CHLAMYDIA

Otitis media in adults with chlamydial conjunctivitis

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The aim of this study was to assess the prevalence of otological symptoms in patients with chlamydial conjunctivitis. We report four cases of chlamydial conjunctivitis, in association with otitis media, that were investigated by an otologist.

The organism *Chlamydia trachomatis* (serovars D–K) is one of the major causes of sexually transmitted infections (STIs).¹ Genital infection in adults may result in follicular conjunctivitis with or without a keratitis following exposure to infectious genital secretions during oro-genital sexual contact or by autoinoculation.² Such patients may go on to develop middle ear infections.^{3,4} However, the aetiological role of *C trachomatis* in otitis media (OM) in adults is still controversial.

METHODS

We performed a retrospective case notes review of all patients with chlamydial conjunctivitis attending the diagnostic clinic, Moorfields Eye Hospital, from January 1992 to December 2004 for otological symptoms, in particular hearing loss, earache, and sensation of blocked ear. Two clinicians cared for these patients in the diagnostic clinic at any one time, one of whom (BTG) was the main clinician throughout the study period. The main referral ophthalmologist (NDV) and the clinicians were trained to inquire for otological symptoms that were known to be associated with chlamydial conjunctivitis. Four consecutive patients with otological symptoms selected at random were reviewed by an otologist (JH). If otitis media was confirmed, otological tests including myringotomy were performed. Chlamydia diagnostic tests including culture and in-house plasmid based polymerase chain reaction (PCR) tests were carried out on specimens from the middle ear.

RESULTS

Of 276 consecutive patients with chlamydial conjunctivitis seen from January 1992 to December 2004, 36 (13.0%) had otological symptoms (12.6% of women and 13.9% of men). Of these 36 patients, 21 had noted ear problems on the same side as the affected eye, 12 noted problems with both ears, and three noted difficulties with the contralateral ear. All otological symptoms resolved following chlamydial treatment using either doxycycline 200 mg daily or erythromycin 500 mg four times daily for a week or 3 weeks if upper genital tract complications.

Four consecutive patients with otological symptoms (three women, one man) who were seen by an otologist (JH) were found to have otitis media. *C trachomatis* was detected from the middle ear aspirate by culture and PCR in two cases and from the nasopharynx of the other two. Screening for other STIs was negative in all cases.

Case 1

A 21 year old woman gave a 2 week history of a red, irritable, and watery right eye and had noted a yellow vaginal discharge for 2 months. She also complained of a 4 day history of a blocked sensation in the left ear with diminished hearing. In addition to peno-vaginal intercourse she reported having had receptive oro-penile intercourse.

Right sided follicular conjunctivitis and a mucopurulent cervicitis were noted. Pure tone audiogram showed a mild conductive hearing loss on the left, and tympanometry confirmed the presence of bilateral middle ear effusions.

C trachomatis was isolated from the right eye, urethra, cervix, and left middle ear. A PCR was also positive for the left middle ear aspirate. Her post-treatment audiogram returned to normal.

Her asymptomatic partner was found to have chlamydial urethritis.

Case 2

A 22 year old woman complained of irritable, red eyes for 2 weeks and a right sided blocked ear with hearing loss for 4 days. She gave a 2 year history of a vaginal discharge and intermittent lower abdominal pain. Six months previously her general practitioner had treated her for pelvic inflammatory disease but her partner had not been treated concurrently.

She was found to have bilateral chlamydial follicular conjunctivitis. Cervical excitation and bilateral adnexal tenderness was elicited, indicating that she still had pelvic inflammatory disease. She also had bilateral middle ear effusions with reduced compliance on tympanometry. Pure tone audiograms confirmed bilateral conductive hearing loss.

C trachomatis was isolated from both eyes, cervix, and urethra and was only detected by PCR in effusion from the right ear. She was treated with oral doxycycline 200 mg daily for 3 weeks and metronidazole 400 mg three times daily for 2 weeks. Her ocular and pelvic symptoms resolved following treatment. Pure tone audiometry returned to normal. Her partner was found to have culture positive chlamydial urethritis, which was treated.

Case 3

A 30 year old man had a 1 month history of a right sticky eye and a blocked sensation in both ears with partial hearing loss for 2 weeks. A right sided follicular conjunctivitis and bilateral middle ear effusions were noted. He had no genitourinary symptoms, but had non-gonococcal urethritis on microscopy.

C trachomatis was isolated from the right eye, urethra, and nasopharynx. Culture and PCR were negative from both ears. He was treated and his ocular and ear symptoms resolved and pure tone audiometry returned to normal. His partner was found to have mucopurulent cervicitis, which was treated.

Abbreviations: OM, otitis media; PCR, polymerase chain reaction; STI, sexually transmitted infections

Case 4

A 23 year old woman presented with an irritable, red right eye for 4 weeks, a blocked sensation with partial hearing loss in the right ear for 5 days, and a yellow vaginal discharge for 1 week. She was found to have a follicular conjunctivitis of the right eye, mucopurulent cervicitis, and a right ear effusion confirmed by tympanometry. Pure tone audiogram showed conductive hearing loss on the right side.

