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Clinical features of newly presenting cases of chronic otitis media

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Abstract
The clinical features of 58 consecutive patients presenting with a new case of chronic otitis media were prospectively collected over a 15-month period. Twenty-three ears had a keratin filled marginal or attic defect (14 with cholesteatoma), 20 had a self-clearing marginal or attic defect, and 21 had a central tympanic membrane perforation (including one cholesteatoma). Twenty patients (35 per cent) had an abnormal finding in the opposite ear. The patients' ages were dispersed over a wide range of age groups with a mean age of 34 years. Hearing loss was the most common presenting symptom (78 per cent), followed by otorrhoea (64 per cent). A significant proportion of patients denied any history of otorrhoea. Our findings should alert the clinician to suspecting a new case of COM in patients with hearing loss of any age, with, or without, a history of otorrhoea, regardless of their background ear history or the duration of their symptoms.

Key words: Otitis Media, Suppurative; Pathological Conditions; Signs and Symptoms

Introduction

Chronic otitis media (COM) represents the most advanced form of otitis media and may be defined as the presence in the middle ear of permanent or intractable pathological changes.[1] This definition encompasses cases of chronic suppurative otitis media (CSOM),[1] a term originally defined in the pre-antibiotic era as a persistent otorrhoea through a non-intact tympanic membrane, but subsequently understood to cover a much wider spectrum of chronic ear disease than the original defining term 'suppurative' would suggest.[2] Left untreated, COM may lead to progressive hearing loss and other serious complications, including facial nerve paralysis, vertigo, and intracranial sepsis.[3] Recognizing COM at an early stage is therefore important to prevent these complications. However, cases of COM may be associated with a long duration of symptoms before clinical presentation, and often occur on a background of recurrent acute otitis media and/or chronic secretory otitis media,[1,2,4,5] factors which may decrease the accuracy of retrospective studies in describing the precise timing of first clinical presentation of COM and the clinical features at this time. The purpose of our study, therefore, was to prospectively examine the clinical and epidemiological features of newly presenting cases of COM at the time of first clinical presentation.

Methods

Setting and subjects

Our study was a prospective population-based study, the setting of which was the ENT department at Waterford Regional Hospital, Ireland. This is the only ENT unit in the South-Eastern Health Board (SEHB) region in Ireland, an area with a population of 400 000. Most of this population will, therefore, have received all their ENT treatment in this unit, from where all their old notes are also readily accessible. The hospital also provides an ENT casualty service, which sees immediate referrals from general practitioners from throughout the Health Board region, as well as self-referred patients, so facilitating early assessment of patients with a variety of ear complaints. All patients normally resident in the SEHB region presenting to the ENT casualty or seen in out-patient clinics or as in-patient consults with a new case of COM during the period of the study were eligible for inclusion in the study.

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Design

The study was carried out prospectively over a 15-month period between January 1999 and March 2000. All new cases of COM presenting to the ENT unit in Waterford Regional Hospital during the period of the study were eligible for inclusion. Patients seen in out-patients clinics who had originally been seen at an outside clinic or at the ENT casualty prior to the commencement of the study were included only if this was within three months of the start of the study. An arbitrary cut-off of three months was chosen because this is the cut-off used by many authors to distinguish between acute and chronic otitis media.[2] All patients were examined using the operating microscope and most also underwent audiometric assessment. Their details were recorded on data sheets designed specifically for the study. At the conclusion of the study, all the patients' clinical notes, including old notes, were collected. Any patient found to have had the changes of COM previously documented or found to have originally presented prior to September 1998 was then excluded. The remainder of the cases were analysed with regard to the age and sex of the patients, the type of pathology with which they presented, their initial presenting symptoms, audiometric profiles, and their subsequent treatment.

Definition of a new case of chronic otitis media

For the purpose of our study, we defined COM in terms of the presence of permanent or irreversible middle-ear pathology.[1] The diagnosis of a new case therefore required clinical evidence of the presence of such pathological changes in ears in which these changes had never been previously diagnosed or documented. Such changes included cholesteatomas, marginal or attic retraction pockets with, or without, keratin accumulation and/or associated granulation tissue, and tympanic membrane perforations. The degree of attic retraction was grade IV[6] and the degree of pars tensa retraction grade IV[7] in all cases, with cases showing lesser degrees of retraction excluded. In the case of potentially reversible defects such as tympanic membrane perforations, we required either a history of symptoms exceeding three months or the documentation of the persistence of the defect at subsequent visits. This was done in order to exclude any case which may have represented acute otitis media. Cases of tympanic membrane atelectasis or suspected adhesive otitis media were excluded unless associated with clear-cut evidence of focal irreversible pathology (e.g. retraction pockets). This was to avoid any inconsistency arising because of difficulty in assessing whether or not adhesive otitis media was actually present in ears with retracted tympanic membranes without any focal retraction pocket. Any ear previously diagnosed as suffering from COM or previously operated on (excluding grommet insertion) was similarly excluded.

