

Bestes Poster

Analysis of the impact of fluorescence guided resection of cerebral metastasis

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Objective

Circumferential stripping of cerebral metastasis from the surrounding brain tissue and consecutive radiation therapy is the established therapy procedure. For patients with malignant glioma, tumour fluorescence derived from 5-aminolevulinic acid enables more complete resections of contrast-enhancing tumour, leading to improved progression-free survival. ALA-induced fluorescence has previously been reported for various carcinomas outside the CNS. Objective of the present study was an evaluation of the suitability of 5-ALA-fluorescence guided resection of cerebral metastasis

Methods:

20 patients with single brain metastasis were treated by 5-ALA fluorescent guided resection. Biopsies were taken from the centre and the periphery of the metastasis and for strongly fluorescent adjacent tissue suggesting a tumour rest, biopsies were taken. Fluorescence was determined for each probe as well as from the normal appearing adjacent tissue. Extirpated metastasis and biopsies underwent histopathological analysis of histopathology, morphology and differentiation were analysed morphology, differentiation, and invasiveness and correlated with fluorescence.

Results:

Eleven of 21 patients suffered from non-small cell bronchial carcinoma, 2 from rectum-cancer and 1 patient each from oesophagus-, ovarial-, mamma-cancer and malignant melanoma. 4 patients had a relapse after radiotherapy. For patients with the first tumour manifestation, 3 metastasis were sharply delimited from the brain, 13 expanded conically into the brain and 6 had an infiltrative growth pattern. For one patient, the growth pattern could not be determined. All tumours were of low differentiated. 17 metastasis showed 5-ALA-induced fluorescence, whereas 3 metastasis were ALA-negative (melanoma metastasis and two bronchial carcinoma metastasis). For patients with first manifestation of an ALA-positive metastasis a cerebral metastasis sensitivity was 1,0, and the specificity was 0,45. For patients with a previous radiation therapy, sensitivity was much lower (0,55) and all probes without tumour manifestation were ALA-positive. For the normal appearing but strongly fluorescent adjacent tissue, tumour was only present in 75% of all probes.

Conclusion:

ALA-fluorescent guided resection may be a tool for patients with the diagnosis of cerebral metastasis. This tool seems not be suitable for patients with a previous radiation therapy. After macroscopically complete resection, normal appearing but strongly fluorescent tissue showed tumour in 75% for patients with first manifestation of an ALA-positive metastasis. However, additional studies - also with quantification of ALA-fluorescence and a greater collective of patients - are needed for defining a clinical benefit.

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