

APPARENT DIFFUSION COEFFICIENT(ADC) OF PERITUMORAL TISSUE IN DIFFERENTIATION OF BRAIN METASTASES FROM GLIOMAS

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Peritumoral edema of high grade gliomas represents a combination of neoplastic cell infiltration and vasogenic edema, while peritumoral edema of intracranial metastases is purely vasogenic. The aim of this study was to examine whether ADC can be used as a noninvasive parameter to distinguish peritumoral brain tissue in metastases from peritumoral tissue in cerebral gliomas.

A prospective study involved 71 patients, 22 with histologically proven intracranial metastases and 49 with gliomas. All patients underwent conventional MRI and DWI up to 7 days before undergoing surgery. ADC values were obtained in three regions of interest within peritumoral brain tissue and compared with the histopathological findings.

The mean minimum ADC values in the peritumoral regions of low grade gliomas were significantly higher (< 0.001) than those of high grade gliomas. The mean minimum ADC values in the peritumoral regions of metastases were significantly higher than those in high grade gliomas. The ADC values of peritumoral brain tissue of lung carcinoma metastases (0.000947 ± 0.000043 mm²/s), melanoma (0.000842 ± 0.000018 mm²/s) and breast metastases (0.000783 ± 0.000048 mm²/s) were significantly higher than the ADC values of peritumoral brain tissue of astrocytoma grade I (0.000775 ± 0.000013 mm²/s), grade II (0.000411 ± 0.000005 mm²/s), grade III (0.000121 ± 0.000004 mm²/s) and glioblastoma multiforme (0.000076 ± 0.000011 mm²/s).

The minimum ADC values of the peritumoral edema in brain metastases were significantly higher than those in gliomas. ADC values can provide additional diagnostic information for distinguishing gliomas from metastases.

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