



Jill Benson
Lillian Mwanri

Chronic suppurative otitis media and cholesteatoma in Australia's refugee population

Background

Chronic suppurative otitis media (CSOM) and cholesteatoma are conditions common in the developing world, and CSOM accounts for most of the burden of hearing impairment worldwide. The aim of this research was to ascertain whether refugees newly arrived in Australia have a higher prevalence of CSOM and cholesteatoma than the majority of the Australian population.

Methods

An audit of patient records from the Migrant Health Service in South Australia was performed for the period 1 June 2009 to 30 November 2011. The prevalence of CSOM and cholesteatoma in newly registered patients was calculated.

Results

The rates of CSOM (2.64%) and cholesteatoma (0.9%) in adults attending the refugee service are much higher than that documented in the majority of the Australian population.

Discussion

The diversity of Australia's population brings new and challenging health conditions to practitioners and to the health system. General practitioners should be alert to the fact that in the newly arrive refugee population, CSOM and cholesteatoma are more common and are not just diseases of childhood. It is important to diagnose and appropriately treat CSOM and cholesteatoma as they have a high morbidity.

Keywords

cholesteatoma; otitis media, suppurative; refugees

Chronic suppurative otitis media (CSOM) involves a cycle of inflammation, ulceration, granulation and infection in the middle ear. There will be a purulent discharge through a perforated tympanic membrane present for more than 6 weeks, conductive hearing loss and often, inflammation of the mastoid cavity. Complications include hearing loss, mastoiditis, cholesteatoma, facial nerve paralysis, meningitis, brain abscess and sigmoid sinus thrombosis.¹

The World Health Organization (WHO) estimates that 65–330 million people worldwide are affected by CSOM, the majority in the developing world.² In Britain, 0.9% of children and 0.5% of adults have CSOM. However, in developing countries and in the Australian Aboriginal population CSOM is common, at 12–50%.^{1–3} Chronic suppurative otitis media and cholesteatoma are viewed as diseases of poverty; and ethnicity does not appear to affect the prevalence of either condition.⁴

Chronic suppurative otitis media accounts for up to 80% of the global burden of hearing impairment; 90% of these cases being in developing countries.² In children, this affects speech, language, intellectual, psychological and social development and education. In addition, adults are likely to suffer from personal and social stigma with decreased employment opportunities.

In 2010–11, Australia accepted 13 750 humanitarian refugees into the country.⁵ Most came from environments with meagre food choices, high infectious disease rates, poverty, overcrowding and limited healthcare facilities. Learning English is a high priority for resettlement and this is compromised with even a mild to

moderate hearing loss.⁶ The general practitioner who first sees a newly arrived refugee may not have knowledge of their patient's complex and unique health issues.^{7,8} One of the challenges of working in refugee health is the lack of evidence as the 'evidence' from well-nourished individuals with good social determinants of health and mostly Caucasian ethnicity cannot necessarily be extrapolated to this population.

Background

In contrast to developed countries, CSOM is highly prevalent in those of low socioeconomic status in developing countries where overcrowding, poor hygiene, frequent upper respiratory tract infections, inadequate nutrition, contaminated water and under-resourced or expensive healthcare are important predictors.^{9–12} These risk factors weaken the immunological defences, increasing the inoculum and encouraging early infection.²

Chronic suppurative otitis media causes a mild to moderate conductive hearing loss of 30–60 dB in more than 50% of cases,² which is enough to affect the acquisition of English skills as there will be mishearing and misarticulation of 'fricatives and affricates' and delays in vocabulary development.⁶ Lack of access to free services to treat the underlying problem allows the hearing loss to get worse and further hinder the acquisition of language.^{2,13}