Results

Number of new cases collected

Altogether, data on a total of 82 patients was collected. Of these, 24 were subsequently excluded: seven were found to have initially presented prior to September 1998; eight had findings consistent with COM previously documented in their notes; three had previous otological surgery which was denied at presentation; in four cases it was impossible to rule out acute otitis media as a cause of their presentation; and in two cases it was impossible to rule out a neoplastic or other non-inflammatory pathology. This left a total of 58 definite new cases of COM collected over a 15-month period, with a new case of COM occurring in a total of 64 ears.

Nature of presenting pathology

The ears were divided into three groups depending on the nature of the presenting pathology. Group 1 comprised 23 ears (36 per cent) which had a marginal or attic defect or retraction pocket filled with keratin, of which 14 had a cholesteatoma (defined as the accumulation of keratin in the middle ear which could not be cleared or visually reached with a suction tip).[8] Group 2 comprised 20 ears (31 per cent) having a marginal or attic defect or retraction pocket without evidence of keratin accumulation, and group 3 comprised 21 ears (33 per cent) having a central pars tensa perforation of which one had a cholesteatoma (diagnosed at surgery). Altogether 43 (67 per cent) ears presented with attico-antral disease and 21 (33 per cent) ears presented with tubotympanic disease.[9] Cholesteatoma was seen occurring in just under a quarter of all ears (23 per cent). Twenty patients (35 per cent) had an abnormal finding in the opposite ear: eight had evidence of middle-ear effusion or tympanic membrane retraction; three ears had COM that had been previously diagnosed; six ears had a new case of COM; and three ears had previous surgery for COM.

Age and sex of patients

Twenty-nine patients were male and 29 were female. The ages of the patients at presentation were dispersed over a wide range of age groups (Figure 1). The mean age at presentation was 34 years, with a range of 11 months (with a central subtotal perforation) to 77 years. Of note, the ages of the 23 patients in group 1 (with keratin-filled retraction pockets or cholesteatoma) tended to be somewhat

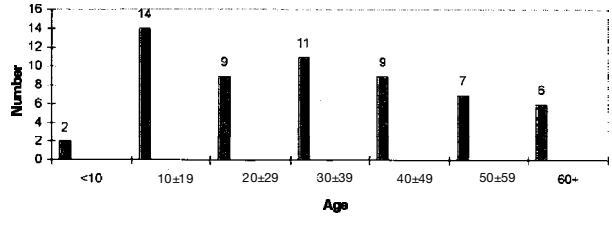

FIG. 1
Ages of patients with new cases of COM

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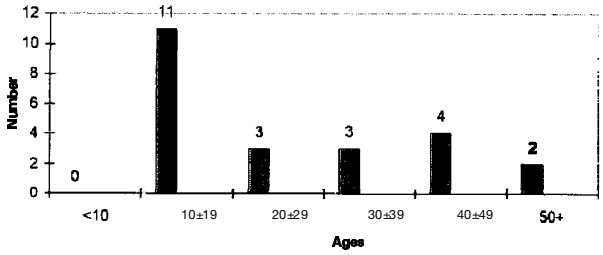

FIG. 2
Ages of patients with keratin-filled defects or cholesteatoma

younger with a mean of 27 years, with nearly half (11) of these patients less than 20 years old and only two older than 50 years (Figure 2).

Presenting symptoms

Figure 3 shows the symptoms of the new cases at presentation. The most common presenting symptom was hearing loss (78 per cent). Sixty-four per cent of patients gave a history of discharge at presentation. Of note was the finding that over one third (36 per cent) denied a history of discharge. Thirty-eight per cent of patients complained of otalgia, with other presenting symptoms including a sensation of blocked ears (14 per cent), aural bleeding, tinnitus, and dizziness (nine per cent each). There was a wide variation in the duration of symptoms before presentation, ranging from 10 days to 12 years, with a median of two years. Thirty-five per cent of patients gave a definite history of childhood ear infection. Figure 4 compares the presenting symptoms of the patients in group 1 (keratin-filled retraction pockets or cholesteatoma) with the rest of patients. Of note is the similarity in the relative frequency in the various presenting symptoms, with, if anything, fewer of these patients (57 per cent) giving a history of otorrhoea.

