Sexually Transmitted Diseases Profile of Patients with Chlamydial Conjunctivitis

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SUMMARY: During 1980–85, 1648 patients with conjunctivitis attended an Eye Hospital in Liverpool. Of these, 195 had proven chlamydial infection. On referral, only 68 adults and 27 children of this group, and 66 adults as 'contacts' attended the Sexually Transmitted Diseases Clinic. Screening tests detected a significant number of STD's among the adults. Though asymptomatic, a large proportion of them had *chlamydia* a potential pathogen, in their genital tract. The need for such a referral, full S.T.D. screening and appropriate systemic treatment to prevent some of the sequelae of untreated chlamydial infection are emphasised.

Introduction

Genital tract infection with *Chlamydia trachomatis* is now the commonest sexually transmitted disease (STD) in most developing countries¹. Complications of untreated chlamydia infections, including salpingitis, arthritis and conjunctivitis, are well recognised². Indeed, as early as 1909 Halberstaedler and Prowazek recognised an abacterial form of urethritis, and inclusion bodies were identified in the epithelial cells of the conjunctiva of infants and in cellular scrapings of the genital tracts of their parents³. This was confirmed by Jones *et al*, when it became possible to grow the agent Trachoma Inclusion Conjunctivitis (TRIC) agent or *C trachomatis* in the laboratory. The venereal nature of inclusion conjunctivitis has been confirmed in several studies^{4–6}. It is also well recognised that neonatal conjunctivitis could result from intrapartum contamination of the eye from cervical secretions, if the mother had an unrecognised and untreated genital infection acquired by sexual contact. Furthermore, in some situations eye-to-eye transmission has also been suggested^{7–9}.

The present investigation was, therefore, undertaken to determine the prevalence of STDs, particularly chlamydial infections of the genital tract of patients with chlamydial conjunctivitis who had been referred to the Department of Genito-Urinary Medicine at the Royal Liverpool Hospital from St Paul's Eye Hospital in Liverpool. The prevalence of STDs in their consorts (and parents in the case of children with chlamydial conjunctivitis) was also studied.

Patients and Methods

The study population was made up of 133 adults (81 male, 52 female) and 72 children (32 male, 40 female) with chlamydial conjunctivitis who were initially seen at St Paul's Eye Hospital in Liverpool between January 1980 and December 1985.

The records of those patients, who were seen at the Department of Genito-Urinary Medicine because of referral from ophthalmologists during this period, were examined. The symptoms, signs, demographic data,

past history and history of recent exposure were recorded. Parents of children with chlamydial conjunctivitis were investigated and consorts of all the adult index cases were also sought.

Investigations performed on men included the obtaining of endourethral swabs using sterile cotton-tipped ENT swabs, which were inserted 3–5 cms into the urethra and rotated several times, for Gram-stained smears and direct inoculation onto modified Thayer-Martin medium for culture of *N gonorrhoeae*. A similar swab was also taken for culture of *C trachomatis*.

Tests on women included endourethral and endocervical swabs for Gram-stained smears and culture for *N gonorrhoeae* and a further endocervical swab was taken for culture for *C trachomatis*. High vaginal swabs were also obtained and cultured in Feinberg Whittington medium for culture for *Trichomonas vaginalis* and yeasts. Samples were obtained for Herpes simplex virus, when the condition was suspected on clinical grounds. Swabs for *C trachomatis* were placed in transport medium and inoculated with centrifugation on to cycloheximide treated McCoy cells in plastic well plates on the day of collection or, occasionally, after overnight storage at 4°C. Growth was estimated after 72 hours by staining the culture with periodic acid schiff (PAS) reagent and screening for brilliant red cytoplasmic inclusions¹⁰. The diagnosis of urethritis was based upon the criteria described by Arya *et al*, and the laboratory methods used for culturing *N gonorrhoeae* were described previously¹⁰. Serological tests for syphilis were performed on all patients. Conjunctival and throat swabs for culture of *N gonorrhoeae* and *C trachomatis* were obtained from all children. Swabs were only obtained from genital sites of children who were suspected of having genital tract infection on clinical grounds.

