



A cohort study of patients with tinnitus and sensorineural hearing loss in a Swedish population

Reza Zarenog, Torbjörn Ledin *

Division of Oto-Rhino-Laryngology, Department of Clinical and Experimental Medicine, Faculty of Health Sciences, Linköping University, Linköping, Sweden

ARTICLE INFO

Article history:

Received 24 October 2011

Accepted 5 May 2012

Available online 29 May 2012

Keywords:

Tinnitus

Sensorineural hearing loss

Hearing aids

Retrocochlear examinations

ABSTRACT

Objective: We aimed to describe a large cohort of patients with tinnitus and sensorineural hearing loss (SNHL) in Sweden, and also to explore the possibility of finding potential possible differences between various diagnoses within SNHL. It is also of great interest to see how a multidisciplinary team was used in the different subgroups and the frequency of hearing aids use in patients with tinnitus.

Methods: Medical records of all patients who had received the diagnosis SNHL in Östergötland County, Sweden between 2004 and 2007 were reviewed. Patients between 20 and 80 years with tinnitus and a pure tone average (PTA) lower than 70 dB HL were included in the study. Patients were excluded from the analyses if they had a cochlear implantation, middle ear disorders or had a hearing loss since birth or childhood. The investigators completed a form for each included patient, covering background facts, and audiograms taken at the yearly check up.

Results: Of a total 1672 patients' medical record review, 714 patients were included. The majority of patients (79%) were in the age group over 50 years. In male patients with bilateral tinnitus, the PTA for the left ear was significantly higher than for the right ear. The results regarding the configuration of hearing loss revealed that 555 patients (78%) had symmetric and 159 (22%) asymmetric hearing loss. Retrocochlear examinations were done in 372 patients and MRI was the most common examination.

In all patients, 400 had no hearing aids and out of those 220 had unilateral tinnitus and 180 patients had bilateral tinnitus. 219 patients had a PTA > 20 dB HL and did not have any hearing aid. Results demonstrated that the Stepped Care model was not used widely in the daily practice. In our study, patients with bilateral-, unilateral hearing loss or Mb Ménière were the most common patients included in the Stepped Care model.

Conclusion: In a large cohort of patients with SNHL and tinnitus, despite their hearing loss only 39% had hearing aids. It was observed that the medical record review often showed a lack of information about many background factors, such as; patients' general health condition, which could be a quality factor that needs improvement. Our results show that the Stepped Care model could be an effective option for providing a better access for tinnitus-focused treatment, although the number of patients in this study who were included in the Stepped Care model was low.

© 2012 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Tinnitus is a distressing otological disorder that may cause various somatic and psychological problems. The overall prevalence of tinnitus in the general adult population is about 10–15%, with 1–3% of the population having severe, distressing tinnitus [1].

Aging increases the prevalence of tinnitus [2] with the peak age range of patients with tinnitus being 40–70 years [3]. The American Tinnitus Association has reported a prevalence of 19%

in the American population, which increases with age and the degree of hearing impairment [4]. In addition to the age-related change in prevalence, tinnitus has been reported to be more prevalent in men than in women. This difference could be related to higher hearing thresholds in the male population [4]. Furthermore, unilateral tinnitus has been reported to be more common in the left ear [5,6].

Tinnitus patients often state that they experience hearing loss. This is usually a sensorineural impairment, cochlear or retrocochlear, and can be due to aging, being exposed to noise, or using ototoxic drugs etc. [2,7]. The diagnosis sensorineural hearing loss (SNHL) includes a variety of diagnoses such as: Mb Ménière, vestibular schwannoma, ototoxic damage, presbycusis, and sudden sensorineural hearing loss (sudden deafness).

* Corresponding author at: Division of Oto-Rhino-Laryngology, Department of Clinical and Experimental Medicine, Faculty of Health Sciences, Linköping University, University Hospital, SE 58183, Linköping, Sweden. Tel.: +46 10 1032526.

E-mail address: torbjorn.ledin@liu.se (T. Ledin).

Unilateral sensorineural hearing loss associated with tinnitus and/or vertigo can be a sign of a vestibular schwannoma. Thus, patients with asymmetric hearing loss and/or unilateral associated symptoms should undergo examinations to rule out a retro-cochlear cause. Such examinations can be auditory brainstem response audiometry (ABR) or magnetic resonance imaging (MRI). An MRI scan has been shown to be a cost effective method of investigation in patients with unilateral SNHL, tinnitus, and vertigo compared to ABR [8,9].

Amplification of sound using hearing aids can increase the level of neural activity, reducing the gap between the tinnitus and the background neural activity [10]. Hearing aids have been used for many years in patients suffering from tinnitus in combination with hearing impairment. Despite the obvious benefits of using hearing aids there are many patients with hearing loss who do not consider hearing aids as a treatment option [11]. The management of adults with tinnitus in the two ENT clinics in Östergötland County (population around 400,000) consists of a detailed evaluation before specific treatment routines are applied. A multidisciplinary team approach, using a team consisting of otolaryngologist, audiologist, psychologist, and a rehabilitation counselor, is used to meet the needs of the patient. The treatment strategy used is called the Stepped Care model. It contains an audiological consultation and hearing aid fitting, if a hearing loss is found (step 1), an information meeting (step 2), and cognitive behavioral therapy (CBT) or individual therapy by a psychologist (step 3). But unfortunately not all patients are brought into the system in this way. Some patients join the Stepped Care model after a visit to the ENT-doctor or while a hearing aids fitting is in progress.