Audiology

Pure tone audiometry was performed on a total of 51 ears with a new case of COM, of which 21 ears were from group 1 (keratin-filled marginal or attic defects), 16 from group 2 (marginal or attic defects without keratin), and 14 from group 3 (central perforations). Hearing loss was expressed in terms of average hearing loss at pure tone frequencies (500 Hz, 1 kHz, 2 kHz). Hearing loss in group 1 ranged from normal hearing (two ears, 10 per cent) to 60 dB, with a mean of 36 dB. In group 2 hearing

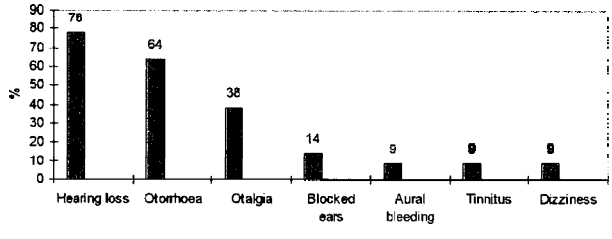

FIG. 3
Presenting symptoms of patients with new cases of COM

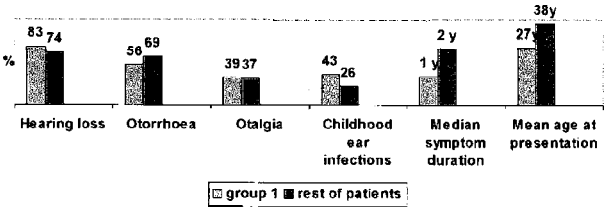

FIG. 4
Presenting features of patients in group 1

loss ranged from normal (two ears, 12.5 per cent) to 50 dB, with a mean of 30 dB, while in group 3 hearing loss ranged from less than 10 dB (three ears, 21 per cent) to 60 dB, with a mean of 30 dB. There was no significant difference in hearing levels between the groups.

Discussion

The purpose of our study was to describe the clinical and epidemiological features of new cases of COM in an Irish population at the time of first clinical presentation. However, cases of COM frequently demonstrate a long duration of symptoms before presentation, and often occur on a background of recurrent acute otitis media and/or chronic secretory otitis media.[1,2,4,5] In our study, we found a duration of symptoms before presentation of up to 12 years with a median of two years, and a history of recurrent ear infections in (earlier) childhood in 35 per cent of our subjects. Therefore, in order to define the precise timing of first presentation of cases with clear-cut COM, as well as describe the presenting symptoms, otoscopic findings, and audiometric profiles of these cases at this initial presentation, a prospective design, as we have used in our study, is necessary. Furthermore, in order to be able to describe the disease in the whole of the regional population, we endeavoured to include every new case of COM in this population. in this respect, our setting was appropriate, as Waterford Regional Hospital has the only ENT unit in the region. The presence of an ENT casualty also facilitated early assessment of patients with a variety of ear complaints, and, in fact, some new cases of COM were discovered among patients with vague complaints or even with specific requests for wax removal. Therefore, while the epidemiological and clinical features of cases of COM undergoing surgery have been previously reported,[4,10,11] this study is, to our knowledge, the first prospective survey on the presenting features of new cases of COM among all patients in a comparable entire area.

In performing the study, we endeavoured to ensure that we only included genuine cases of COM, demonstrating unequivocal clinical evidence of irreversible pathological change. Any case showing minor degrees of tympanic membrane retraction (fundus of retraction pocket visible), or without evidence of focal irreversible pathology, was excluded. Cases of suspected adhesive otitis media without evidence of focal pathology were generally excluded because of the difficulty distinguishing

