Ocular chlamydial infection in a University Eye Clinic

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Summary

In the University Hospital, Kuala Lumpur, from 1984 to 1990, 184 patients with acute conjunctivitis were examined for chlamydial infection by direct immunofluorescence. Overall, 52 (28.3%) were found to be positive for chlamydial antigen. There was no significant difference in the detection rate between men and women and among the 3 major ethnic groups. The detection rate was highest among sexually active adults. Epidemiological and clinical features suggest that most of the chlamydial ocular infections seen were inclusion conjuctivitis and not classical trachoma.

Key words: Chlamydia, conjunctivitis.

Introduction

Chlamydia trachomatis which is an obligate intracellular parasite, is responsible for 2 distinct ocular syndromes, namely, classical trachoma and inclusion conjunctivitis.

Inclusion conjunctivitis has an adult and neonatal form. Adult inclusion conjunctivitis is essentially an acute follicular conjunctivitis caused mainly by serotypes D to K. The incubation period is about 1 week and the infection can be unilateral (70%) or bilateral. It is of acute or subacute onset characterised by a follicular inflammation most marked in the lower fornix and lower lid, but also extending to the region of the plica, caruncle and upper fornix. The cornea remains unaffected and after a period of months the disease resolves without conjunctival scarring, pannus formation or other corneal abnormally[1]. Transmission is from a chlamydial genital infection to the eye, probably via hands. It occurs in sexually active adults, especially those with multiple sex partners[2]. Thus, quite often, chlamydia can be isolated from the endocervix of women and the urethra of men with inclusion conjunctivitis. Apart from genital to eye transmission, clusters of cases have also been associated with swimming pool bathing[3].

TRIC ophthalmia neonatorum occurs in neonates as a result of contamination during passage through the birth canal. It is usually an acute papillary conjunctivitis with copious discharge. In some cases there is haemorrhage from the papillae when touched. In untreated cases, the infection may result in pannus formation and scarring. About 25 to 50% of babies born to mothers with culture positive chlamydial cervicitis may develop the infection[3]. The incubation period is 5 to 7 days but can extend to 40 days.

Classical trachoma is clinically a chronic, follicular keratoconjunctivitis caused mainly by serotypes A, B, Ba and C. Transmission is from eye to eye and occurs most frequently among children. The infection may remain active for years, producing both conjunctival and corneal scarring, visual

impairment and even blindness. It is endemic in countries like India, Pakistan, Middle East and parts of South America. It is potentially more blinding than inclusion conjunctivitis which is usually self-limiting and comparatively easier to treat.

Chlamydia reside intracellularly in the conjunctival and corneal epithelia, producing inclusion bodies and provoking both humoral and cell-mediated responses. The organism can be isolated in embroynated hen's eggs or in tissue culture. It can also be detected in clinical specimens by direct fluorescent antibody staining or enzyme-immunoassays.

Materials and methods

This paper describes a retrospective study of chlamydial conjunctivitis seen from 1984 to 1990, in the University Hospital, Kuala Lumpur (UHKL). Case histories of patients investigated for chlamydial eye disease were reviewed for clinical and laboratory data. Conjunctival swabbing was done with a cotton wool bud or by scraping with a blunt metallic spatula. Smears were made on Teflon-coated slides and stained with FITC-conjugated chlamydial antibodies (Micro Trak, Syva, USA).

Results

A total of 184 patients with acute conjunctivitis were examined for chlamydial infection. Of these, 52 (28.3%) were positive for chlamydial antigen by immunofluorescence (Table I). There is no significant difference in the detection rate of chlamydia between men and women ($p > 0.1$) and among the 3 ethnic groups, Malays, Chinese and Indians. The detection rate among neonates approximates that observed for adults (TableII). The patients' ages ranged from a few days to 63 years with the largest number being between 21 to 30 years (53.6% and 41.7% of women and men respectively). The 9 positive neonates were from 7 days to 30 days of age but 1 of them had a history of sticky eyes from the second day of life. Five presented with haemorrhagic conjunctivitis. Conjunctival cultures from these infants yielded no other bacterial or fungal pathogens. Endocervical swabs were obtained from 2 of the mothers a few days after their babies were examined. Both were positive for chlamydia by enzymeimmunoassay. All 4 social classes were represented. However, college students and clerks made up 53% of the cases.

Table I
Detection of Chlamydial conjunctivitis from 1984-90

Year	No. Specimens examined	No. (%) Chlamydia positive
1984	9	4
1985	10	2
1986	3	2
1987	4	2
1988	16	9
1989	37	16
1990	105	17 (16.2%)
Total	**184**	**52 (28.3%**

Table II
Demographic data on 52 patients with chlamdial conjunctivitis

	No. examined	No. (%) Chlamydia Ag positive
Male	99	24 (24.2%)
Female	85	28 (32.9%)
Adult	149	41 (27.5%)
Children	9	2 (22.2%)
Neonates	26	9 (34.6%)
Malay	97	27 (27.8%)
Chinese	53	15 (28.3%)
Indian	34	10 (29.4%)

Only 38 of the 52 patients had clinical records available for further analysis. Besides follicles, redness, mucopurulent discharge and itchiness were the commonest clinical presentations (Table III).