Index cases were defined as those patients who were seen at the Department of Genito-Urinary Medicine with a laboratory confirmed diagnosis of chlamydial conjunctivitis and who had been referred from St Paul's Eye Hospital. Contacts were defined as parents of children who were index cases or sexual partners of adult index cases.

Treatment

All index cases were initially treated with topical tetracycline eye ointment and referred to the Department of Genito-Urinary Medicine. Following screening tests for STDs, systemic treatment was prescribed using either oxytetracycline 250 mg or erythromycin 250 mg four times daily for two weeks. All children were treated with erythromycin syrup, using 50 mg/kg/day in four divided doses for two weeks.

Other STDs diagnosed as a result of routine screening were treated as necessary.

Results

During the period January 1980–December 1985, 1648 patients with conjunctivitis were seen at St Paul's Eye Hospital in Liverpool. Of these, 133 adults (81 males, 52 females) and 72 children (32 male, 40 female) were found to have chlamydial infection. All patients with chlamydial conjunctivitis were referred to the Department of Genito-Urinary Medicine for further management. A total of 68 adults (44 males, 24 females) and 27 children (10 males, 17 females) attended the STD clinic for further tests and management. This represented 51% and 37.5% of all adults and children respectively who had been referred to the STD clinic by the ophthalmologists. A further 31 men and 35 women also attended the STD clinic as contacts of index cases. This included 14 men and 19 women who were parents of children with chlamydial conjunctivitis.

The results of chlamydial cultures from the urethra in men are summarised in Tables 1 and 2. In the index group, 84.1% (37/44) were found to have urethritis and 59.1% (26/44) were positive for *Chlamydia*. Of these, only 23.1% (6/26) had symptoms of urethritis. Evidence of urethritis was found in 80% (28/35) of the index cases and 71.4% (20/28) of the contacts who were asymptomatic. *C. trachomatis* was isolated from 4 patients who had no signs or symptoms of urethritis. Of the 15 index cases whose urethral swabs were negative for *Chlamydia*, evidence of urethritis was found in 80% (12/15), 75% (9/12) of whom were asymptomatic. Urethritis was present in 71% (22/31) of the contacts, 64.3% (18/28) of whom were asymptomatic. *C. trachomatis* was isolated from 35.5% (11/31) of the asymptomatic contacts. The organism was also isolated from 4 male contacts who were asymptomatic and who had no signs of urethritis when first seen.

Tables 3 and 4 summarise the findings in women. *C. trachomatis* was isolated from the cervix of 79.1% (19/24) of index cases and 72.7% (24/33) of contacts. Hypertrophic ectopy of the cervix, together with a mucopurulent cervical discharge, was noted in 51.2% (22/43) of those who were *Chlamydia* positive, as compared with 7.1% (1/14) of those who were *Chlamydia* negative $\chi^2 = 7.47$, $p = 0.001$). Five women with chlamydial cervicitis actually had signs and symptoms of pelvic inflammatory disease when first seen at the STD clinic.

None of the children seen at the STD clinic as index cases had any signs or symptoms of genital infection.

In addition to a high isolation ratio of *C. trachomatis* from the genital tract of index cases and consorts, a number of patients were found to have other STDs which were only discovered as a result of routine screening. These are summarised in Table 5.

Discussion

Only 51% of adults and 37.5% of children with chlamydial conjunctivitis who were initially seen at St Paul's Eye Hospital, Liverpool, attended the STD clinic at the Royal Liverpool Hospital. Although it is possible that the remaining patients may have attended other STD clinics in the region, it is more than likely that most of them never attended an STD clinic. This inference is drawn from the fact that the majority of those who did attend the STD clinic (80% males, 58.3% females) were asymptomatic.

Chlamydial infection of the genital tract was found in a large proportion (68.2%, 45/66) of patients with chlamydial conjunctivitis. Indeed, of the 44 male index cases, urethritis was found in 84.1% (37/44). Furthermore, only 20% of male index cases and 41.7% of female index cases were symptomatic.

