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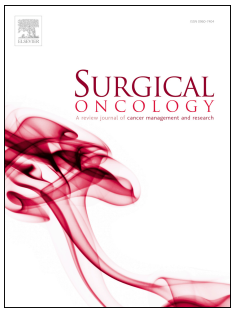

Overall survival prediction in glioblastoma multiforme patients from volumetric, shape and texture features using machine learning

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Overall survival prediction in glioblastoma multiforme patients from volumetric, shape and texture features using machine learning

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Abstract

Glioblatoma multiforme (GBM) are aggressive brain tumors, which lead to poor overall survival (OS) of patients. OS prediction of GBM patients provides useful information for surgical and treatment planning. Radiomics research attempts at predicting disease prognosis, thus providing beneficial information for personalized treatment from a variety of imaging features extracted from multiple MR images. In this study, MR image derived texture features, tumor shape and volumetric features, and patient age were obtained for 163 patients. OS group prediction was performed for both 2-class (short and long) and 3-class (short, medium and long) survival groups. Support vector machine classification based recursive feature elimination method was used to perform feature selection. The performance of the classification model was assessed using 5-fold cross-validation. The 2-class and 3-class OS group prediction accuracy obtained were 98.7% and 88.95% respectively. The shape features used in this work have

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