author) Nothing to Disclose
Clarisse Dromain, MD, Villejuif, France (Abstract Co-Author) Nothing to Disclose
Martin Schlumberger, Villejuif, France (Abstract Co-Author) Nothing to Disclose
Aurelien Marabelle, Villejuif, France (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS

Cancer immunotherapies are revolutionary treatments that utilize the passive or active immune response of the immune system. They show outstanding results, might be used in a wide range of tumor types and in synergy. Several facts demonstrate the enthusiasm of the medical community, especially for anti-PD1: the U.S. Food and Drug Administration granted them the title of ‘breakthrough therapy designations’, and they were considered as the drug of the year in 2013. This report describes take home messages for daily clinical practice: the concept of targeting immune checkpoint, the new pattern of tumor response, auto-immune adverse events and other emerging concepts.

TABLE OF CONTENTS/OUTLINE

EVALUATION CRITERIA

III. AUTO-IMMUNE ADVERSE EVENTS
1. REPORTED ADVERSE EVENTS DEPEND ON THE TYPE OF IMMUNOTHERAPY
2. THYROIDITIS AND HYPOPACHISITIS
3. DIGESTIVE TRACT
4. CUTANEOUS

IV. PEARL AND PITFALLS
1. INFECTION
2. OTHER INCIDENTAL FINDINGS
Anatomical Variations of the Superior and Inferior Vena Cava: MDCT Findings

TEACHING POINTS
To briefly describe the normal embryological development of the venae cavae To familiarize the radiologists with the different congenital anomalies of the venae cavae making a systematic review and illustrating them by cases found in our service

TABLE OF CONTENTS/OUTLINE
Abnormalities of the venae cavae occurs in less than 1% of the population. Embryological development of the SVC and IVC involves the development, regression and fusion of different primitive venous systems (cardinal, subcardinal and supracardinal systems). Abnormal development of this venous system causes the known anatomic variants. VCS anomalies: duplicated/persistent left SVC. IVC anomalies: Interrupted IVC with azigos/azigos continuation, left/duplicated IVC, Absence of infrarenal IVC, IVC with retrocaval ureter, retroaortic/circumaortic left renal vein. In most patients these abnormalities do not have clinical implications, although a small proportion may be associated with increased risk of arrhythmias or thrombosis due to an inadequate venous return, left renal vein compression, pelvic varices and recurrent varicocele. The detection of these variants in asymptomatic patients has increased due to the ever more frequent use of MDCT and greater use of central venous access, their identification is relevant to planning surgery and interventional vascular procedures to avoid complications
Tuesday Plenary Session

Tuesday, Dec. 1 1:30PM - 2:45PM Location: Arie Crown Theater

OT
AMA PRA Category 1 Credits™: 1.25
ARRT Category A+ Credit: 1.00

Participants
Ronald L. Arenson, MD, San Francisco, CA (Presenter) Nothing to Disclose

Sub-Events
PS30A Presentation of the Gold Medal of the Radiological Society of North America

Participants
Hedvig Hricak, MD, PhD, New York, NY (Presenter) Nothing to Disclose
Robert A. Novelline, MD, Boston, MA (Presenter) Nothing to Disclose
Steven E. Seltzer, MD, Boston, MA (Presenter) Nothing to Disclose

PS30B Dedication of the Annual Oration in Diagnostic Radiology to the Memory of Byron Gilliam Brogdon, MD (1925-2014)

Participants
James H. Thrall, MD, Boston, MA (Presenter) Board Member, Mobile Aspects, Inc; Board Member, WorldCare International Inc; Consultant, WorldCare International Inc; Shareholder, Antares Pharma, Inc; Shareholder, iBio, Inc ; Shareholder, Peregrine Pharmaceuticals, Inc
Jon A. Jacobson, MD, Ann Arbor, MI (Presenter) Consultant, BioClinica, Inc; Royalties, Reed Elsevier; ;

