

Vestibular Schwannoma Screening Guidelines: Change in our practise. An audit loop

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Citation

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Abstract

Clinical audit is the review of clinical performance, refining the clinical practice as a result and the measurement of performance against standards – a cyclical process of improving the quality of clinical care. Royal Gwent Hospital did not have written guidelines for requesting MRI scan in clinically suspected Vestibular Schwannoma patients. Northern Regional Guidelines were introduced for requesting Magnetic Resonance Scans in such patients. Scan requests were looked into retrospectively and then prospectively after introducing the guidelines, and our compliance with the guidelines compared. There was reduction in the number of inappropriate scan requests after introduction of the guidelines. Interesting findings were that number of scan requests increased and the pick up rates of Vestibular Schwannoma decreased during this period.

INTRODUCTION

Vestibular Schwannoma is a benign tumour of the 8th cranial nerve, usually arising from the inferior division of the Vestibular nerve. It presents with wide range of symptoms such as asymmetrical sensorineural hearing loss, unilateral tinnitus, cranial nerve palsy, meniere's symptom triad, and cerebellar compressing symptoms and on occasions as surprises.

Gadolinium enhanced MRI scans of internal auditory meatus is recognised as the current "gold standard" and cost effective investigation of choice for tumour detection, being able to detect tumours as small as 4mm in diameter [1] [2].

The falling costs of MRI compared to screening batteries have led to recommendation that it should be used as the sole investigation [2].

Northern Regional Guidelines were introduced by Northern and Yorkshire regional hospitals. These guidelines were followed and audit loop was conducted between 1994 and 1998, at the Sunderland Royal Hospital [3]. The out come of their audit was significant, and results published, which was comparable to other results.

OBJECTIVES

Aim of this audit was to follow set guidelines for requesting MRI scans in clinically suspected vestibular schwannoma patients. Royal Gwent Hospital in Newport is the busiest

district general hospital in South Wales, serving a population of 600,000 populations.

STANDARD

Northern Regional Guidelines [3]

- Asymmetrical sensorineural hearing loss of 20dB or greater at two adjacent frequencies – even if there is another accountable cause
- Unilateral tinnitus – even if no asymmetry on the audiogram
- Meniere's symptom triad
- Long- standing asymmetrical sensorineural hearing loss
- Asymmetric sensorineural loss less than 20dB at adjacent frequencies with accompanying neurological signs
- Sudden sensorineural hearing loss

Note: Claustrophobic patients will undergo ABR/ CT

METHODS

Primary audit was performed in June 2002. All MRI scans of Internal Auditory meatus were retrieved from radiology department for the period 1998 to 2001. The MRI reports

and patient notes were retrieved from the medical records. Primary audit was to compare our compliance with the Northern Regional Guidelines. 605 MRI scans were requested between 1998 and 2001. Requests were compared with the guidelines and out come reported.

Northern Regional Guidelines were then introduced for requesting MRI scans in clinically suspected vestibular schwannoma patients. Guidelines were exhibited in all consultancy rooms and were discussed with the radiology team.

Re audit was conducted in May 2004. Total of 353 scans were requested between 2002 and 2004. These scan requests were retrieved from the radiology department and the department of medical records. Our compliance with the guidelines increased during this period.

RESULTS

During the period 1998 and 2001, 605 MRI scans of internal auditory meatus were requested, i.e. approximately 151 scan per year. The scans were requested by all grades of ENT surgeons, from consultants, registrars to senior house officers. 12 scan requests were positive for vestibular schwannoma. Our pick up rates for the period was 3.0% and this was comparative to other published results. The requests for these scan were all complying with the guidelines.

150 negative scans and the notes were reviewed. 120(80%) scan requests were within the guidelines (Table 1).

30(20%) scan requests did not comply with the guidelines (Table 2).

Figure 1

Table 1: Negative scans complying with the guidelines (Primary audit)

| Number of scans (120) 80% | Reason for referral |
|---------------------------|--|
| 83 | >20 dB asymmetrical sensorineural hearing loss at adjacent frequencies |
| 14 | Meniere's symptom triad |
| 16 | Unilateral tinnitus |
| 6 | Sudden sensorineural hearing loss |
| 1 | ?Canal dysplasia & long standing sensorineural hearing loss |

Figure 2

Table 2: Negative Scans did not comply with the guidelines (Primary audit)

| Number of scans (30) 20% | Reason for referral |
|--------------------------|---|
| 19 | < 20dB asymmetrical sensorineural hearing loss |
| 6 | 2 Khz dip |
| 3 | Conductive loss |
| 2 | Vertigo with family history of meniere's Syndrome |

After this arm of the audit, Northern regional guidelines were introduced to the department, and exhibited in all ENT consultancy rooms. This was discussed with the radiology team in the hospital.

