2014

One hundred thirty-one surgically managed patients with cystic vestibular schwannomas (CVSs) were age, sex, and tumor size matched to 131 surgically managed patients with solid vestibular schwannomas (SVSs). Demographics, tumor morphology, surgical approach, extent of resection, facial and nonfacial complications, and recurrence rates were compared between the 2 groups. Subtotal removal was defined as removal of at least 95% of the tumor.

The mean maximal tumor diameter was 2.8 cm for both groups. For CVS, gross total tumor resection (GTR) was achieved in 92 patients (70.2%), and subtotal tumor resection (STR) was achieved in 39 patients (29.8%). Postoperative facial nerve outcomes at 1-year follow-up were good (HB Grade I-III) in 116 (88.5%) of 131 CVS patients. Twenty-three patients developed nonfacial nerve-related complications (17.6%). For SVS, GTR was achieved in 102 patients (77.9%), and STR was achieved in 29 patients (22.1%). Postoperative facial nerve outcomes at 1-year follow-up were good (HB Grade I-III) in 118 (90.1%) of 131 SVS patients. Nonfacial nerve related complications occurred in 14 patients (10.7%). None of the differences in outcome between the 2 groups were statistically significant.

The difference in surgical outcomes is minimal between patients with CVS and those with SVS, not reaching statistical significance. We think, with judicious surgical management, similar outcomes can be achieved in cystic tumors and solid tumors [1)].

Thirty-seven consecutive patients matched the inclusive criteria. The whole pool of solid vestibular schwannomas with similar tumor extension was used as a control group. The facial nerve outcome is reported early after surgery and after 1-year follow-up. Facial nerve palsy GI-III according to House-Brackmann grading system was considered a favorable outcome. Facial nerve palsy GIV-VI was considered unfavorable. The surgical morbidity in the 2 groups was compared. A special point of interest was the correlation between the cyst pattern and outcome.

Cystic vestibular schwannomas are associated with a worse early facial nerve outcome (unfavorable in 37.8% in cystic vestibular schwannoma compared with 17.5% in the solid variant). After 1-year follow-up, 8.1% of the cystic variant had unfavorable facial nerve outcome. Meanwhile, 6.2% of the solid variant had unfavorable outcomes. There was no statistically significant difference between both groups regarding the long-term facial nerve outcome. The cystic variant had a greater postoperative morbidity rates, especially hemorrhage (8.1%), in comparison with solid vestibular schwannoma of the same extension (1.7%). Hydrocephalus without significant hematoma is also significantly greater in the cystic type than the solid variant. Medially located thin walled cysts are related to worse facial nerve outcome.

Surgery of cystic vestibular schwannomas is associated with a greater rate of morbidity and facial nerve dysfunction compared with the solid variant. Special attention is required during facial dissection to allow functional preservation, especially with tumors with medially located thin walled cysts. Meticulous hemostasis also is required to avoid postoperative hematoma. Close postoperative care is mandatory for early detection and prompt management of possible postoperative complications [2)].

2013

Surgical outcome of 36 patients with large cystic VS was retrospectively assessed, and compared with a group of 67 patients with large solid VS.

The anatomical integrity of the facial nerve was preserved in 88.9% of cystic group patients and in 92.5% of solid group patients. At 1 year after surgery, 75.8% of the patients with cystic VSs had favorable facial nerve function and 24.2% had poor function. There was no significant difference in facial nerve outcomes between cystic and solid tumors. When the cyst wall was closely adherent to the facial nerve, near total or subtotal resection was associated with a better facial nerve outcome compared to total excision ($P < 0.05$).

In most cystic VS patients, favorable facial nerve function can be attained by surgical treatment via retrosigmoid approach. Special care should be taken to remove entire cystic VSs as well as partial cystic VSs with anterior or medial located cysts. When a dissection plane cannot be developed between the cyst wall and the facial nerve, near total or subtotal resection is of benefit for facial nerve function [3].

2005

In 22 patients with cystic acoustic neuroma, a the end of surgery, the facial nerve was anatomically intact in 86.4% of cystic acoustic neuromas. Complete removal of the tumor was achieved in 18 cases (81.8%) [4].

2004

Among 1000 consecutive patients who underwent Gamma Knife surgery in Marseilles, France between July 1992 and January 2002, there were 54 patients with cystic VS at the time of treatment.

The median follow-up of this group was 26 Months (mean: 33, range: 6-90). Failure (6.4%) led to microsurgical removal in 2 patients and a radiosurgery in 1 patient with a delay of 2 Years for 2 of them and 3 Years for the third. No facial palsy has been reported. Two patients developed transient hypesthesia. Among the 32 patients with functional hearing at the time of treatment, 53% preserved their hearing function at 3 Years.

There was an increased risk of failure in this group compared to patients with no cyst at time of radiosurgery (93.6% instead of 98%). But this is also a group were we observe most dramatic shrinkage. Prudent radiosurgical treatment of cystic vestibular schwannomas remains mandatory: strict follow-up is specially important [5].

2003

Twenty-two patients with cystic acoustic neuromas were diagnosed by CT and MRI preoperatively, and the tumors were resected by retrosigmoid approach, and verified by pathological studies.