Abstract
Three categories of innovation will shape future directions in radiology: continued development of imaging technologies, parallel developments in infrastructure, most importantly in computer analytics, and information and communications systems and the development and application of the imaging correlates of precision medicine. Continued substantial improvements in the spatial and temporal resolution of existing imaging methods coupled with more efficient detector technologies and analytical capabilities will support the increased use of parametric imaging—the imaging of function, the use of imaging to detect and portray physiology and cellular and molecular events. These attributes will result in new applications and in wider use of imaging methods clinically. They will also make imaging methods more valuable and relevant in basic research and imaging methods will be ever more widely adopted by scientists outside of traditional radiology research domains. Improvements in x-ray based imaging will result in reductions in radiation exposure to the point that radiation dose will no longer be a topic of concern or controversy. Phase contrast imaging with x-rays is likely to be the next entirely new imaging method in clinical practice and has the potential to reduce radiation doses by 10-to-100 fold or more. In the era of “big data,” no discipline in medicine will have opportunities that rival or surpass those we will have in radiology. We will use computer data mining and analysis techniques to turn “dumb” data into knowledge that can be delivered in real time at the point of care-just-in-time - for both radiologists and referring physicians. Data will inform development of better appropriateness criteria which will be immediately available to ordering providers and their patients. Borders will blur between concepts of information and communications systems and strong analytic and image processing capabilities will be incorporated directly into diagnostic work stations for key stroke access to advanced functions. The term “teleradiology” will become obsolete because of ubiquitous wide area networking capabilities worldwide. Advances in the foregoing areas will underpin radiology’s participation in the era of precision medicine, also called personalized medicine. The fundamental principle of precision medicine is definition of ever smaller more precise sub groups of patients with similar characteristics who are likely to benefit from the same therapies and have similar prognoses. Imaging phenotypes—i.e. systems for scoring, categorizing or classifying disease presence and severity-based on imaging biomarkers will help define these “precise” subpopulations. Linkages between patient genotype and imaging phenotypes will also be important for surveillance of disease manifestation, assessment of disease extent and discovery of genetic polymorphisms. Positive consequences of future developments in imaging include new applications with higher medical value, reduced radiation doses, more appropriate utilization and more efficient use of health care resources. Challenging consequences of future developments include vastly increased complexity in radiology practice with associated increased educational requirements especially in parametric imaging. There will be unremitting competition for “ownership” of imaging methods between specialties in clinical practice and in research.

Honored Educators

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Jon A. Jacobson, MD - 2012 Honored Educator
Developing the Hybrid Technologist in US and Canada (Sponsored by the Associated Sciences Consortium) (An Interactive Session)

Tuesday, Dec. 1 3:30PM - 5:00PM Location: S105AB

Participants
Lynne Roy, MBA, MS, Los Angeles, CA (Moderator) Nothing to Disclose
Steven P. DeColle, Edmonton, AB (Moderator) Nothing to Disclose

LEARNING OBJECTIVES
1) Attendees will learn the additional curriculum that is needed to formally educate technologists who operate hybrid equipment. 2) Attendees will be able to compare educational practices in the United States and in Canada. 3) Attendees will understand the opportunities and challenges that certified technologists face when cross training in different imaging disciplines and will be able to proactively mitigate some of these hurdles.

ABSTRACT
Imaging technology is evolving faster than we can develop technologists to competently perform molecular and cross sectional imaging. Both Canada and the United States have designed curriculum that address these essential learning modules. These two educational models will be compared, contrasted, and discussed in detail. In addition, the practicing technologist must be given an opportunity to learn this new technology and to safely and effectively operate it to deliver the necessary information so that the patient can reap the benefit of this technology. This path can be challenging but if undertaken in a planned fashion, and using lessons from the field to mitigate hurdles, on the job training can produce very competent, dual licensed and credentialed individuals.

Sub-Events

MSAS34A  Educating the Technologist for Future Practice -The United States Perspective

Participants
David Gilmore, MS, Boston, MA (Presenter) Nothing to Disclose

MSAS34B  Lessons from the Field: Becoming a Hybrid Technologist

Participants
Mark C. Hyun, ARRT, Los Angeles, CA, (mark.hyun@cshs.org ) (Presenter) Technical Consultant, Astellas Group; Speakers Bureau, Astellas Group

LEARNING OBJECTIVES
View learning objectives under main course title.

Active Handout:Mark C. Hyun
Histiocytosis from Head to Toe (In Conjunction with the American Institute for Radiologic Pathology)

Tuesday, Dec. 1 4:30PM - 6:00PM Location: N229

Participants
Mark D. Murphey, MD, Reston, VA, (mmurphey@acr.org) (Moderator) Nothing to Disclose
Mark D. Murphey, MD, Reston, VA, (mmurphey@acr.org) (Presenter) Nothing to Disclose
Jeffrey R. Galvin, MD, Baltimore, MD (Presenter) Nothing to Disclose
Kelly K. Koehler, MD, Rochester, MN (Presenter) Nothing to Disclose
Darcy J. Wolfman, MD, Bethesda, MD (Presenter) Nothing to Disclose
Ellen M. Chung, MD, Bethesda, MD (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Describe the typical clinical and pathological features of Langerhans cell histiocytosis. 2) Define the characteristic imaging patterns of Langerhans cell histiocytosis. 3) Understand the pathological basis for the imaging patterns of Langerhans cell histiocytosis.