Worldwide, CSOM is commonest in childhood, but in developing countries adults may present with this condition.^{13,15} Because it is so common and treatment is unlikely to be available or affordable, CSOM is often seen as a 'normal' part of childhood.² People tend to tolerate the disease and live with its complications into their adult life^{11,12} and on arrival in a developed country, may not complain of its existence.¹³ If insufficiently

treated, the risk of complications and mortality increases.^{9,12,16}

Between 5% and 30% of those with acute otitis media will have a ruptured ear drum. In developed countries, 90% close spontaneously in a month regardless of whether treatment is given or not.^{1,2} Chronic suppurative otitis media develops when the perforation has not healed after 2–3 months and the pathogens change from those of the upper respiratory tract, such as *Streptococcus pneumoniae* and *Haemophilus influenzae*, to those opportunistic pathogens more common in the external canal, such as *Pseudomonas aeruginosa* and *Staphylococcus aureus*.² These organisms are not susceptible to broad-spectrum oral antibiotics such as those used to treat acute otitis media, and so this treatment will have no effect on the disease process in CSOM.² Chronic suppurative otitis media is commonly misdiagnosed as otitis externa, which is usually treated with aminoglycoside ear drops such as framycetin. However, aminoglycosides are ototoxic and are absolutely contraindicated if there is perforation of the tympanic membrane, such as that which occurs in CSOM.

The mainstays of treatment for CSOM involve ear toilet to dry and clear the ear, the instillation of ciprofloxacin ear drops, which are not ototoxic, and surgery for the tympanic perforation if it does not heal spontaneously.

Ciprofloxacin ear drops were registered for the treatment of CSOM in Australia in 2006¹⁸ and listed on the Pharmaceutical Benefits Scheme (PBS) as an Authority prescription for Aboriginal and Torres Strait Islander people in 2007. From November 2009, this listing was extended to include those aged less than 18 years with tympanic membrane perforation or a grommet in situ. Without a PBS Authority prescription one bottle of ciprofloxacin ear drops costs about \$25.

In up to 10% of people with CSOM a cholesteatoma can develop,¹ though its actual pathogenesis is unknown. This is a nonmalignant but destructive lesion that can cause erosion of bones such as the ossicles, the mastoid process or the skull base. Estimations of prevalence of cholesteatoma are about 6/100 000.¹ Confirmation of a clinical suspicion of cholesteatoma should be with a computed tomography (CT) scan. Treatment involves radical surgery, often with permanent hearing loss and other serious health complications.

Otitis media in children accounts for about 10% of consultations with Australian GPs.¹⁹ Unless working in the area of Aboriginal health, most GPs are unlikely to have experience in diagnosing or treating CSOM. Similarly, most are unlikely to see a patient with cholesteatoma in their lifetime.

Methods

An audit of patient records from the Migrant Health Service (MHS) in South Australia was performed, covering the period 1 June 2009 to 30 November 2011, and looking for patients with a diagnosis of CSOM. Notes were reviewed to ascertain that the correct diagnosis had been made based on the clinical history recorded by the GP. Since 2009, all scriptwriting at the MHS has been computerised and GPs have been recording clinical diagnoses for patients who are given prescriptions.

All patients at the MHS have a history and examination by the GP as part of their initial screening, including an ear examination. For the purpose of this study, the GPs at MHS recalled the codes they had utilised to enter a clinical diagnosis and if there were cases of CSOM that they may not have coded. The latter were mostly adult patients who were sent to hospital for treatment, as they could not afford the non-PBS price of ciprofloxacin ear drops. Patients were investigated, treated and referred for audiometry, ear nose and throat specialist review and/or surgery according to the clinical judgement of the individual GP. Follow up of management outcomes was not part of this study.

Ethics approval was obtained from the South Australian Health Human Research and Ethics Committee. The MHS manager, clinic coordinator and individual GPs gave permission for the research to occur.

Results

There were 1705 new refugee patient registrations from 1 June 2009 to 30 November 2011: 47% female, 53% male and 63% aged ≥18 years. During this period, the MHS was seeing about half of all newly arrived refugees to South Australia: approximately one-quarter from Africa (eg. Sudan, Congo, Horn of Africa, Liberia), half from the Middle East (eg. Afghanistan, Iran and Iraq) and one-quarter from other countries (eg. Bhutan, Burma). The cross-section of people in this study with CSOM reflects the ethnicity and other demographic and clinical profiles of the MHS.

In the 2.5 year timeframe of the study, 20 patients were diagnosed with CSOM, including 13 males (65%) and seven females (35%). The majority (85%) were adults aged ≥15 years (*Table 1*). The number of patients diagnosed with CSOM tended to increase each year with the majority of patients (65%) diagnosed in 2011 (*Table 2*).