Of the 22 patients, 18 had tumors totally resected (postoperative house Brackman facial nerve grading: grade II in 4 patients, III in 7, IV in 3, V in 2, VI in 2) and 4 had tumors subtotally resected.

Because of its specific clinical features and poor operative results, cystic acoustic neuroma should be regarded as a specific subtype [6].

2000

In 65 patients treated with fractionated SRT between 1991 and 1999, 20 were diagnosed with cystic VS, in which at least one-third of the tumor volume was a cystic component on magnetic resonance imaging (MRI), and 45 were diagnosed with solid VS. Thirty-six Gy to 50 Gy in 20-25 fractions was administered to the isocenter and approximately 80% of the periphery of the tumor. All cystic and solid components were included in the gross tumor volume. The mean follow-up period was 37 months, ranging from 6 to 97 months.

The actuarial 3-year rate of no episode of enlargement greater than 2.0 mm was 55% for cystic-type and 75% for solid-type VS; the difference was statistically significant ($p = 0.023$). The actuarial 3-year tumor-reduction (reduction in tumor size greater than 2.0 mm) rates were 93% and 31%, respectively ($p = 0.0006$). The overall actuarial tumor control rate (no tumor growth greater than 2. 0 mm after 2 years or no requirement of salvage surgery) was 92% at 5 years in 44 patients with a follow-up period of 2 or more years. There was no difference in the class hearing preservation rate between cystic VS and solid VS. No permanent trigeminal or facial nerve palsy was observed in either group.

Transient tumor enlargement occurs in cystic VS more frequently than in solid-type VS, but the subsequent tumor-reduction rate in cystic VS is better [7].

1996

14 cystic (13.5% of 104 cases) in the last 17 years. Computerized tomographic or magnetic resonance images allowed for the classification of these cystic ANs into three types: Type A being large single cysts with a thin tumourous wall (7 cases); type B single cysts with a thick tumourous wall (3 cases); type C multicystic (4 cases). Half of the cystic ANs were not accompanied by enlargement of the internal auditory canal, despite the largeness of the cysts. The mean size of the tumours was 29 mm in diameter. Type A cysts had a shorter clinical history than types B and C. One patient had intact hearing. In five cases, an atypical initial symptom such as facial pain, dysgeusia, facial palsy, unsteadiness or vertigo presented. The trigeminal nerve was involved in 12 cases, the facial nerve in nine. The characteristic features of cystic ANs are largeness of the tumour, a short clinical history, an atypical initial symptom, facial nerve involvement, and/or no enlargement of the internal auditory canal. In addition, the histological features are a lobular growth pattern, high nuclear atypia, and numerous macro phages [8].

Six cases of acoustic neurinomas with macrocystic components are presented. In three cases the cystic portion was within the tumor, while in the other three, the cyst was peritumoral, in the form of a cul-de-sac within the arachnoid, in other words it was not a true tumor cyst. The six tumors are from a series of 74 acoustic neurinomas treated by radiosurgery with a minimum follow-up of 18 months. In all cases, enlargement of the associated cyst was observed as early as 4 months after radiosurgery. Clinical signs and symptoms such as facial weakness, trigeminal symptoms, vertigo and dizziness and coordination disorders developed between 4 and 8 months. In three cases (two intramural cysts and one combined peri- and intramural cyst), subacute microsurgery was performed to treat the

progression of neurological symptoms. One case had spontaneous rupture of an intramural cyst, one case of a peritumoral cyst, after progression showed a slow spontaneous size decrease after 2 years, and one case is still under observation. In the reported series, the dose at the tumor margin ranged between 11 and 17 Gy (mean 13.8 +/- 2.5 [SD] Gy) and the maximal dose between 24 and 40 Gy (mean 30.6 +/- 6.2 Gy). In view of the findings in this study, one should perhaps be cautious in advising radiosurgery for this subgroup of acoustic tumors [9].

1994

23 patients (11 female and 12 male). Ages ranged between 23 and 77 years with a median of 51.2 years.

The results are rather poor compared with results achieved in surgery of noncystic tumors of matching size, particularly the poor postoperative facial nerve function.

Even though the operation for a cystic acoustic neuroma may appear to be easier and faster than the operation for a solid tumor, there is a high risk for accidental lesion of the facial nerve, in spite of using facial nerve monitoring. Rapid symptomatic worsening may occur due to sudden expansion of cystic elements and, therefore, a wait-and-see policy should not be applied to patients with cystic tumors (Charabi S, Tos M, Børgesen SE, Thomsen J. Cystic acoustic neuromas. Results of translabyrinthine surgery. Arch Otolaryngol Head Neck Surg. 1994 Dec;120(12):1333-8. PubMed PMID: 7980897.()).

1991

Three cases with large space-occupying cysts in the cerebellopontine angle are reported. CT and MRI findings were not typical for acoustic schwannomas but at operation, besides the large cysts, small acoustic schwannomas could be detected and removed. The clinical and neuroradiological features of this unusual variety and the CT and MRI differential diagnosis of cerebellopontine angle lesions are discussed [10].

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