Honored Educators
Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: https://www.rsna.org/Honored-Educator-Award/

Mark D. Murphey, MD - 2015 Honored Educator
Career Development for Women Radiologists and Radiation Oncologists (In Conjunction with the American Association for Women Radiologists)

Wednesday, Dec. 2 8:30AM - 10:00AM Location: SS04AB

Participants
Susan J. Ackerman, MD, Charleston, SC (Moderator) Nothing to Disclose

Sub-Events

RC516A  Residency - What Does It Take?

Participants
Rachel M. Nelson, MD, Charleston, SC (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Early identification of the key skills and resources needed to excel in a radiology residency. 2) Application of these skills and resources to build a solid foundation in radiology. 3) Utilization of this foundation to balance clinical duties and continuing education with involvement in non-academic pursuits.

ABSTRACT
Navigating a radiology residency is a daunting task, especially in the beginning. By building a solid foundation, each resident will have the basic skill sets and access to the resources needed to excel. Basic fund of knowledge, early mentorship, and effective communication are key aspects of a strong foundation. Residents can then build on this foundation through residency balancing both continuing education in the more complex realms of radiology as well as involvement in research, national organizations or the local community.

RC516B  Climbing the Ladder - Challenges and Opportunity

Participants
Madeleine C. Lewis, MD, Charleston, SC (lewism@musc.edu) (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Identify opportunities to ascend the ladder to promotion and leadership roles. 2) Develop strategies to overcome common challenges in building a successful academic career. 3) Formulate a plan to effectively climb the ladder.

ABSTRACT
Climbing the ladder is not an easy task, and along the way you will encounter many challenges and opportunities. However, there are skill sets and practical tips that are useful in turning challenges into opportunities as well as capitalizing on opportunities. Mentorship is invaluable for navigating your climb up the ladder. Mentors can serve as a sounding board and give honest feedback based on their experiences and perspective. Networking is also an effective method for getting in the door and helping with the ascent up. In today's competitive and accelerated world, those looking to advance their careers need to be proactive, develop a plan, and embrace learning new leadership skills.

RC516C  Challenges of Private Practice - How to Be Successful

Participants
Beatriz E. Amendola, MD, Coral Gables, FL, (dramendola@gmail.com) (Presenter) Speakers Bureau, Varian Medical Systems, Inc

LEARNING OBJECTIVES
1) After this presentation, the participant will be able to identify practical points to help them succeed in developing a private practice, in the field of Radiation Oncology. 2) Define policies to develop a successful practice. 3) Develop resource management with vendors and staff.

ABSTRACT
This presentation will be based on my personal experience of more than 15 years in the private practice of Radiation Oncology, mostly as a solo-practice. The reason I decided to go into private practice, after many years of academia it was my desire to be independent and be able to provide the best quality of medical care for my patients the way I wanted. Develop a team of excellence is the main ingredient; followed by the ability to provide them with the appropriate technical tools, if possible 'state-of-the-art' or even better, offer the most advanced technology available. Innovative research and emphasize the patient and their family needs in fighting their disease are keys to success. Support of friends and family is essential in this endeavor.

RC516D  Women at the Top - Do's and Don'ts

Participants
Carol M. Rumack, MD, Aurora, CO (carol.rumack@ucdenver.edu) (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Learn actions and habits that will help you perform well at a high level in an organization. 2) Learn actions and planning strategy that will help you get your new ideas across in a competitive environment. 3) Learn actions that may be risky to your career.

ABSTRACT

What to do and what not to do at the top levels of an organization are different than just being a team player for one of those leaders. My goals are to teach specific actions that you can use to perform well and to make as many as possible into habits so that you become a reliable and trusted colleague who is listened to for good ideas. How to prepare yourself so that you are ready accept new challenges? It may be your chance to succeed where others hesitate to go! How can you build a support system of other leaders? How do you plan for your ideas to succeed with their support in a top level meeting? In a leadership position there are risky actions that may destroy your credibility. What should you not be doing? Is it ok to be too cautious to speak? Why does not being visible can help undermine your success?
Participants
Barbara J. Smith, BS, Portland, OR (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Explain obesity statistics and issues related to radiography. 2) Discuss sensitivity training and communication. 3) Identify transportation and transfer of obese patients for safety of patient and personnel. 4) Describe imaging challenges and how to locate anatomical landmarks. 5) Examine exposure related issues.