C trachomatis was isolated from the right eye, cervix, and nasopharynx but not from the middle ear aspirate. She was treated and her symptoms resolved; her post-treatment pure tone audiogram was normal. Her partner had chlamydial urethritis that was treated with a course of doxycycline.

DISCUSSION

Otitis media has been shown to complicate 14% of adult patients with experimental chlamydial inclusion conjunctivitis in whom *C trachomatis* was positive on fluorescent antibody staining of the middle ear aspirate.³ Our study showed a similar prevalence of otological symptoms in patients with naturally acquired chlamydial conjunctivitis (13%). Occasional reports of OM with isolation of *C trachomatis* from the middle ear aspirate in adults with chlamydial conjunctivitis have been published.⁴ These findings are confirmed by our study.

In animal models using chinchillas it was shown that acute OM developed when *C trachomatis* was inoculated into the ear, nasopharynx, or eye and chlamydiae were able to proliferate in the middle ear.⁵ The same study also demonstrated that *C trachomatis* inoculated into the nasopharynx could cause pharyngitis, which then spread to the eustachian tube resulting in OM.⁵

OM may result from direct infection from the conjunctiva via the eustachian tube (which probably occurred in cases 1 and 2), or secondary to its blockage following nasopharyngeal lymphoid hypertrophy (which is the probable explanation in cases 3 and 4).³

C trachomatis has been detected in middle ear aspirates by culture or PCR in children and adults with OM in the absence of chlamydial conjunctivitis^{6,7} although these findings have not been reproduced by others investigating OM in children.⁸⁻⁹ However, *C pneumoniae* is the more likely species to be involved in children with acute OM.^{10,11} The two species behave differently and the latter is an important cause of community acquired pneumonia.

In case 1, there is also the possibility of pharyngeal infection following oro-penile intercourse, which then spread to the eustachian tube, as *C trachomatis* can be isolated from patients with OM without ocular problems.⁵ We postulate that some of these patients may have acquired the ear

infection from the infected genital material through receptive oro-genital sexual intercourse. It is important to recognise the association of chlamydial conjunctivitis and OM, as appropriate antibiotics are required to treat this condition.

In chlamydial oculo-genital infection, partner notification is essential to prevent reinfection, complications, and spread of infection. All partners of the four cases had asymptomatic genital infection, three of whom had positive chlamydial isolation. This study showed that cases of OM with chlamydial conjunctivitis are commonly associated with asymptomatic chlamydial genital infection. Whether cases of "idiopathic" OM, particularly in sexually active adults, are associated with *C trachomatis* infection merits further investigation.

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REFERENCES

- 1 **Peipert JF**. Clinical practice. Genital chlamydial infections. *N Engl J Med* 2003;**349**:2424-30.
- 2 **Haller-Schober EM**, El-Shabrawi Y. Chlamydial conjunctivitis (in adults), uveitis, and reactive arthritis, including SARA. *Best Practice & Research in Clinical Obstetric & Gynaecology* 2002;**16**:815-28.
- 3 **Dawson CR**, Wood TR, Rose L, et al. Experimental inclusion conjunctivitis in man. *Arch Ophthalmol* 1967;**78**:341-9.
- 4 **Gow JA**, Ostler HB, Schachter J. Inclusion conjunctivitis with hearing loss. *JAMA* 1974;**229**:519 (letter).
- 5 **Weber PC**, Kotai PJ. Chlamydia trachomatis in the etiology of acute otitis media. *Ann Otol Rhinol Laryngol* 1991;**100**:615-19.
- 6 **Ogawa H**, Hashiguchi K. Isolation of Chlamydia trachomatis from the middle ear aspirates of otitis media. *Acta Oto-Laryngol* 1990;**110**:105-9.
- 7 **Zhang G**, Ning B. Study on the relationship between chlamydial infection and otitis media with effusion [Chinese]. *Chinese J Otorhinolaryngol* 1999;**34**:92-4.
- 8 **Hammerschlag MR**, Hammerschlag PE. The role of Chlamydia trachomatis in middle ear effusions in children. *Paediatrics* 1980;**66**:615-17.
- 9 **Blackston ML**, Lovehik JC. Presence of Chlamydia trachomatis in tympanocentesis fluid assessed by immunofluorescence microscopy and cell culture. *Otolaryngol Head Neck Surg* 1989;**100**:348-9.
- 10 **Block SL**, Hammerschlag MR, Hedrick J, et al. Chlamydia pneumoniae in acute otitis media. *Pediatr Infect Dis J* 1997;**16**:858-62.
- 11 **Falk G**, Engstrand I, Gnarp J, et al. Association of Chlamydia pneumoniae with otitis media in children. *Scand J Infect Dis* 1998;**30**:377-80.