

Comparing Accuracy of Semantic and Radiomics Features in Prognosis of Epidermal Growth Factor Receptor Mutation in Non-Small Cell Lung Cancer

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Abstract : Purpose: Non-small cell lung cancer (NSCLC) is the most common lung cancer type. Epidermal growth factor receptor (EGFR) mutation is the main reason which causes NSCLC. Computed tomography (CT) is used for diagnosis and prognosis of lung cancers because of low price and little invasion. Semantic analyses of qualitative CT features are based on visual evaluation by radiologist. However, the naked eye ability may not assess all image features. On the other hand, radiomics provides the opportunity of quantitative analyses for CT images features. The aim of this review study was comparing accuracy of semantic and radiomics features in prognosis of EGFR mutation in NSCLC. Methods: For this purpose, the keywords including: non-small cell lung cancer, epidermal growth factor receptor mutation, semantic, radiomics, feature, receiver operating characteristics curve (ROC) and area under curve (AUC) were searched in PubMed and Google Scholar. Totally 29 papers were reviewed and the AUC of ROC analyses for semantic and radiomics features were compared. Results: The results showed that the reported AUC amounts for semantic features (ground glass opacity, shape, margins, lesion density and presence or absence of air bronchogram, emphysema and pleural effusion) were %41-%79. For radiomics features (kurtosis, skewness, entropy, texture, standard deviation (SD) and wavelet) the AUC values were found %50-%86. Conclusions: In conclusion, the accuracy of radiomics analysis is a little higher than semantic in prognosis of EGFR mutation in NSCLC.

Keywords : lung cancer, radiomics, computer tomography, mutation

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