Further analysis of data from 1 June 2009 to 30 November 2010 revealed that there were 982 new arrivals with only five diagnosed with CSOM. However, from 1 December 2010 to 30 November 2011 there were 723 new arrivals (455 adults) with 15 diagnosed with CSOM: 12 adults and three children (six female, nine male). The overall rate of CSOM was 2.07%. The rate was 2.64% in adults.

Ten of these patients had ear swabs performed, with four swabs growing *S. aureus* and four growing *P. aeruginosa*. The two swabs reporting no growth were in patients who had both CSOM and cholesteatoma.

The lead author (JB) has seen 444 patients in 10 years at the MHS and has diagnosed four patients with cholesteatoma confirmed by CT scan that required surgery. All were adults: one from the Horn of Africa and three from the Middle East. This is a prevalence in the refugee clientele of 0.9%, which is over 100 times the predicted rate in the general population.²

Discussion

There is no literature on the prevalence of CSOM or cholesteatoma in newly arrived refugees, although anecdotal evidence suggests that hearing loss is common.¹³ Most refugees come to Australia from a region or background with a high prevalence of these diseases to an environment where prevalence is rare.

This study confirms that the clinic prevalence of CSOM in this cohort of newly arrived refugees reflects the prevalence in their countries of origin and hence, is higher than in the rest of Australia.

The overall rate of CSOM at 2.07% meets the WHO definition of 'high' prevalence, the level at which they suggest that there is an 'avoidable burden of disease which needs to be addressed'.² The rate of 2.64% in adults is much higher than expected in the general Australian population according to WHO, and alerts clinicians to the fact that in the refugee population, CSOM is not just a disease of childhood.

The presence of CSOM will make resettlement

Table 1. Number and gender of patients diagnosed with CSOM

Patients age group (years)	Gender of patients		Total	Percentage
	Male	Female		
0–14	3	0	3	15
15–29	8	6	14	70
30+	2	1	3	15
Total	13	7	20	100

Table 2. Year of diagnosis and number and gender of CSOM patients

Year	Gender of patients		Total	Percentage
	Male	Female		
2009	3	0	3	15
2010	3	1	4	20
2011	7	6	13	65
Total	13	7	20	100

more challenging because of the resulting deafness and subsequent difficulty with language skills, socialising, education and employment.¹³ Learning English is a priority for all refugees and even mild hearing loss will impact on learning and correct pronunciation.^{6,20}

Both adults and children from high-prevalence countries may 'normalise' CSOM and not complain about the ear discharge or deafness. General practitioners should be aware of this and add otoscopy and possibly hearing tests to the screening protocol for all newly arrived refugees.

Education about the differentiation between CSOM, acute otitis media and otitis externa is important because the treatment for acute otitis media and otitis externa will have no impact on CSOM and may actually be detrimental. As with many issues affecting new and vulnerable populations, the Australian PBS does not address the potential high prevalence of CSOM in the refugee population and adults are unlikely to be eligible for hearing aids and other services. Advocacy may be needed to ensure that adults with CSOM who come from a refugee background have access to evidence based ciprofloxacin treatment and hearing services.

Implications for general practice

Refugees arriving in developed countries will present with a different range of illnesses to that of the rest of the population. General practitioners should be alert to the fact that in this population, CSOM and cholesteatoma are more common and are not just diseases of childhood. Screening of

newly arrived refugees and appropriate diagnosis and management is needed to minimise the burden of hearing loss. Because CSOM is more common, has a high morbidity and a unique treatment regimen, there is a necessity for screening, education of GPs and advocacy within governments and teachers in order to support refugees with CSOM.

Authors

Jill Benson AM MBBS, DCH, FACPpsychMed, MPH, is Director, Health in Human Diversity Unit, Discipline of General Practice, University of Adelaide, Senior Medical Officer, Migrant Health Service, Adelaide and Medical Director, Kakarrara Wilurrara Health Alliance. jill.benson@adelaide.edu.au

Lillian Mwanri MD, MCN PhD, FAFPHM, is a course coordinator, Master of Health and International Development, Discipline of Public Health, School of Medicine, Faculty of Health Sciences, Flinders University, South Australia.

