Hearing impairment can occur at any age, and is usually associated with communication problems and reduced quality of life (Yueh et al, 2003; Chen, 1994; Arakelian, 1993). It occurs in some 5–20 people in 100,000 each year (Yoo et al, 1995), and in the US alone there are about 4,000 new cases each year (National Institute on Deafness and Other Communication Disorders, 2000).

While chronic hearing loss is related to old age, develops over time and is incurable, sudden hearing loss can appear at any age, develops quickly and in most cases is curable if identified and treated early (Nageris et al, 2004; Schattner et al, 2003). Nurses can have a central role in identifying these patients and referring them to treatment.

This study examines the personal and clinical characteristics of patients with sudden hearing loss.

Literature review
Sudden hearing loss, also called sudden deafness or Sudden Sensorineural Hearing Loss (SSNHL) is defined as a decrease of 30dB or more in the level of hearing, in at least three successive frequencies, that appears within several hours or a period of up to three days, in one or both ears (Isaacson and Vora, 2003; Schattner et al, 2003). To put this in context, 30dB is estimated at about half the volume produced in a normal conversation (National Institute on Deafness and Other Communication Disorders, 2000).

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Aim To examine the personal and clinical characteristics of patients suffering from sudden hearing loss.

Method The participants were 45 Israeli patients, and the data was collected retrospectively from their medical files.

Results In most cases the injury was sensory, and in one ear. The common symptom was tinnitus, followed by vertigo. In 20 per cent of the cases no preliminary signs were documented. As many as 60 per cent of the participants suffered from high levels of cholesterol. This finding might indicate a link between the events of hearing loss and patients’ vascular background. A total of 42 per cent of the participants delayed their appeal to treatment, despite the appearance of symptoms.

Conclusion A significant link was found between quick referral to treatment and recovery. The nurse holds a central role in identifying this group of patients and ensuring their referral to further treatment.

Although the reasons for hearing loss are generally known, the unique cause of sudden hearing loss is still unknown. However, there are several associated factors. The most common are viral infections such as influenza, parotitis, measles, rubella, and HIV; as well as bacterial infections, for example syphilis, tuberculosis, meningitis and pneumonia. Autotoxin medicines such as aminoglycosides can also damage the ear. Other causes are tumours such as lymphoma, trauma such as head injuries and autoimmune diseases such as lupus. Vascular disorders and conditions such as Ménière’s disease and hypothyroidism can also be responsible (Nageris et al, 2004; Schattner et al, 2003; Yueh et al, 2003; Van-Veelen, 2001).

There is evidence to suggest sudden hearing loss can be due to radiotherapy and chemotherapy (Van-Veelen, 2001; Chaimoff et al, 1999). The literature also reports sudden hearing loss following epileptic seizure that led to fractures of the temporal bone (Klemens et al, 2004) and after an intramuscular administration of chemotherapy.
penicillin (Escada et al, 2004). However, in most cases the literature reports the cause for sudden hearing loss as idiopathic (Nageris et al, 2004; Schattner et al, 2003; Yueh et al, 2003; Yoo et al, 1995).

Evidence suggests that some patients recover spontaneously within three days, while others take 1–2 weeks. In these cases the prognosis is largely dependent on prompt treatment following the appearance of the symptoms (Nageris et al, 2004; Schattner et al, 2003; NIDCD, 2000; Yoo et al, 1995).

Based on the evidence in the literature the research question was: what are the clinical and personal characteristics of patients suffering from sudden hearing loss?

Method
A descriptive retrospective approach was used and included clinical and demographic data collected from the medical files of 45 patients, admitted to one hospital in Israel during the past two years (2002–2004) with a diagnosis of sudden hearing loss. Due to the lack of an established research tool, a questionnaire was constructed based on the literature reviewed. Data analysis was conducted using descriptive statistics, and chi-square tests to examine the relation between categorical variables.

Findings
Personal data
The participants’ average age was 42.5 years (SD=1.61) with 55 per cent belonging to the 30–60 age group. Only 18 per cent were under 30, and the remaining 27 per cent were over 60. Half of the subjects were women, and half were men, most were married (70.45 per cent), with 2–5 children. Most were born in Israel (65.5 per cent), 18.2 per cent were born in former Soviet Union countries, and the remainder in other European and Asian countries (6.3 and 10 per cent respectively).