Investigation of contacts of all the index cases also yielded evidence of genital tract infection in a large proportion of those seen. Urethritis was found in 71% (22/31) of male contact cases, the majority of whom (64.3%) were asymptomatic. Of the female contact cases, *C. trachomatis* was isolated from the cervix in 72.7% (22/33), of whom 50% (12/24) were asymptomatic. This study has, therefore, shown that a high proportion of patients and their consorts who have chlamydial conjunctivitis also have evidence of genital tract infection which is occult in most cases, and this clearly demonstrates the importance of referral to a genito-urinary clinic for full STD screening in this group.

It is interesting that *C. trachomatis* could not be isolated from 36.6% (15/41) of male index cases, 85% of whom had evidence of urethritis. Although it could be argued that the aetiology of urethritis in these patients was non-gonococcal and non-chlamydial, it is possible that some of the negative results were due to "loss" of chlamydial isolates which occurred in the interval between swabbing and culturing the organism.

C. trachomatis was isolated from the urethra of 8 men who had no sign of urethritis. Whilst this is somewhat unusual, similar isolations of the organism have been reported by others¹¹. It must be stressed, however, that in none of these cases in our study was the initial examination carried out under optimal conditions, in other words, after the patient had held urine for at least 4 hours prior to the examination.

Conjunctivitis is a common condition in military as well as civilian practice. As chlamydial diagnostic services become more widely available, these should be used routinely to investigate patients with conjunctivitis,

Table 1
***Chlamydia* isolation and the presence of urethritis in male index cases**
n = 44(%)

<i>C trachomatis</i>	Symptoms		Urethritis	
	Present	Absent	Present	Absent
Positive	6 (66.7)	20 (57.1)	22 (59.5)	4 (57.1)
Negative	3 (33.3)	12 (34.3)	12 (32.4)	3 (42.9)
Not tested	0	3 (8.6)	3 (8.1)	0
Total	9	35	37	7

Table 2
***Chlamydia* isolation and the presence of urethritis in male contact cases**
n = 31(%)

<i>C trachomatis</i>	Symptoms		Urethritis	
	Present	Absent	Present	Absent
Positive	1 (33.3)	10 (35.7)	7 (31.8)	4 (44.4)
Negative	0	10 (35.7)	6 (27.3)	4 (44.4)
Not tested	2 (66.6)	8 (28.6)	9 (40.9)	1 (11.1)
Total	3	28	22	9

Table 3
***Chlamydia* isolation and appearance of cervix: Female index cases**
n = 24(%)

<i>C trachomatis</i>	Hypertrophic Ectopy & Mucopus	
	Present	Absent
Positive	10 (100)	9 (64.3)
Negative	0	5 (35.7)
Not tested	0	0
Total	10	14

Table 4
Chlamydia isolation and appearance of cervix: Female contact cases
n = 35(%)

<i>C trachomatis</i>	Hypertrophic Ectopy & Mucopus		Total
	Present	Absent	
Positive	12 (92.3)	12 (54.5)	24
Negative	1 (8.3)	8 (36.4)	9
Not tested	0	2 (9.1)	2
Total	13	22	35

Table 5
Incidental detection of other sexually transmitted diseases

	<i>Neisseria gonorrhoea</i>	<i>Trichomonas vaginalis</i>	<i>Candida albicans</i>	Herpes Simple	Warts
Males	4	1	1	1	1
Females	7	4	6	0	3

as the isolation of *C trachomatis* has wider implications about the need to carry out full STD screening on index patients as well as their consorts. All patients with chlamydial conjunctivitis should be referred to an STD clinic before systemic treatment is initiated and the necessity for such a referral should be impressed upon the patient so as to minimise the default rate. When seen at the STD clinic these patients must undergo full STD screening and their contacts must be sought, as such practices could help prevent some of the sequelae of untreated chlamydial infection.

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