ABSTRACT
Obesity is affecting an increasing number of people throughout the world and is a growing global health problem. This presentation will define various degrees of obesity, review the statistics and discuss some of the health impacts. Included is a discussion of equipment specifically designed for transportation and the transfer of obese patients. Radiographic equipment designed to image obese patients will be included. The dignity of the patient should be kept in mind so patient care issues such as sensitivity training and communication require us to be more aware of the issues of obesity. There are many imaging challenges associated with obese patients and it is important to understand that the bony skeleton and organ locations have not changed, but it is difficult to locate common positioning landmarks. A new technique for locating anatomical landmarks will be presented to assist with positioning accuracy. Exposure factor use for images and how it affects the radiographic tube will be covered. Additional considerations will be discussed relating to image receptor size, collimation, focal spot size, grid use, AEC and dose.

Active Handout: Barbara Joeine Smith

Participants
Donna L. Long, RT, Indianapolis, IN (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Discuss best practices in digital radiography. 2) Comprehend and analyze ASRT position statements and practice standards pertinent to best practices. 3) Analyze the effects of technical factor selection on the digital image. 4) Discuss and apply quality control issues in digital imaging. 5) Analyze and apply exposure indicator systems and values.

ABSTRACT
Digital Radiography has been in practice for quite some time. However we are still working to provide education and best practices for technologists and students regarding the use of digital imaging versus film/screen equipment. This presentation will cover best practices in digital radiography referencing the ASRT white paper, position statements and practice standards. Recommendations regarding future research will also be presented.

Active Handout: Donna L. Long
Participants

Sub-Events

MSE-WEA Multimodality Imaging of Multiple Myeloma: Defining the Role of Structural and Functional Imaging Techniques

Station #1

Participants

Helen Cliffe, MBChir, BA, Leeds, United Kingdom (Abstract Co-Author) Nothing to Disclose
Mark Igra, MBBS, Leeds, United Kingdom (Abstract Co-Author) Nothing to Disclose
Chirag Patel, FRCR, Oxford, United Kingdom (Abstract Co-Author) Nothing to Disclose
Andrew F. Scarsbrook, FRCR, Leeds, United Kingdom (Presenter) Nothing to Disclose

TEACHING POINTS

1. To understand the rationale for imaging in multiple myeloma (MM) 2. To illustrate the manifestations of myeloma on plain film, CT, MRI and PET-CT imaging. 3. To highlight pearls and pitfalls of each technique in myeloma imaging 4. To assess the relative merits of structural and functional imaging techniques in the staging and follow-up of MM.

TABLE OF CONTENTS/OUTLINE

1. Rationale for imaging in MM and recommendations of the new International Myeloma Working Group (IMWG) guidelines (2014). 2. Imaging myeloma with skeletal survey, low-dose whole-body CT, regional and whole-body MRI, and PET-CT. Emerging use of whole-body diffusion weighted (DW) MRI. 3. Pearls and pitfalls in myeloma imaging. 4. The merits and limitations of structural and functional imaging techniques in MM. Conclusion: i. Imaging has an important role in defining myeloma bone disease, an important trigger for treatment. ii. Structural imaging is able to detect lytic bone disease, but unable to accurately assess treatment response. iii. MRI and PET-CT are able to detect bone marrow disease, the extent of which has prognostic significance and therefore facilitates risk stratification of patients. iv. Functional techniques like PET-CT and DW-MRI are able to more accurately define treatment response, especially in patients with non-secretory myeloma.
Lymphoma Simplified: Unveiling this Master of Disguise

MSE-WEB

Multisystem/Special Interest Wednesday Poster Discussions

Wednesday, Dec. 2 12:45PM - 1:15PM Location: MS Community, Learning Center

AMA PRA Category 1 Credit ™: .50

Participants

Sub-Events

MS154-ED-WEB1  Lymphoma Simplified: Unveiling this Master of Disguise

Station #1

Participants

Saya Horiuchi, MD, Tokyo, Japan (Presenter) Nothing to Disclose
Jay Starkey, MD, Tokyo, Japan (Abstract Co-Author) Nothing to Disclose
Masaki Matsusako, MD, PhD, Tokyo, Japan (Abstract Co-Author) Nothing to Disclose
Yasuyuki Kunihara, MD, Tokyo, Japan (Abstract Co-Author) Nothing to Disclose
Ryo Miyazawa, Tokyo, Japan (Abstract Co-Author) Nothing to Disclose
Midori Enokido, Tokyo, Japan (Abstract Co-Author) Nothing to Disclose
Naoki Wakabayashi, Tokyo, Japan (Abstract Co-Author) Nothing to Disclose
Yuji Yaguchi, Tokyo, Japan (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS

The new WHO classification of lymphoma is somewhat complex and unfamiliar to many radiologists. We aim to simply and memorably present the major types of lymphomas included in the newest edition of the WHO classification. Specifically, we seek to:

1. Teach the pathophysiology of lymphoma in the context of the new WHO 4th edition classification.
2. Show the pathologic-radiologic correlations of the major types of lymphoma.
3. Review the radiographic features of each type of lymphoma.

