ABSTRACT

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Proposal of a new grading system for meningioma resection: the Copenhagen Protocol.

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INTRODUCTION: The extent of meningioma resection is the most fundamental risk factor for recurrence, and exact knowledge of extent of resection is necessary for prognostication and for planning of adjuvant treatment. Currently used classifications are the EANO-grading and the Simpson grading. The former comprises radiological imaging with contrast-enhanced MRI and differentiation between "gross total removal" and "subtotal removal," while the latter comprises a five-tiered differentiation of the surgeon's impression of the extent of resection. The extent of resection of tumors is usually defined via analyses of resection margins but has until now not been implemented for meningiomas. PET/MRI imaging with 68Ga-DOTATOC allows more sensitive and specific imaging than MRI following surgery of meningiomas.

OBJECTIVE: To develop an objective grading system based on microscopic analyses of resection margins and sensitive radiological analyses to improve management of follow-up, adjuvant therapy, and prognostication of meningiomas. Based on the rationale of resection-margin analyses as gold standard and superior imaging performance of 68Ga DOTATOC PET, we propose "Copenhagen Grading" for meningiomas.

RESULTS: Copenhagen Grading was described for six pilot patients with examples of positive and negative findings on histopathology and DOTATOC PET scanning. The grading could be traceably implemented and parameters of grading appeared complementary. Copenhagen Grading is prospectively implemented as a clinical

standard at Rigshospitalet, Copenhagen.

CONCLUSION: Copenhagen Grading provided a comprehensive, logical, and reproducible definition of the extent of resection. It offers promise to be the most sensitive and specific imaging modality available for meningiomas. Clinical and cost-efficacy remain to be established during prospective implementation.

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