

# Incidence of Acoustic Neuroma in Malta

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## Introduction

Vestibular schwannoma, also known as acoustic neuroma, is an uncommon entity, with incidence estimated at 1 in 100,000 individuals.<sup>1-2</sup> They make up 8% of all intracranial tumours, but around 80% of all cerebello-pontine angle growths.<sup>3</sup>

These lesions usually present with a mix of asymmetrical hearing loss, occasionally acute, tinnitus, vertigo and unsteadiness, which occur due to compression of the vestibulocochlear nerve directly or pressure on its blood supply.

The main concern with these benign tumours is the pressure on surrounding structures.

This study was performed to have a picture of the incidence of vestibular schwannomas in Malta.

## Method

Review of the reports of MRIs of the Internal Auditory Meatus (MRIAM) performed between 2009 and 2016 in Mater Dei Hospital (MDH), the main hospital in Malta was done and findings of acoustic neuroma recorded.

For the years 2000 until 2008, no reliable electronic records of MRIs performed are available. The records of patients referred for treatment to specialist centres in the UK were accessed and the patients referred for management of acoustic neuroma included.

These records were also used to find any patients discovered by MRI brain which were not investigated by MRIAMs.

## Results

In all, 76 new cases of acoustic neuroma were found over 17 years.

4.5 new cases per year were discovered on average, which results in an incidence of 1.1 per 100,000.

The age range of the cases was from 20 to 81 years, with a median age of 57 and mean age of 54.6 years.

37 were males and 39 females.

## Discussion

The incidence of 1.1 per 100,000 is similar to that found in other studies.<sup>4-5</sup>

A slight female preponderance was found, which is similar to the findings of similar studies which found a greater percentage of females affected by vestibular schwannoma.<sup>6,7</sup> The average ages affected were similar to those reported in other studies.<sup>6,7</sup>

The number of acoustic neuromas discovered have gradually increased over the years, 43 of the cases were discovered in the years 2012 - 2016, while only 33 were discovered in the previous 12 years. This might be due to the increasing availability and use of MRI.

Limitations of this study include the relatively small number of cases when compared to other similar studies. Due to the small population of Malta, this can only be mitigated by increasing the number of years included in the study.

Another limitation of this study is that cases of acoustic neuroma which were not investigated by MRIAM in Mater Dei Hospital and/or referred for treatment abroad were not included in this study.

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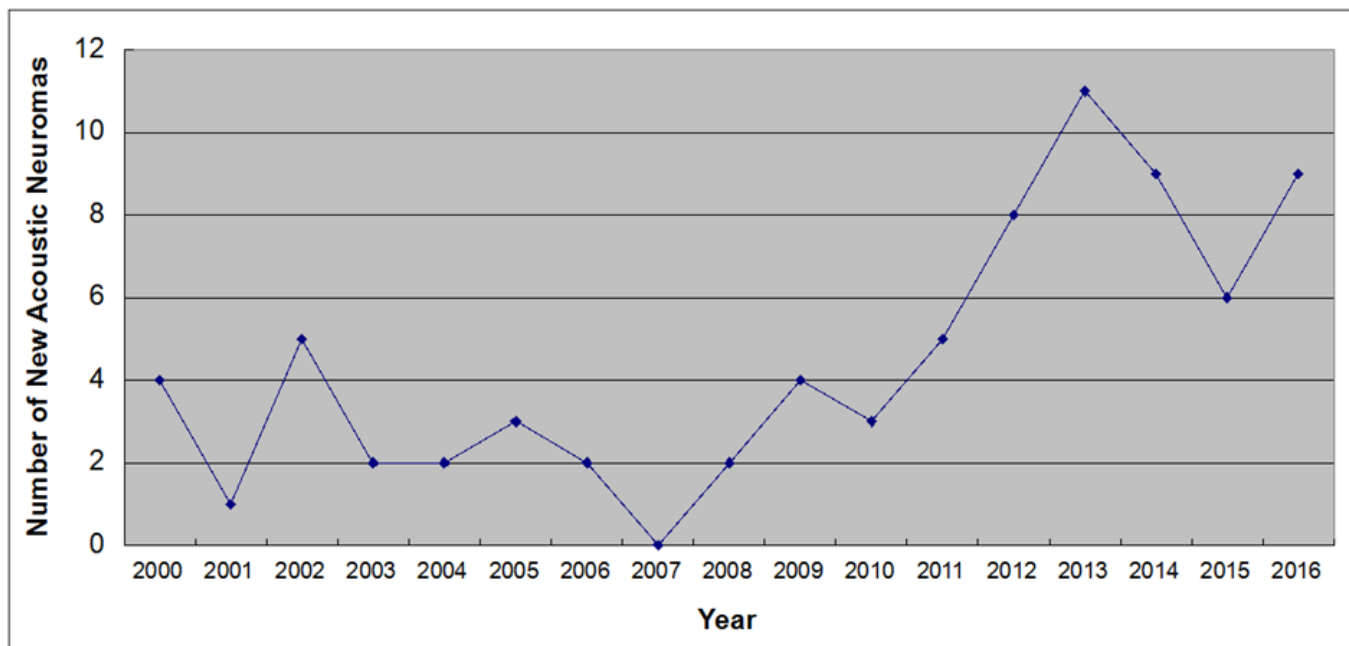
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This might have resulted in missing a small number of cases of acoustic neuroma discovered in private hospitals and acoustic neuromas discovered by MR head which did not have a subsequent MRIAMs and were not referred for management abroad.

**Conclusion**

This is the first such study investigating the incidence of acoustic neuroma in Malta. An incidence similar to that found in other incidence studies performed in Europe and the US was found. In spite of the limitations of the study, it is a good picture of the epidemiology of acoustic neuroma in Malta.

*Figure 1. Number of Newly Diagnosed Acoustic Neuromas per Year*



*Table 1. Number of Newly Discovered Acoustic Neuromas from 2000 to 2016*

Year	Number of Cases Discovered
2000	4
2001	1
2002	5
2003	2
2004	2
2005	3
2006	2
2007	0
2008	2
2009	4
2010	3
2011	5
2012	8
2013	11
2014	9
2015	6
2016	9

References

1. Penner M. Linking spontaneous otoacoustic emissions and tinnitus. *Br J Audiol.* 1992; 26:115–23.
2. Gal T, Shinn J, Huang B.. Current epidemiology and management trends in acoustic neuroma. *Otolaryngol Head Neck Surg.* 2010; 142(5):677-81.
3. Coles R. Epidemiology, aetiology and classification. In: Reich GE, Vernon JA, editors. *Proceedings of the Fifth International Tinnitus Seminar, 1995, Portland, OR, U.S.A.* Portland (OR): American Tinnitus Association. 1996; p. 25–30.
4. Stangerup S, Tos M, Thomsen J, Caye-Thomasen P. True incidence of vestibular schwannoma? *Neurosurgery.* 2010; 67(5):1335-40;
5. Babu R, Sharma R, Bagley J, Hatef J, Friedman A, Adamson C. Vestibular schwannomas in the modern era: epidemiology, treatment trends, and disparities in management. *J Neurosurg.* 2013.;119(1):121-30.
6. Howitz M, Johansen C, Tos M, Charabi S, Olsen J. Incidence of vestibular schwannoma in Denmark, 1977-1995. *Am J Otol.* 2000; 21:690–694.
7. Propp J, McCarthy B, Davis F, Preston-Martin S. Descriptive epidemiology of vestibular schwannomas. *Neuro Oncol.* 2006; 8:1–11.