TABLE OF CONTENTS/OUTLINE

1. We discuss the pathophysiology of the most common lymphomas, or those with highly specific diagnostic features, including:
   a. Mature B-cell neoplasms
      i. Diffuse large B-cell lymphoma
      ii. Follicular lymphoma
      iii. Mucosa-associated lymphoid tissue (MALT lymphoma)
   b. Mature T- and NK-cell neoplasms
      i. Extranodal NK/T-cell lymphoma, nasal Type
      ii. Adult T-cell leukemia/lymphoma
      iii. Peripheral T-cell lymphoma, NOS
      iv. Angioimmunoblastic T-cell lymphoma
      v. Anaplastic large cell lymphoma
   c. Hodgkin lymphoma
   d. Immunodeficiency-associated lymphoproliferative disorders
   e. Post-transplant lymphoproliferative disorders
   f. Lymphomas associated with HIV infection
   g. Precursor lymphoid neoplasms
2. Specific involving organ of each type of lymphoma
3. Case based examples of the above.
The Role of Advanced Imaging in Unraveling the Secrets of Ancient Art and Artifacts

Thursday, Dec. 3 8:30AM - 10:00AM Location: S404AB

AMA PRA Category 1 Credits ™: 1.50
ARRT Category A+ Credits: 1.50

Participants
Barry D. Daly, MD, Baltimore, MD, (bdaly@umm.edu) (Moderator) Research Grant, Koninklijke Philips NV
Barry D. Daly, MD, Baltimore, MD, (bdaly@umm.edu) (Presenter) Research Grant, Koninklijke Philips NV
Vahid Yaghmai, MD, Chicago, IL, (v-yaghmai@northwestern.edu) (Presenter) Nothing to Disclose
Jonathan P. Brown, MS, Chicago, IL (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) To describe the novel use of advanced imaging techniques in the non-invasive investigation of historic art treasures. 2) To identify related benefits for both research and educational activities at museums and art institutions.

ABSTRACT
In recent years, museums worldwide have sought to partner with radiology departments in the non-invasive investigation of ancient and fragile treasures. Advanced digital imaging and 3D CT have been used to determine the age, authenticity, composition and geographic origin of these artifacts, to investigate their internal contents, and to detect prior structural damage and hidden repairs. The subject matter of this course includes a diverse range of significant artifacts such as Egyptian and Peruvian mummies, Mesoamerican and Chinese ceramics, Mesopotamian stucco art, Judaic tabernacles, European medieval religious artifacts, Renaissance paintings, Stradivarius violins, and Japanese wood sculptures. Some conservators now have access to 3D imaging software at museums or may conduct remote collaborative analysis of cases with radiologists via cloud-based 3D servers. The speakers include two radiologists with extensive experience in the technical approach to imaging these treasures and a senior conservator at the Field museum who will provide an expert’s perspective on the research and educational value of the findings.

Honored Educators
Presenters or authors on this event have been recognized as RSNA Honored Educators for participating in multiple qualifying educational activities. Honored Educators are invested in furthering the profession of radiology by delivering high-quality educational content in their field of study. Learn how you can become an honored educator by visiting the website at: https://www.rsna.org/Honored-Educator-Award/

Vahid Yaghmai, MD - 2012 Honored Educator
Vahid Yaghmai, MD - 2015 Honored Educator
TEACHING POINTS

The widespread use of multidetector computed tomography (MDCT) scanners has led to an increased radiation exposure of the patients undergoing CT. Lowering the tube voltage (kV) has shown to be an effective means of decreasing the amount of radiation delivered to the patient while improving contrast enhancement, lesion detection and reducing contrast dose. The purpose of this abstract is to review the basic principles and methods employed to reduce kV in routine CT examinations and provide illustrative examples of its clinical applications.

