The Image Biomarker Standardization Initiative

A set of 169 radiomic features was standardized, which enabled verification and calibration of different radiomics software [1].

A study of Park et al. aimed to evaluate the quality of radiomics studies on brain metastases based on the radiomics quality score (RQS), (TRIPOD) Transparent reporting of a multivariable prediction model for individual prognosis or diagnosis checklist, and The Image Biomarker Standardization Initiative (IBSI) guidelines.

PubMed MEDLINE, and EMBASE were searched for articles on radiomics for evaluating brain metastases, published until February 2021. Of the 572 articles, 29 relevant original research articles were included and evaluated according to the RQS, TRIPOD checklist, and IBSI guidelines.

External validation was performed in only three studies (10.3%). The median RQS was 3.0 (range, -6 to 12), with a low basic adherence rate of 50.0%. The adherence rate was low in comparison to the “gold standard” (10.3%), stating the potential clinical utility (10.3%), performing the cut-off analysis (3.4%), reporting calibration statistics (6.9%), and providing open science and data (3.4%). None of the studies involved test-retest or phantom studies, prospective studies, or cost-effectiveness analyses. The overall rate of adherence to the TRIPOD checklist was 60.3% and low for reporting title (3.4%), blind assessment of outcome (0%), description of the handling of missing data (0%), and presentation of the full prediction model (0%). The majority of studies lacked pre-processing steps, with bias-field correction, isovoxel resampling, skull stripping, and gray-level discretization performed in only six (20.7%), nine (31.0%), four (3.8%), and four (13.8%) studies, respectively.

Conclusion: The overall scientific and reporting quality of radiomics studies on brain metastases published during the study period was insufficient. Radiomics studies should adhere to the RQS, TRIPOD, and IBSI guidelines to facilitate the translation of radiomics into the clinical field [2]

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2)
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