Editorial

Acoustics and hydrocephalus

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This retrospective study regarding management options in patients with hydrocephalus associated with vestibular schwannomas (VSs) comes from a center with a remarkably large surgical experience treating this tumor type.1 Their surgical technique has been exquisitely developed over many years, and is uniform among colleagues in their institution. They receive worldwide referrals and treat a greater than usual number of larger VSs. This helps to account for their significant experience with hydrocephalus in patients with this specific tumor; that is, larger tumors often present for a longer than usual period of time. Their consecutive series of 400 patients was collected over a 6-year period (an average of more than 66 cases per year). Their overall results with complete tumor removal and percentage of saved facial nerve function and general and functional outcome of surgery showed no correlation to the presence of preoperative hydrocephalus (obstructive or communicating), and CSF leakage would probably be similar to that reported herein. The authors emphasize the advantages of avoiding an EVD, but the desirability of this EVD approach in the patient who undergoes surgery in the recumbent position would be a less complex surgical procedure, with a better chance of total tumor removal, with sparing of critical cranial nerves.

This is not the type of evaluation that is compatible with the design of a prospective trial. Indeed, it is a report most appropriately summarized for clinical recommendations based on clinical experience. There continues to be an important place for such published reports, and the expectation of prospective or double-blind trials in this arena is inappropriate. That is the reason my editorial contains remarks based on clinical experience, and why the recommendations the authors make based on their own observations in their own unique environment are of great value. I seriously doubt that their proposed design of a prospective trial will be successful, particularly in light of their proposal to obtain lumbar CSF to measure protein levels both before and after tumor removal: obtaining CSF in a patient with a large posterior fossa tumor remains an unquestionably dangerous procedure.

References

Response

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The treatment of patients with VS-associated hydrocephalus should be individualized. Several factors have to be considered when making the decision on the optimal management, but the most important one is the clinical condition of the patient. In case of severe intracranial hypertension, an EVD should be inserted and the tumor surgery should be performed only after normalization of the intracranial hypertension. In case of less severe symptoms, the tumor is removed and the patients are observed closely; an EVD is required only if clinical deterioration, correlating with a persisting or increasing hydrocephalus, is seen.

The senior author’s (M.S.) surgical experience is not restricted to the semisitting position: in the period 1968–1973, he often used the supine and lateral positions. In the current study we included a series of 400 patients who underwent surgery in a single institution over a 6-year period (2001–2006), whose cases could be analyzed in detail. In the initial 3 years, however, the senior author was active in 2 further neurosurgical settings, with a similar number of VS surgeries performed annually. One of the main reasons to promote the semisitting position, besides the possibility to use the 3-hands technique for tumor removal, is better control of the ICP. If the patient undergoes operation in the lateral or supine position, the elevated ICP can render the surgery more difficult. We agree, therefore, that even in cases of moderately increased ICP, an EVD might contribute to the safety of surgery. This decision, however, should be made on a case-by-case basis. Patients with less severe or NPH-like symptoms do not necessarily need an EVD before surgery.

The crucial action that allows the surgeon to control the ICP is the early opening of the cerebellomedullary cistern and sufficient drainage of CSF. If the craniotomy is extended sufficiently in a basal and lateral direction, and the dural incision is extended basally, the cerebellum can be carefully elevated and the cistern can be accessed. This is possible even if the patient undergoes surgery in the supine or lateral position and has an increased ICP. In these positions, however, the angle of retraction should be changed repeatedly to allow the continuous egress of CSF throughout the surgery.

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