TABLE OF CONTENTS/OUTLINE

Review of various methods to reduce kV in routine CT: Weight-based, BMI based, patient-width based, automated attenuation based selectionClinical applications: Cardiovascular: Effect of lower kV on evaluation of vascular structuresChest: Effect of low kV on soft-tissue nodule conspicuity, pneumothorax detection and evaluation of pulmonary embolismAbdomen: Effect on image quality, low-contrast detectability, lesion characterization and reduced contrast doseMusculoskeletal: Effect of low kV on conspicuity; role of iterative reconstruction in maintaining image qualityHead and Neck: Significance of using lower kV as thyroid is radiated.

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Vahid Yaghmai, MD - 2012 Honored Educator
Vahid Yaghmai, MD - 2015 Honored Educator
Transcompartmental Pathology in the Abdomen: Making Sense of Chaos

Participants

Daniel Alvarez, MD, Santiago, Chile (Presenter) Nothing to Disclose
Jose Gutierrez Chacoff, MD, Santiago, Chile (Abstract Co-Author) Nothing to Disclose
Francisca Leiter, MD, Santiago, Chile (Abstract Co-Author) Nothing to Disclose
Ignacio Maldonado, MD, Santiago, Chile (Abstract Co-Author) Nothing to Disclose
Cristian Varela, MD, Santiago, Chile (Abstract Co-Author) Nothing to Disclose
Juan R. Ayuso, MD, Barcelona, Spain (Abstract Co-Author) Nothing to Disclose

TEACHING POINTS

1. There is a group of locally aggressive diseases that are capable of crossing anatomical boundaries between different compartments in the abdomen and/or pelvis. Infectious transcompartmental diseases such as tuberculosis, actinomycosis, mucormycosis and malakoplakia may simulate neoplastic disease. Actinomycosis should be suspected in the setting of recent gynecologic or colonic surgery; mucormycosis might be suspected in poorly controlled diabetes; low attenuation adenopathy suggests tuberculosis. Big, homogeneously enhancing hypovascular masses are typical of lymphoma. If not promptly resolved, xanthogranulomatous processes and acute inflammatory gastrointestinal disease (ie. appendicitis, diverticulitis) might try to find a way out of the abdomen through fistulous tracts to the skin.

TABLE OF CONTENTS/OUTLINE

1. Introduction and objectives
2. Compartmental anatomy of the abdomen and pelvis
3. Transcompartmental disease:
a) Extraintestinal conditions: xanthogranulomatous pyelonephritis, tuberculosis, actinomycosis, mucormycosis, malakoplakia
b) Gastrontestinal conditions: Crohn’s disease, xanthogranulomatous cholecystitis, complicated appendicitis and diverticulitis, anisakiasisc) Neoplastic conditions: lymphoma, leukemia
4. Systematic diagnostic approach
5. Take home points
RadioGraphics' Publication Information for Potential Authors

Thursday, Dec. 3 1:30PM - 2:45PM Location: E350

AMA PRA Category 1 Credits ™: 1.25
ARRT Category A+ Credits: 1.50

Participants
Jeffrey S. Klein, MD, Burlington, VT, (jklein@rsna.org) (Presenter) Nothing to Disclose
Kimberly L. Franks, Oak Brook, IL (Presenter) Nothing to Disclose
Lucinda Foulke, Oak Brook, IL (Presenter) Nothing to Disclose
Stephanie Khio, Oak Brook, IL (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Prepare a format- and content-compliant manuscript for possible publication. 2) Use ScholarOne Manuscripts to submit a manuscript for possible publication. 3) Become familiar with the RadioGraphics publication process.

ABSTRACT
The majority of material published in RadioGraphics is derived from solicited education exhibits selected by subspecialty panels at the RSNA annual meeting. This session, conducted by the RadioGraphics peer review and production staff, will review the process of developing a manuscript from your solicited exhibit and submitting your material via our online submission and peer review system ScholarOne. The components of a standard RadioGraphics manuscript will be detailed, including the creation of a CME test. There will be ample time for questions to the staff and the editor of RadioGraphics, Dr. Jeffrey Klein.

