Acta Neurochir (2014) 156:2231
DOI 10.1007/s00701-014-2215-5

EDITORIAL

Intraoperative MRI in transsphenoidal surgery

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Received: 27 August 2014 / Accepted: 28 August 2014 / Published online: 14 September 2014

Over the years, several pre- and intraoperative diagnostic techniques have been introduced to optimize the results of transsphenoidal surgery for pituitary adenomas. Preoperative diagnostic measures routinely consist of a CT scan and an MRI of the sellar region for visualization of the paranasal sinuses and the tumor and for data acquisition for intraoperative measures such as neuronavigation and intraoperative MRI (iMRI); an endocrine workup; and in some instances blood sampling from the inferior petrosal sinuses with an associated venography. Intraoperative diagnostic measures may consist of fluoroscopy, neuronavigation, intraoperative ultrasound [3], intraoperative inferior petrosal sinus sampling [2], endoscopy, intraoperative frozen sections for histology, or iMRI. Currently, there are two different iMRI techniques in use: low-field iMRI and high-field iMRI.

The authors of this issue's contribution "Follow-up and long-term outcome of nonfunctioning pituitary adenoma operated by transsphenoidal surgery with intraoperative high-field magnetic resonance imaging"[1] are to be commended for sharing their experience with high-field iMRI. The authors present their impressive surgical experience with endocrine inactive- or non-functioning pituitary adenomas (NFA). In 85 of the more than 1,000 cases that have undergone transsphenoidal surgery at their institution, they have performed first-time surgery with the assistance of a high-field iMRI. In some of those patients, the authors have used intraoperative endoscopy in addition. Although the authors can draw from an extraordinary caseload, some questions remain unanswered. Why was high-field iMRI used in merely less than 10 % of the cases with first-time transsphenoidal surgery for NFA? Could this have anything to do with the fact that its use is rather time-consuming? Does high-field iMRI really add so much more information in comparison to low-field iMRI? Does this justify its use over the comparably easy and quick-to-use low-field iMRI? In addition, one last question remains: why was a lateral tumor extension of Knosp grades 3 and 4 or a sphenoidal tumor extension of modified Hardy- or Wilson-Hardy grades 3 and 4 present in merely less than 10 % of the patients with NFA who underwent first-time transsphenoidal surgery when this number is more than 40 % in another study dealing with iMRI [4] and when that percentage seems so much more convincing? In other words, may there have been a selection bias? Unfortunately, this potential limitation may have an impact on the validity of the study's results and its conclusions.

While there are several studies on the use of low-field and high-field iMRI in transsphenoidal surgery, there is no direct comparison of the two methods. This is understandable, since a department of neurosurgery is unlikely to purchase both machines. On the other hand, such a comparison would be of great interest. While the goal is always to improve the success rate of pituitary surgery, at the same time the intraoperative cost and expenditure should be kept reasonable.

Conflicts of interest None.

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