Clinical data
The type of hearing problem was sensory in all the cases, except one mechanical injury. Right ear problems were involved in 51 per cent of cases, 47 per cent were left ear only and two per cent had problems in both. The symptoms reported by the patients were tinnitus (41 per cent), vertigo (22 per cent), nystagmus (10 per cent), emesis and nausea (seven per cent), and 20 per cent had no description of accompanying symptoms (Fig 1).

Examination of the patients’ background conditions showed that 60 per cent of those diagnosed suffered from high levels of cholesterol, 24 per cent suffered from hypertension, 21 per cent from diabetes, 15 per cent from ischaemic heart disease, and 19 per cent from infections in the airways. Lower rates were associated with thyroid diseases, arthritis, contusions and traumas, tumours in the head and neck, and diving. Thirteen per cent of subjects had a previously reported event of sudden hearing loss (Fig 2, p36).

Treatment referral data
During the first three days following the emergence of the symptoms only 58 per cent of the subjects sought medical treatment and 42 per cent delayed their treatment up to two weeks, even though symptoms such as tinnitus, vertigo, emesis, nausea, and nystagmus emerged. The average period of hospitalisation was 5.11 days (SD=2).

Significant links were found between the time of referral to treatment and recovery ($\chi^2=4.66, p=0.001$). A tendency to a positive link between being male and the emergence of tinnitus was also found ($\chi^2=3.436, p=0.06$). No significant link was found between the time of referral for treatment and the symptoms or background conditions preceding the injury.

Discussion
The findings show that the age group most likely to suffer from sudden hearing loss is aged 30–60 years. The literature also suggests that although sudden hearing loss can appear at any age it is more common in this age group, but a possible reason is not suggested (NIDCD, 2000).

The findings of this research support those of earlier studies by showing that the most common problem was in one ear only (Schattner et al, 2003). Similarly, this study also agreed with the literature in finding that the most prevalent symptoms were tinnitus, which was mainly reported by men, and

**Key words** Sudden hearing loss • Personal and clinical characteristics • Nurse role

**References**


This article has been double-blind peer-reviewed.

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vertigo, which was reported by both genders. One-fifth of the subjects did not report any accompanying symptoms. This finding corresponds with earlier reports showing that some patients do not exhibit preliminary signs of hearing loss (Yoo et al, 1995).

However, unlike previous research, this study identified additional symptoms such as emesis, nausea and nystagmus, although at lower rates. The findings showed a significant link between quick referral and treatment and recovery. However, they also found that some patients delayed seeking medical help and disregarded the symptoms for several days.

The main background conditions identified in the study were, in descending order of prevalence: hypertension, diabetes, ischaemic heart disease, infections in the airways, autoimmune diseases, traumas and tumours. This is consistent with findings reported in the literature. In addition, the findings of this research show a small minority of patients with a previously reported sudden loss of hearing. This was not reported in previous studies.

The finding of a link between sudden hearing loss and high levels of cholesterol also concurs with earlier research. Suckfull (2002) suggested that cholesterol may be involved in sudden hearing loss due to vascular problems, as in cardiovascular diseases. He also remarked that, in these cases, patients treated with heparin responded better to treatment and recovered faster, compared with those treated with steroids only (Suckfull, 2002). In addition, Kojima et al (2001) reported that patients with sudden hearing loss accompanied by hyperlipidaemia improved as a result of a low-fat diet and antilipid medication.

Conclusion

Even though the current research was based on a small sample taken from one hospital, it is possible that these findings will increase awareness of sudden hearing loss and its characteristics. The findings are of benefit in identifying the population at risk, and highlight the need for quick referral to enable treatment.

Based on our findings, we recommend that the nursing assessment of patients with hearing loss should include the following questions:
- When did the hearing loss begin?
- Was it sudden, or gradual?
- Are there additional signs such as tinnitus or vertigo?
- What other conditions are part of the patient’s medical history?

Since nursing literature does not offer any description of the nurse’s role in relation to sudden hearing loss, we recommend, based on medical sources (NIDCD, 2000; Yoo et al 1995) and our own experience, that nursing interventions should include the following advice and care:
- Rest;
- Stool softeners;
- Prevention of stressful situations;
- Low-salt diet;
- Avoidance of alcohol and tobacco;
- Avoidance of blowing the nose;
- Raising the bed head.

It is also important to identify patients with sudden hearing loss and refer them as soon as possible for treatment to prevent the deterioration of their condition, and so improve recovery times.