In all patients, treatment, whether topical and/or systemic was started before the laboratory results were known. When chlamydial infection was suspected, tetracycline ointment was prescribed to be applied twice or thrice daily. When laboratory confirmation was obtained, this regimen was continued for a month. In addition, systemic (oral) tetracycline 250mg 4 times a day was given for at least 4 weeks. Alternatively, erythromycin 250mg was given orally 4 times daily and continued for 4 weeks. Neonates were treated with syrup erythromycin orally and topical tetracycline ointment or chloramphenicol drops.

Table III
Presenting symptoms and signs in 38 patients with Chlamydial conjunctivitis

Symptoms / Signs		No. (%) positive
1.	Irritation / smarting	10 (26.3)
2.	Itchiness	10 (26.3)
3.	Tearing	5 (13.2)
4.	Pain / Foreign body sensation	4 (10.5)
5.	Blurred vision	9 (23.7)
6.	Redness, uniocular or binocular	21 (55.3)
7.	Mucopurulent discharge	14 (36.8)
8.	Follicles	24 (63.2)
9.	Papillae	3 (8.0)
10.	Haemorrhagic conjunctivae	5 (13.2)
11.	Superficial punctate keratitis (SPK)	7 (18.4)
12.	Filamentary keratitis	1 (2.6)
13.	Superficial limbal vascularisation	4 (10.5)
14.	Scarring of cornea / conjunctiva	4 (10.5)
15.	Lid oedema	6 (15.8)

About half of the patients were on other drops like gentamicin, chloramphenicol, hydrocortisone and Opticrom before positive laboratory tests necessitated a change in therapy. Unfortunately, the results of therapy were mostly not known as the majority of patients failed to return for follow-up. Only 2 cases were known to have recurrent infections resulting in corneal and conjunctival scarring. The predisposing factors for recurrence in these cases were not noted.

Discussion

In the UHKL, *C. trachomatis* was first isolated from patients with genital tract infections in 1974[4]. Three years later, fluorescent antibody staining of chlamydial antigens became available. This technique which was more convenient and reported to be of high sensitivity and specificity[5] soon replaced cell culture for the routine diagnosis of chlamydial infections.

Acute conjunctivitis is a relatively common presentation in eye clinics. At the UHKL, approximately 1,300 cases are seen every year. However, due to budgetary constraints very few cases were selected for chlamydial investigation until 1990 when it became routine for follicular conjunctivitis cases. Hence, the high chlamydial detection rate of 44.3% from 1984 to 1989 is likely to be biased because of case selection, whereas the 16.2% detection rate in 1990 is probably a fairer indication of the incidence of chlamydial follicular conjunctivitis among our patients.

The immunofluorescence test we used would not differentiate between classical trachoma and inclusion conjunctivitis serotypes. Our clinical data, however, suggested that most of the chlamydia positive cases seen were likely to be inclusion conjunctivitis as 41 (78.8%) occurred among neonates and sexually-active adults 20 to 40 years old. There were a few instances where the infection occurred among sex partners and in mother and baby pairs. There were few serious complications like scarring and pannus formation as seen in classical trachoma.

However, the differentiation between classical trachoma and inclusion conjunctivitis is clinically unimportant as the initial management is the same for the 2 conditions.

This study has shown that a significant proportion of acute follicular conjunctivitis cases in this country may be due to *C. trachomatis*. We have not found distinct clinical features to distinguish uncomplicated chlamydial conjunctivitis from other microbial and non-infective conjunctivitis but a red eye in a patient with genital tract infection and late onset conjunctivitis in the neonate should alert the clinician to the possibility of a chlamydial etiology. Fortunately, immunofluorescence tests have greatly facilitated the rapid diagnosis of chlamydial eye disease. It is important to establish an etiological diagnosis so that appropriate therapy can be given early in the course of the disease. The management of adult inclusion conjunctivitis should include taking a sexual history and treatment for concomitant genital chlamydial infections. TRIC ophthalmia in neonates is not preventable with 1% silver nitrate instillation. Systemic treatment is required to eliminate the eye infection as well as prevent upper respiratory tract colonisation which may lead to lower respiratory tract disease later on in life[6].

Thus, the control of chlamydial eye disease requires heightened awareness among ocular health care personnel, early detection, effective management, adequate follow up, health education for the patient and a proper understanding of the behaviour of chlamydiac and their modes of spread.

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