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References

- O'Connor T, Perry C, Lannigan F. Complications of otitis media in Indigenous and non-Indigenous children. *Med J Aust* 2009;191:S60–S64.
- Acuin J. Chronic suppurative otitis media. Burden of illness and management options. World Health Organization. Geneva: WHO, 2004.
- Parry D, Roland P. Chronic suppurative otitis media. *Medscape*. 2011. Available at <http://emedicine.medscape.com/article/859501-overview> [Accessed 24 September 2012].
- Thornton D, Martin T, Amin P, Haque S, Wilson S, Smith M. Chronic suppurative otitis media in Nepal: ethnicity does not determine whether disease is associated with cholesteatoma or not. *J Laryngol Otol* 2011;125:22–6.
- Australian Government Department of Immigration and Citizenship. Fact sheet 60 – Australia's Refugee

and Humanitarian Program. Canberra: DIAC, March 2011. Available at www.immi.gov.au/media/fact-sheets/60refugee.htm [Accessed October 2011].

- Stelmachowicz PG, Pittman AL, Hoover BM, Lewis DE, Pat M. The importance of high-frequency audibility in the speech and language developing of children with hearing loss. *Arch Otolaryngol Head Neck Surg* 2004;130:556–62.
- Johnson DR, Ziersch AM, Burgess T. I don't think general practice should be the frontline: experiences of general practitioners working with refugees in South Australia. *Aust New Zealand Health Policy* 2008;5:20.
- Australasian Society for Infectious Diseases. Diagnosis, management and prevention of infection in recently arrived refugees. Sydney: Dreamweaver, 2009. Available at www.asid.net.au/downloads/RefugeeGuidelines.pdf [Accessed September 2012].
- Acuin JM. Chronic suppurative otitis media: a disease waiting for solutions. *Comm Ear Hearing* 2007;4:17–9.
- Lasisi AO, Sulaiman OA, Afolabi OA. Socio-economic status and hearing loss in chronic suppurative otitis media in Nigeria. *Ann Trop Paediatr* 2007;27:291–6.
- Adoga A, Nimkur T, Silas O. Chronic suppurative otitis media: socio-economic implications in a tertiary hospital in Northern Nigeria. *Pan Afr Med J* 2010;4:3.
- Taipale A, Pelkonen T, Taipale M, Bernardino L, Peltola H, Pitkäranta A. Chronic suppurative otitis media in children of Luanda, Angola. *Acta Paediatrica* 2011;100:e84–e88.
- Willoughby L. Catering to a diverse community: a report on the situation and needs of deaf people from migrant backgrounds living in Victoria. Victorian Deaf Society, East Melbourne, Victoria 2008. Available at www.vicdeaf.com.au/files/editor_upload/File/Research%20Reports/fullreportcateringtoadiversecommunity.pdf [Accessed September 2012].
- Verhoeff M, van der Veen EL, Rovers MM, Sanders EA, Schilder AG. Chronic suppurative otitis media: a review. *Int J Pediatr Otorhinolaryngol* 2006;70:1–12.
- Okafor BC. The chronic discharging ear in Nigeria. *J Laryngol Otol* 1984;98:113–9.
- Vikram B, Khaja N, Udayashankar S, Venkatesha B, Manjunath D. Clinic-epidemiological study of complicated and uncomplicated chronic suppurative otitis media. *J Laryngol Otol* 2008;122:442–6.
- Macfadyen CA, Acuin JM, Gamble C. Systemic antibiotics versus topical treatments for chronically discharging ears with underlying eardrum perforations. *Cochrane Database Syst Rev* 2006;(1):CD004508.
- Therapeutic Good Administration. Public summary document. 2006. Available at [www.health.gov.au/internet/main/publishing.nsf/Content/D4B68C5727258A78CA25720A001B89F9/\\$File/ciprofloxacin.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/D4B68C5727258A78CA25720A001B89F9/$File/ciprofloxacin.pdf) [Accessed December 2011].
- Gunasekera H, Knox S, Morris P, Britt H, McIntyre P, Craig J. The spectrum and management of otitis media in Australian indigenous and nonindigenous children: a national study. *Pediatr Infect Dis J* 2007;26:689–92.
- Colic-Peisker V, Tilbury F. "Active" and "passive" resettlement: the influence of support services and refugees' own resources on resettlement style. *Int Migr* 2003;41:61–91.

correspondence afp@racgp.org.au