In order to determine the prevalence of Chlamydia trachomatis infections in patients at a metropolitan referral centre in Riyadh we examined various clinical specimens from 19,234 patients during the period from January 1988 to August 1991; 61% of the subjects were females and 39% males. Of the 19,234 patients tested 2,210 (11.1%) yielded positive results for Chlamydia antigen. Positive reactions from ocular sites accounted for 1,361 (61.6%) patients and the antigen was detected from genital sites in 849 (38.4%) patients. Chlamydial infection rate in women was 10.8% compared with 12.5% for men; the highest number of positives occurred in the 26-45 year age group.

In developing countries, Chlamydia trachomatis is often endemic and is a major cause of blindness. Previous studies have shown that trachoma is a familial disease, especially where there is overcrowding, large numbers of children, lack of water and poor hygiene. It is estimated that over 350 million people in the world are infected with trachoma and 80 million children have active inflammatory disease requiring treatment. Chlamydia trachomatis is also one of the most common causes of sexually transmitted diseases. Genital infections in women can lead to infertility, ectopic pregnancy and neonatal conjunctivitis. The prevalence of clinical and subclinical infections due to C. trachomatis have been reported to be high in both men and women in many developing countries. Although definitive diagnosis of C. trachomatis requires tissue culture isolation, this is costly, special transport and growth media are required and there are often long delays in the specimen reaching the laboratory; these factors make isolation of this fragile organism difficult and hence restricted to only a few facilities in the world. Therefore, a direct monoclonal antibody test was used in this study to determine the incidence of Chlamydia infections at King Faisal Specialist Hospital and Research Centre, in Riyadh.

Materials and Methods

The patient population studied in this investigation consisted of a total of 19,234 subjects, 7,480 of them being male and 11,754 being females. These patients were seen at the King Faisal Specialist Hospital and Research Centre, a tertiary care 550-bed referral centre with a high volume of out-patients attending various clinics. Specimens from male patients came from those attending polyclinics or family health clinics; female subjects consisted of those attending the above mentioned clinics as well as women’s clinic and obstetric/gynaecology services. A rapid direct fluorescent antibody test was used routinely to detect Chlamydia antigen (Syva Microtrak, Palo Alto, CA). The test was performed according to the manufacturer’s instructions. The Syva Microtrak
specimen collection kit was used to collect all samples which were fixed with acetone. Positive patient samples were reported as follows: 1–9 elementary bodies (EB), inconclusive; 10–15 EBs, few C. trachomatis; 16–25 EBs, moderate C. trachomatis; ≥25 EBs, many C. trachomatis.

Results

Clinical specimens from 19,234 patients were tested for the presence of C. trachomatis between January 1986 and August 1991. Of these, 2,210 were found to be positive. Specimens from 1,273 (10.8%) of the 11,754 female patients were positive compared with 937 (12.5%) of 7,480 male patients. The number of positive genital specimens from females was higher (569) than male patients (280). The majority of positive cases were from ocular sites (1,361, 61.6%) (Fig. 1). The age range of infections followed a very similar pattern in both male and female patients (Fig. 2), the highest number of infections occurring between the ages of 26 and 45 years.

The overall incidence rate over this period was 11% for all specimens, 7% for ocular and 4% for genital specimens. Inconclusive results were not included to avoid false positive results being reported.

Discussion

Chlamydia are recognized as major aetiologic agents of a variety of serious human diseases. In developing countries, repeated ocular infection with C. trachomatis is responsible for 300 to 500 million cases of trachoma, the leading cause of preventable blindness. In developed countries, including the USA it is the most prevalent sexually transmitted bacterial pathogen constituting over 50% cases of non-gonococcal urethritis. Many of these infections are asymptomatic and thus go untreated. This not only serves as a reservoir for further spread of infection, but their consequences can be severe, affecting reproduction, fertility, and infant morbidity and mortality. Complications include salpingitis, endocarditis, and perihepatitis in the female and epididymitis in the male.

Reinfecction is not prevented by high levels of specific antibody in secretions or active cellular immunity. In fact there is good evidence that severe inflammation and scarring of epithelia, which may result from repeated reinfection or reactivation of 'latent' infection, are due to immune-mediated damage.

The prevalence of chlamydial genital infection in women varies in different groups and in different communities. In general, the incidence of C. trachomatis infection in asymptomatic unselected pregnant women varies from 4 to 21%. In selected populations, C. trachomatis has been detected in from 15 to 35% of patients examined in genitourinary clinics, and from 29 to 68% of female consorts of men with non-gonococcal urethritis (NGU). Very few reports on the
prevalence of *C. trachomatis* in developing countries have been published. In Ethiopia 32% of men and 45% of women attending STD clinics were infected with this organism. A prevalence rate of 19% and 21% for men and women, respectively, was found in Nigeria. Ismail et al. found that 6% of men and 18% of women in a Somali village had chlamydial genital infections. In a single study from Saudi Arabia, Forsey & Darougar reported *C. trachomatis* incidence of 30.6% in males attending an STD clinic in Saudi Arabia while 10% of females attending a gynaecology clinic were positive for this organism. An overall rate of 4% genital infections in our patients is considerably lower than that reported earlier. However, King Faisal Specialist Hospital and Research Centre is a tertiary care referral facility with approximately 750,000 out-patients seen every year in our polyclinics. Since most of our out-patients come from the higher socio-economic level or are expatriates from different countries, most of them being Americans, Canadians or Europeans, our results may not reflect the true incidence of *Chlamydia* infection in the general population or those seen in specialized clinics like STD or gynaecology. A rate of 4% genital infections in this study is low compared with those of developing countries but comparable with general medical or health clinics in USA where the rate ranges from 3–5% in men and women compared with 15–20% for those seen in STD clinics. The low prevalence rate in our patient population may also reflect the adherence to strict moral principles and code of ethics in this country because it has been shown in the USA and Europe that demographic factors associated with an increased risk of chlamydial infections include youth, non-white race, single marital status, multiple sexual partners and use of oral contraceptives in women.

Although prevalence and severity of chlamydial eye infections have decreased significantly during the last 35 years due to improved hygienic conditions and standard of living, the disease remains endemic in parts of Africa, Middle East, India, Australia, Pacific Islands and Latin America. Malaty et al. found *C. trachomatis* in one-third of randomly selected children beyond the neonatal period up to 2 years of age in Egypt. It has been shown that in endemic areas, including Saudi Arabia, trachoma is a familial disease, resulting from eye to eye transmission. The highest rate of infection in endemic areas occurs in young children under 10 years of age. However, clinical trachoma is rare in USA and Europe and when it does occur, the incidence is highest in young adults during the height of their sexual activity. The mode of transmission in these cases appears to be genitalia-to-eye. In the USA 5–10% of pregnant women are estimated to harbour *C. trachomatis* in their cervixes and 70% of the babies born to such mothers develop clinical or subclinical eye infection with 25–35% resulting in conjunctivitis.

Because of the ubiquitous nature of this organism, its potential for causing serious complications and its ability to remain latent, it is important that further epidemiological studies be conducted in Saudi Arabia, especially in acute care facilities, to ascertain its full significance. Chlamydial disease, especially trachoma, is believed to be endemic in this country but its incidence rate is not known in the general population and needs to be determined.

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References


