Sudden sensorineural hearing loss and bedside phone testing:

a guide for primary care

INTRODUCTION

Sudden sensorineural hearing loss (SSNHL) should be considered an otological emergency yet often goes unrecognised. It can have debilitating long-term effects upon individuals, yet early treatment with steroids has been shown to be effective in helping recovery in what is a time-critical clinical scenario.

Recently published National Institute for Health and Care Excellence (NICE) guidelines indicate that the sudden onset of hearing loss in one or both ears, which is not explained by external or middle-ear causes, is an emergency.¹ The guidance states that sudden hearing loss that has developed within the past 30 days needs immediate referral for specialist assessment within 24 hours. If it has developed more than 30 days ago then urgent referral for specialist opinion is required within 2 weeks. While this may be considered ideal, the reality is that such rapid access is often impossible for GPs and ear, nose, and

throat (ENT) departments to organise, such that this guidance will prove impractical to many.

The aim of this article is to provide a sensible algorithm to help guide GPs to consider when to prescribe oral steroids to treat the SSNHL, as this is the time-critical aspect of care, such that starting treatment in the primary care setting is the most practical approach to helping the majority of patients. Subsequent assessment from an ENT referral will allow for non-urgent investigation and management.

DEMOGRAPHICS AND AETIOLOGY

It is estimated that between 1–6/5000 people suffer from this each year, though in reality the numbers may be considerably greater as it often goes undiagnosed.² The cause is not known in 70% of cases, with Box 1 outlining the common pathologies that can cause SSNHL.³

DIAGNOSIS

The history should determine the duration of symptoms, the side (unilateral or bilateral), other relevant associated features, and potential precipitating or causative factors (Box 1).

In most cases of conductive hearing loss (CHL), including otitis externa, wax, middle-ear fluid, and infection or tympanic membrane perforation, there will be positive findings on clinical examination. Otoscopy is therefore important as in most cases of SSNHL this will be normal. Formal audiological assessment is ideal yet is not available in most GP practices.

Tuning fork tests are simple and practical for the GP setting. In Weber's test the tuning fork is placed firmly on the midline of the head (top of cranium, forehead, or bridge of nose); sound will localise to the deaf ear in conductive cases and to the non-deaf ear in SSNHL. In conjunction with the otoscopic findings this helps to positively identify cases of SSNHL. However, tuning forks are often not readily available. For this reason;

Box 1. Causes of sudden sensorineural hearing loss

Cause	Diagnosis
Viral infection	Mumps, measles, rubella
Bacterial infection	Syphilis Lyme disease Meningitis Acute labyrinthitis
Trauma	Head injury Blast injury Barotrauma
Pharmacological	Ototoxic medication
Autoimmune	Wegener's granulomatosis
Central	Ischaemic (cerebrovascular event) Multiple sclerosis Cerebellopontine angle tumour
Other	Ménière's disease

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Figure 1. Sudden-onset hearing loss algorithm.
ENT = ear, nose, and throat. OD = once daily.
SNHL = sensorineural hearing loss TM = tympanic
membrane. URTI = upper respiratory tract
infection.

a prospective study was conducted that looked at applying the vibration function of a smartphone to perform a Weber's test as a readily available alternative to a tuning fork.

Data were collected on 74 adult patients post-middle-ear surgery. A Weber's test was performed at the bedside with both a traditional 256 Hz tuning fork and a vibrating smartphone. The Real Razor™ mobile application on silent vibration mode was used. The smartphone vibrates at a frequency of 163 Hz. The bottom corner of the smartphone was placed in the midline of the forehead. The patient was then asked whether the vibration lateralised to either ear. The results demonstrated >97% agreement between the two tests. The smartphone was shown to be a reliable and more accessible way of administering a Weber's test.

With this in mind, presented here is an algorithm to help GPs determine if the immediate administration of oral steroids is appropriate for a given case of sudden hearing loss (Figure 1).

MANAGEMENT

The time-critical treatment for SSNHL is the administration of steroids. This may be effective orally or when injected through the eardrum (intra-tympanic). In the primary care setting a short course of oral steroids (for example, prednisolone 1 mg/kg to a maximum 60 mg for 7 days)⁴ is recommended. Early treatment within 48 hours of onset of symptoms is ideal, while beyond 2 weeks it is considered no longer effective.

Asymmetrical sensorineural hearing loss will necessitate investigation (that is, to exclude a retro-cochlear lesion such as a vestibular schwannoma). Formal audiological assessment and a magnetic resonance imaging (MRI) scan is recommended such that ENT assessment will usually be required, but this becomes non-urgent in nature provided that steroids have been prescribed in a timely manner.

DISCUSSION

The authors believe that the urgency of treatment in SSNHL needs to be practically considered. Rapid access to full ENT services in the desired time-frames highlighted by NICE should remain the goal, but the reality is that many departments cannot offer this, such that many patients miss the crucial time period for effective treatment with steroids.

It is hoped that the algorithm should allow GPs to feel more confident in correctly identifying and initiating treatment for SSNHL. There are few scenarios where a 1-week short course of oral steroids is contraindicated and the risks associated with this treatment are few. The authors would argue that the potential advantage in restoring the hearing outweighs many concerns and there should be an attitude of 'Why should I NOT prescribe steroids?'

A smartphone can be a useful tool to assist with diagnosis for GPs, and, as well as hearing tests, it has widespread applications for ENT in the primary care setting, such as allowing image capture (useful for advice and guidance requests)⁵ and for tinnitus management.⁶

The data that support the findings of this study are available from the corresponding authors upon reasonable request.

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