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between cases of genuine adhesive otitis media and gross generalized retraction without adhesive otitis media. In addition, many such cases had severe retraction previously documented creating difficulty in determining whether or not such cases represented genuine new cases of COM. In order to exclude any case which may have represented acute otitis media, we required that any case presenting with potentially reversible pathological defects (e.g. central tympanic membrane perforations) with a history of symptoms of less than three months, had to have the persistence of their presenting pathology documented at subsequent visits. However, this is likely to have led us to exclude some genuine cases of COM as many patients, having received treatment, failed to attend for follow-up. Furthermore, in order to ensure that only genuinely new cases were included, we excluded any case where pathological changes consistent with COM had been previously documented. This included patients seen at a clinic for the first time during the period of the study but who had been seen at an outside clinic or ENT casualty more than three months prior to the commencement of the study and the pathological changes of COM noted, as the clinical features of such patients at the time of filling out the data sheet may no longer be reflective of newly presenting cases. Again, this is likely to have led us to exclude some cases in which the diagnosis of COM only became apparent during the period of study. Therefore, while the number of new cases collected over the 15-month period of the study would suggest an incidence of new cases of COM in our region of 11.5 per 100 000, and an incidence of cholesteatoma of three per 100 000, the unavoidable exclusion of some genuine new cases of COM, as well as the possibility of there being a certain number of patients who were either missed by the study or who presented in a different Health Board area, is likely to mean that these figures represent an underestimate of the true figures. Nevertheless, these figures are not inconsistent with previously published figures for the overall prevalence of COM (general prevalence of active COM in UK population of 0.5 per cent, Browning[2]) and cholesteatoma (general prevalence of cholesteatoma in US population of six per 100 000, Harker[13]).

Among the subjects of our study, we found a mean age at presentation of 34 years. It was notable how many patients came from older as well as younger age groups. There is some evidence that the incidence of COM among Western populations is falling,[11] therefore it is possible that these figures reflect a higher general prevalence of COM among older age groups. The late presentation of many of these patients may possibly be accounted for by their having more indolent disease. It is interesting to note that among patients in group 1 with more advanced disease (keratin-filled defects), that there was a somewhat younger mean age at presentation of 27 years and that nearly half (11/23) were less than 20 years old. In their studies based on cohorts of patients undergoing surgery for COM, Aberg[4] reported a mean age of surgery of 41 years, Vartiainen[10] a mean age of 38 years, and Alho[11] a mean of 42 years (patients with cholesteatoma). However, Aberg reported the mean age of onset of symptoms of 10 to 14 years, while Alho reported an average duration from onset of symptoms to surgery of two decades. However, such studies based on cohorts of patients undergoing surgery may be biased towards including patients with more aggressive disease who may tend to be younger,[5,14] and exclude patients from older age groups with less aggressive disease. In addition, the retrospective nature of these studies may prejudice their ability to identify the precise timing of first presentation with authentic COM. Therefore, we believe that our findings should serve to emphasize how patients of any age may present with a new case of COM.

Another notable finding from our study was the frequent association with a new case of COM of an abnormal finding in the opposite ear (35 per cent). In 30 per cent of cases, this finding was itself a new case of COM. Hearing difficulties in the opposite ear may have implications for treatment and aural rehabilitation. Therefore, this finding should serve to stress the importance of examining the opposite ear in all patients with COM.

We found hearing loss to be the most common presenting symptom (78 per cent). Otorrhoea was found to be absent in over one third (36 per cent) of all patients and nearly one half (44 per cent) of the group of patients with the most advanced disease (group 1) and six of the 15 patients with cholesteatoma (40 per cent). Aberg[4] also found a history of discharge to be absent in one quarter of patients undergoing surgery for COM, with, or without, cholesteatoma. While it is possible that many patients without a history of discharge at presentation may subsequently develop it in the course of their disease, we believe that our findings are significant in that they provide further evidence to suggest that the traditional definition of chronic suppurative otitis media as a chronically discharging ear fails to cover all clinically evident cases of chronic otitis media,[2] and that the absence of otorrhoea should not deter the clinician from suspecting chronic otitis media.

In conclusion, our study constitutes one of the first prospective studies of new cases of COM in an entire regional population. We found new cases of COM occurring in patients of all age groups. Over one third of new cases were associated with an abnormal finding in the opposite ear, and otorrhoea was absent in over one third of patients at initial presentation. We believe that our findings should serve to alert the clinician to suspecting a new case of COM in patients of any age, regardless of the duration of their symptoms or their previous otological history, and regardless of whether or not they are complaining of discharge. This may have particular relevance in assessing any patient with conductive hearing loss where the entire tympanic membrane has not been adequately visualized because of wax or other debris in the external auditory canal. In addition it is

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important to examine and document the condition and hearing level in the opposite ear, as pathology here may have important implications for treatment and rehabilitation.

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