AI119-ED-X

Radiomics in Clinical Trials - The Rationale, Current Practices, and Future Considerations

All Day Room: AI Community, Learning Center Digital Education Exhibit

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TEACHING POINTS

- Radiomics involves deep quantitative analysis of radiological images for structural and/or functional information. - It is a phenomic assessment of disease to understand lesion microstructure, microenvironment and molecular/cellular function. - In oncology, it helps us accurately classify, stratify and prognosticate tumors based on if, how and when they transform, infiltrate, involute or metastasize, - Utilizing radiomics in clinical trials is exploratory, and not an established end-point. - Integrating radiomics in an imaging-based clinical trials involves a streamlined workflow to handle large datasets, robust platforms to accommodate machine learning calculations, and seamless incorporation of derived insights into outcomes matrix.

TABLE OF CONTENTS/OUTLINE

-Introduction; -What is Radiomics; -Images as datasets; --Human vs. Computational interpretation; -What's there to find? --Lesion signature; --Microstructure/microenvironment; --Molecular function; --Disease behavior profiles; -Why do we care? --Disease stratification; --Disease prognostication; --Therapy response prediction & assessment; -Translational radiomics; --Conceptualization--Computational considerations - Data extraction, analysis, processing, utilization; --Trial design considerations; --Outcomes considerations - exploratory vs endpoint; -A Radiomics-ready future for Imaging trials