Re audit was conducted in May 2004. 353 MRI scans of internal auditory meatus were requested between the period 2002 and 2003, i.e. approximately 176 scans per year. 20 patients who were claustrophobic did not have the scans and hence were excluded. 8 scan requests were positive for vestibular schwannoma. 4 scans were of a single patient who is followed up after stereo tactic radiotherapy treatment. 2 scans were follow up patients after surgery. There were 2 new cases during this period, with a pick up rate 1.0 % (incidence). The requests for these scans were complying with the guidelines.

202 negative scan requests and notes were retrieved.

191(95%) requests complied with the guidelines (Table 3).

11(5%) requests did not comply with the guidelines (Table 4).

Figure 3

Table 3: Negative scans complying with the guidelines (Re audit)

| Number of scans (191) 95% | Reason for referral |
|---------------------------|---|
| 61 | > 20 dB asymmetrical sensorineural hearing loss at adjacent frequencies |
| 36 | Meniere's symptom triad |
| 55 | Unilateral tinnitus |
| 8 | Recurrent 7 th cranial nerve palsy |
| 15 | Vertigo and Tinnitus |

Figure 4

Table 4: Negative Scans did not comply with the guidelines (Re audit)

| Number of scans (11) 5% | Reason for referral |
|-------------------------|--|
| 9 | < 20dB asymmetrical sensorineural hearing loss |
| 2 | Asymmetrical conductive loss |

Table 5 Summarises the two audits and the loop

Figure 5

Table 5: comparing the audits

| Audit Period | 1998 to 2002 | 2003 to 2004 |
|--|--------------|-----------------|
| MRI scan requests | 605 | 353 |
| Number of scans per year | 151 | 176 |
| Positive scans | 12 | 8 (2 new cases) |
| Pick up rate | 3.0% | 1.0% |
| Number of negative scans and notes reviewed | 150 | 202 |
| Number of scan requests did not comply with the guidelines | 30(20%) | 11(5%) |

DISCUSSION

A good effective audit is one in which the present practice is evaluated, compared with the standard, if any and then bringing about change in the practice if necessary. Re – evaluation of the practice is an important component of an effective audit.

This audit is hence a complete cycle of an audit loop.

Screening for vestibular schwannoma is a significant burden in the modern otology and radiology departments. Modern imaging techniques and surgical expertise allows early detection to be followed, where appropriate, by surgical treatment or any other modality with low morbidity and mortality. The rewards of early diagnosis and treatment of Vestibular schwannoma to the patient and community has been well documented in the literature [4] . This has increased the pressure on the otologist to diagnose the condition at an early stage. Litigation has been another issue in this modern medical practice.

Screening and protocols are two different entities. Screening

guidelines are laid out statements which are flexible where as protocols are rigid statements.

There are various guidelines followed with regards to screening vestibular schwannoma patients. Differences in criteria's of asymmetrical sensorineural hearing loss between the ears still persist. Age has been the criteria in few of the guidelines, the upper limit being 70 years [5]. Asymmetrical noise induced hearing loss has been another controversial topic to scan the patient [6]. As mentioned earlier guidelines are flexible when put into practice.

Northern regional guidelines were introduced in the Northern regional hospitals 1995. The guidelines were followed, re audited and the findings published, hence taken as a standard in our practice.

Northern regional guidelines for requesting the scans were followed over 2 years time. Our previous requests were compared to these guidelines and reported.

Number of inappropriate scan requests reduced from 20% to 5% between the audit periods 2002 and 2004. The number of scans requests increased from 151 per year to 176 per year, which is noted in other similar published studies. The pick up rates (number of new cases) has reduced from 2% to 1% over this audit period. The question to be asked is to whether all of the possible patients are being screened in view of the decreased pick up rates. A further audit in 2 years would possibly reveal any missed cases and also our compliance with the guidelines.

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