URL
Active Handout: Lucinda Foulke

Radiological and Nuclear Terrorism: Like It or Not, Radiology Professionals Will Be in the 'Hot' Seat

Thursday, Dec. 3 4:30PM - 6:00PM Location: S103AB

AMA PRA Category 1 Credits ™: 1.50
ARRT Category A+ Credits: 1.50

Participants
Donald P. Frush, MD, Durham, NC (Moderator) Nothing to Disclose
John Lanza, MD, Pensacola, FL, (JohnJ.Lanza@FLHealth.gov) (Presenter) Nothing to Disclose
Nick Dainiak, MD, Oak Ridge, TN, (Nick.Dainiak@orau.org) (Presenter) Nothing to Disclose
Judith L. Bader, MD, Bethesda, MD (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) To describe the scenarios for a radiological dispersal device (RDD) or improvised nuclear device (IND). 2) To discuss roles of federal, state, and local governments. 3) To review the roles and strategies of hospital teams, including radiology professionals in the setting of an RDD/IND. 4) To provide resources for radiology professionals for response in the setting of RDD/IND. 5) Describe the very large mass casualty scenarios of concern that radiologists might be called to help with. 6) Understand the difference between radiation contamination and exposure. 7) Understand the clinical strategies used to manage contamination and exposure. 8) Identify internet resources physicians can use to inform themselves about preparing for and participating in responses to these types of incidents.

ABSTRACT

URL
Participants

Sub-Events

RC809A Abdomen Radiographs: Just an Annoyance Before the CT, Right?

Participants
David J. DiSantis, MD, Lexington, KY, (djdisantis@gmail.com) (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) List the innate 'contrast materials' present in abdomen radiographs. 2) Use those cues to identify pathology.

ABSTRACT
Millions of abdomen radiographs still are performed yearly in the United States. If viewed in a more than perfunctory manner, they can reveal a spectrum of abnormalities. This presentation offers a fresh approach to ferreting out the clues to pathology hidden in the lowly KUB.

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RC809B Esophagography 2015: What You Need to Know

Participants
Laura R. Carucci, MD, Midlothian, VA, (lcarucci@vcu.edu) (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Discuss the continuing importance of fluoroscopic evaluation of the esophagus. 2) Describe examination techniques for the esophagus. 3) Review the radiologic diagnosis of pathologic conditions involving the esophagus including functional and structural abnormalities.

ABSTRACT
Despite an overall trend towards a decreasing number of fluoroscopic procedures performed, the number of esophagography studies has proportionally increased in recent years. Fluoroscopic evaluation remains the primary modality for evaluating the esophagus. Radiologists should be able to perform and interpret esophagography studies. A spectrum of functional and structural abnormalities that may affect the esophagus will be discussed.

RC809C Fluoro Eyes Only: Role of Fluoroscopy in the Colon

Participants
Christine O. Menias, MD, Scottsdale, AZ, (menias.christine@mayo.edu) (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Discuss the role of plain film, fluoroscopy and CT in the evaluation of colonic pathology. 2) Review the radiographic, fluoroscopic imaging features of a spectrum of colonic pathologies, with CT correlation. 3) Review the fluoroscopic appearance of complications in the post-operative colon.

ABSTRACT
Despite the overall trend of the decreasing number of fluoroscopic screening studies of the colon, fluoroscopic evaluation of the colon is often requested in the post-operative or obstructed patient. Understanding the common surgical appearance of the post-operative colon, becomes important for the radiologist who is asked to evaluate for complications. Common surgical procedures as well as their complications will be discussed. In addition, a spectrum of entities that result in distal colonic obstruction will be discussed.

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LEARNING OBJECTIVES

1) To discuss essentials in the performance of fluoroscopic examinations of the postoperative gastrointestinal tract to: a. prevent complications, b. insure a diagnostic examination, c. avoid technical and interpretive pitfalls.

ABSTRACT

Despite advancements in endoscopy and cross sectional imaging, fluoroscopic examinations of the postoperative GI tract has remained essential. Rationale for its performance are: 1. to detect complications in the early (<4 weeks) or late (>4 weeks) post operative periods, 2. to assess the efficacy of the surgical procedure, and 3. to define anatomy and establish a baseline. A brief review of commonly performed surgical procedures will be given to insure understanding of the altered anatomy to insure complete anatomic coverage and enable performance of a 'tailored' diagnostic examination designed to answer clinical questions to guide management of the post surgical patient. Knowledge of the essentials on what contrast agents to use, how it should be administered and radiographic considerations (views/positioning) are emphasized to avoid procedure related complications and avoid pitfalls.
ABR Maintenance of Certification for Medical Physicists

Friday, Dec. 4 8:30AM - 10:00AM Location: E263

Participants
G. Donald Frey, PhD, Charleston, SC, (dfrey@theabr.org) (Director) Nothing to Disclose

Sub-Events

RC823A  MOC Requirements

Participants
G. Donald Frey, PhD, Charleston, SC (Presenter) Nothing to Disclose

Learning Objectives
1) The learner will be able to prepare for the 2016 lookback. 2) The learner will understand the nature of the cognitive exam. 3) The learner will be able to use the changes in the MOC program.