Most prevalence studies have investigated each diagnosis within SNHL separately to see whether the presence of tinnitus is restricting the patients' life, and if there is a relationship between tinnitus and SNHL [12]. However, they have not addressed the findings in the whole SNHL group which is the more realistic situation that an ENT-clinic is there to meet. To our knowledge, there is no study that has examined possible differences in the prevalence of tinnitus between various diagnoses within SNHL.

The aim of this study is to describe a large cohort of patients with tinnitus and SNHL in Sweden, and also to analyze the potential differences in examination methods and treatment models in different subgroups.

2. Materials and methods

The investigation is a retrospective, descriptive study based on data from patients who sought care for tinnitus and hearing loss at the two ENT clinics in Östergötland County, Sweden during 2004–2007 and got a diagnostic code at the same time. The study is approved by the regional ethical review board in Linköping, Sweden (Dnr M214-07).

The time period was chosen because the multidisciplinary team started in 2004 and remained a complete team until the spring of 2008. A nurse and a physiotherapist left the team at that time which limited the possibilities to offer patients a complete set of treatment options.

Patients' hearing loss was classified as a unilateral hearing loss when one of the ears was within normal limits, i.e. pure tone average (PTA) was ≤ 20 dB HL, and the PTA of the other ear was >20 dB HL. Bilateral hearing loss was defined as a hearing loss where PTA for both ears was >20 dB HL and could either be symmetric or asymmetric hearing loss. A hearing loss was classified as an asymmetric hearing loss if the difference between the PTA for both ears was larger than 15 dB HL. All classifications were made at the first visit by the ENT-doctors, based on patients' audiograms. The investigators completed a form for each patient, covering background information, and audiograms taken at the

yearly check up. The background information contained data about the patient's tinnitus, vertigo, hearing loss, diagnosis, further audiological examinations, treatment of tinnitus, heredity for tinnitus, concomitant diseases and medication.

2.1. Inclusion and exclusion criteria

Medical records for all patients who had sought care for hearing problems during the study period and were diagnosed with sensorineural hearing loss were reviewed. Information from the ENT clinics' medical records occasionally did not contain the Audiologist information obtained in the clinics, thus additional information was collected from the patients audiology case records.

Patients between 20 and 80 years of age with tinnitus and a PTA lower than 70 dB HL were included in the study. In Östergötland, patients with a PTA > 70 dB HL could be candidates for cochlea implants (CI) and were thereby not included in this study. Because of their profound hearing loss, these patients have severe problems. Therefore, there are normally other rehabilitation plans that are developed and handled by the CI-team. Patients were excluded from the analyses if they had a CI, middle ear disorders, or a hearing loss since birth/childhood. Multi-handicapped patients and those who did not speak fluent Swedish and had an interpreter at the ENT visit were also excluded.

2.2. Statistics

Data were registered in Microsoft Office Excel. Distribution of patients between groups with two or more possible states was evaluated using Chi² test, and in the 2×2 case Yates' correction was used. Measurement variables were compared between groups with Student's *t*-test.

The level of significance was set at $p < 0.05$.

3. Results

3.1. Patient characteristics

Medical record review of total 1672 patients with SNHL demonstrated that 1175 (70%) patients also had tinnitus (Fig. 1). An additional 446 patients (27%) were excluded because they did not experience tinnitus. Information about the frequency of occurrence of tinnitus was missing for 51 patients (3%), and those patients were thereby excluded from the analyses. Out of 1175 patients with both SNHL and tinnitus, 461 patients (39%) were excluded because they had a PTA > 70 dB HL or had a cochlear implantation, middle ear disorders, hearing loss since birth/childhood, and/or could not speak fluent Swedish.

The remaining 714 patients had SNHL with tinnitus, and fulfilled the specific inclusion criteria. The group consisted of more male patients ($n = 388$; 54%) than female ($n = 326$; 46%). The difference was significant ($p = 0.02$). The majority of patients were older than 50 years (Table 1).

In patients with unilateral tinnitus, the prevalence of tinnitus in the left ear was higher ($p < 0.001$). In addition, the PTA for the left ear was significantly higher than for the right ear in male patients ($p = 0.01$) but not in females ($p = 0.45$). In all, 402 patients (56%) were diagnosed with bilateral SNHL, 151 (21%) with unilateral SNHL, and 161 (23%) with various diagnoses; 113 (16%) Mb Menière, 32 (4%) sudden sensorineural hearing loss (SSHL), 9 (1%) noise-induced SNHL, 5 (0.7%) presbycusis, and 2 (0.2%) cochlear otosclerosis. There was an absence of information about patients' vertigo in 47% of the medical records.

The characteristics data for patients with unilateral vs. bilateral tinnitus are described in Table 1. There were more men than

Download English Version:

<https://daneshyari.com/en/article/8755593>

Download Persian Version:

<https://daneshyari.com/article/8755593>

[Daneshyari.com](https://daneshyari.com)