ABSTRACT

Vestibular Schwannoma (VS) account for 5-6% of all intracranial tumours. Historically, these benign tumours have been treated by microsurgical (MS) excision via the middle fossa, posterior fossa (hearing preservation) or translabyrinthine (hearing destructive) approaches. There is increasing evidence in the literature from retrospective case series and prospective longitudinal studies favouring a more conservative approach, with Stereotactic Radiosurgery (SRS) being reserved for tumours <30mm showing radiological signs of growth.1,2

In our Skull Base unit, VS over 30 mm at presentation are offered primary surgery but the majority of tumours measuring <30mm have their growth monitored by interval imaging with serial Magnetic Resonance Imaging (MRI) of the internal acoustic meatus and cerebellopontine angles or Computed Tomography (CT) if there are any contraindications to MRI. Treatment (microsurgery or SRS) are offered to patients whose tumours are growing significantly.

METHODS AND MATERIALS

A prospective database of consecutive patients diagnosed with sporadic unilateral VS and referred to the Skull Base unit in South Glasgow, United Kingdom, over the last 20 years was retrospectively reviewed. Patients with Neurofibromatosis type (NF) II were excluded. Patients who consented to being managed conservatively by initial interval imaging (II) using 6-monthly axial T2-weighted post-gadolinium MRI for the first year followed by annual scans had the growth of their VS assessed.

The tumour growth was measured by serial MR imaging using the American Academy of Otolaryngology-Head Neck Surgery criteria. In our study, significant growth, defined as >1 mm radiological change in size per annum, was the primary outcome measure.

RESULTS

Follow-up was defined as the duration of time between the first and the last MRI scan.

The natural history of VS shows a growth rate of 0.3-3.9mm/year, a tendency to double in volume in 1.65 to 4.4 years. In Raut’s series, mean tumour growth was 1mm/year (range -0.84 to 9.65mm/year); CPA tumours tend to grow faster than IC ones. A systematic review by Yoshimoto including 26 studies with a total of 1340 patients reported that 46% of VS grew and 8% regressed. There was a mean growth rate of 1.2mm/year. Our cohort demonstrate a growth rate on par with the literature.

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The quality of life (QoL) of 50 VS patients from our cohort, managed by II, was assessed using the short form 36 (SF36) health questionnaire. Fifty age- and sex-matched controls attending a general otolaryngology clinic with similar otologic symptoms consented to complete the SF36.

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DISCUSSION

The QoL of the VS patients managed conservatively and the controls were comparable across all 8 domains of the SF36. These results have been previously published by the senior author of this study.

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A retrospective study in Australia demonstrated that although 21% of VS managed conservatively demonstrated growth, only 18.7% required intervention. Yoshimoto mirrors this result (18%). In addition, 10% of VS regressed. Spontaneous involution was observed in 5.3% of VS in our cohort. This phenomenon described in the literature may represent the tumour outgrowing its own blood supply.

Retrospective studies have demonstrated comparable QoL in groups of patients managed by SRS and II. Advocates of SRS argue that SRS leads to higher tumour reduction, long term control and improved serviceable hearing preservation compared to II. These claims are mirrored in a recent systematic review of controlled studies showing that SRS was best practice for solitary VS measuring <30mm. However only 4 studies met the review criteria and all of them being level III or level IV evidence.

CONCLUSIONS

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CONCLUSIONS

III is a desirable alternative to SRS or the traditional MS excision to maintain quality of life. All patients with a VS size of <20 mm should initially be offered conservative management with interval imaging. Patients with a VS size of 20-30 mm should be considered III depending on symptoms. Follow-up with complete oto-neurological examination and serial MRI is mandatory if conservative management is to be adopted in order to identify those with significant radiological growth or deteriorating signs or symptoms.

REFERENCES

7. Kondziolka D, Mousavi SH, Kano H, Flickinger JC, Lunsford LD. The newly published version of the Otolaryngology-Head Neck Surgery criteria. In our study, significant growth, defined as >1 mm radiological change in size per annum, was the primary outcome measure.