Abstract
The ABR MOC process has been in place for more than a decade. The process requires for elements. This presentation will review the four elements with an emphasis on some recent enhancements. Several years ago the ABR replaced the time limited certificates with a 'continuous certification' process. Continuous certification is based on an annual 'lookback.' The first complete lookback will be in March of 2016. This presentation will help medical physicists be ready for the 2016 lookback.

RC823B  PQI Projects

Participants
Jerry D. Allison, PhD, Augusta, GA (Presenter) Nothing to Disclose

Learning Objectives
1) The learner will understand the context of and purpose for Performance Quality Improvement (PQI). 2) The learner will understand the "Plan, Do, Study, Act" PQI cycle. 3) The learner will understand requirements for PQI projects. 4) The learner will understand types of PQI projects.

Abstract
Practice Quality Improvement (PQI) is a key element of the ABR MOC continuous certification process. This presentation will review the framework for PQI including the "Plan, Do, Study, Act" cycle for PQI project cycles, PQI project requirements, types of PQI projects and PQI project documentation.

Active Handout: Jerry D. Allison

RC823C  The MOC Cognitive Exam

Participants
J. Anthony Seibert, PhD, Sacramento, CA, (jaseibert@ucdavis.edu) (Presenter) Nothing to Disclose

Learning Objectives
1) The learner will identify the content of the MOC cognitive exam for each of the specific Medical Physics disciplines (Therapy Medical Physics, Diagnostic Medical Physics, Nuclear Medical Physics). 2) The learner will understand the percentage of fundamental and current clinical question topics and how the exam is assembled. 3) The learner will know how to prepare for the examination based on reference materials used in developing questions, and when to consider taking the exam within the 10 year MOC cycle.

Abstract
Part 3 of the MOC 'Continuous Certification' policy represents the Cognitive Expertise component for participating diplomates of the American Board of Radiology, and is required to maintain the ongoing validity of the certificate (except for lifetime certificate holders). In order to fulfill this requirement, the Diplomate must pass the MOC cognitive exam within the past 10 years. The content of the exam is 30 percent fundamental core questions and the remainder represents recent advances in the field for each of the Medical Physics disciplines. Exams are offered each year at a testing center and can be taken at any time during the MOC process. The Diplomate must take an exam in each discipline in which certification is being maintained. Details of the exam, its content, any study guides useful for preparing for the exam are discussed.
Participants
Angela D. Levy, MD, Washington, DC (Moderator) Nothing to Disclose
Howard T. Harcke, MD, Dover AFB, DE, (howard.harcke@gmail.com) (Presenter) Nothing to Disclose
Barry D. Daly, MD, Baltimore, MD, (bdaly@umrn.edu) (Presenter) Research Grant, Koninklijke Philips NV
David Fowler, MD, Baltimore, MD (Presenter) Nothing to Disclose
Edward L. Mazuchowski, MD, PhD, Dover AFB, DE (Presenter) Nothing to Disclose

LEARNING OBJECTIVES
1) Describe the strengths and limitations of the imaging techniques used in forensic radiology. 2) Explain how the courtroom use of imaging findings assists expert witnesses such as forensic pathologists or radiologists. 3) Compare the role of the radiologist and forensic pathologist in preparing cases for the courtroom. Please bring your charged mobile wireless device (phone, tablet or laptop) to participate.

ABSTRACT
Radiography, CT, CT angiography, and MRI are routinely used in forensic radiology. These are widely accepted imaging techniques that are becoming important diagnostic tools for forensic pathologists. Increasingly, CT and MRI images are being used to provide evidence in the courtroom and the radiologist and pathologist must appreciate how imaging findings may be complementary to or more sensitive than autopsy findings. Imaging findings provide additional objective evidence that can be easily displayed. In some cases, forensic imaging may support evidence from accident or crime scene investigations or may be the sole finding to support a theory for the mechanism and cause of injury or death. Such studies may influence jury members and contribute in securing either a criminal conviction or acquittal where appropriate. In this course, radiologists are paired with a forensic pathologist to discuss cases that they typically encounter in practice. The cases will be presented to the audience in a systematic manner with imaging and autopsy findings to teach the audience how imaging is used in the court to supplement the testimony of the medical examiner or expert radiologist. Examples include the meaning of hyoid fracture in strangulation; assessment of perforating gunshot wounds; the significance of intravascular air; and, the appearance of stillbirth versus live birth in infant death.