PROFILE OF WOMEN WITH CHLAMYDIA POSITIVE PAPANICOLAOU SMEARS

By

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SUMMARY

The incidence of Chlamydia trachomatis infection is on the rise in most areas of the world. In order to prevent the sequelae of infection the importance of early diagnosis and treatment cannot be overemphasized. We have presented a simple, easy and economic screening procedure using the Papanicolaou smear which can be used in the absence of other more sophisticated diagnostic tests.

Introduction

The human diseases caused by Chlamydia trachomatis have been recognised since antiquity, being described in Egyptian papyruses. Although Chlamydia trachomatis was first visualised in stained conjunctival scrapings from Orangutans by Halberstaedter in 1907, the first isolate from the human genital tract was recovered by Jones, Collier and Smith in 1959 from the cervix of the mother of an infant with ophthalmia neonatorum. In recent years the syndromes associated with Chlamydia trachomatis have expanded and Serotypes L1, L2, L3, A, B, C, D, E, F, G, H, I, J and K have been identified (Schachter, 1978).

Studies in the human female have implicated the Chlamydia micro-organism as a source of cervicitis, (Rees and Tait, 1977) endometritis (Mardh, 1981; Paavonen *et al*, 1985) salpingitis and associated infertility, (Henry-Suchet, 1980; Kosseim and Brunham, 1986; Wilson, 1985) urethritis, (Stamm, 1980) and the Fitz-Hugh-Curtis syndrome (Wang, 1980).

C. trachomatis infection has been implicated as the commonest sexually transmitted disease in the United States today, with estimates of two to three million new cases annually. Although very specific and sensitive methods of detection like cultural techniques, immunofluorescent antibody techniques (Microtrak) (Kiviat, 1986; Munday, 1986) enzyme-linked immunoabsorbant assays (Chlamydiazyme) are available, these require trained laboratory personnel, are expensive and time consuming and may not be freely available. Since the Chlamydia organism has a predilection for the cervical epithelium, detection of cytological changes in the Papanicolaou smear is a good screening procedure. Gupta *et al* (1979) showed that infected cells demonstrated cytomegaly, were multinucleated and demonstrated intracytoplasmic coccoid and inclusion bodies in the meta-

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plastic cells. They supported these morphological observations with immunofluorence electron microscopy and tissue cultures. The universality of the Papanicolaou smear makes it an easily acceptable method. Other stains are the Giemsa and Iodine stains.

Material and Methods

The clinic population attending Bridgeport Hospital, Connecticut, was selected for the study. The profile of 55 women whose smears had changes suggestive of C. trachomatis infection is described. The profile is inclusive of age, past history of pelvic infection, present complaints and the detection of other sexually transmitted organisms. All women were appropriately treated with antibiotics and colposcopic evaluation carried out where required.

Results

Table I shows that more than 50% of the women were 30 years or less of age. All women were sexually active.

TABLE I
Age Incidence

Age	Number	Percentage
$\leqslant 20$	7	12.7
21-30	23	41.9
31-40	11	20.0
41-50	7	12.7
>50	7	12.7

Symptomatology: 4 women had dysuria without conventional bacteruria. Stamm (1980) evaluated women with acute urethral syndrome (dysuria without bacteruria of greater than 10^5 conventional uropathogens per ml) and implicated the Chlamydia as an important cause of dysuria (Stamm, 1980). Three patients had chronic abdominal pain. Of these one had a recently treated pelvic infection. She also complained of right upper quadrant pain seen typically in the Fitz-Hugh-Curtis syndrome which has been reported in 9 to 20 per cent of patients with salpingitis (Lutt and Cohen, 1978; Onsrud, 1980; Lopez-Zeno and Keith, 1985). Eight patients complained of a vaginal discharge. None of the patients reviewed were infertile. In the recent past 2 had voluntary and 3 had spontaneous abortions. One patient was pregnant at the time of the screening. One patient had a recent tubal ectopic pregnancy. Estimates claim that 10% of women with Chlamydia salpingitis become infertile and 1.8% have ectopic pregnancies.

Table II shows the associated cytological changes. Nineteen women (34.5%) had a Class I PAP with distinct inflammatory changes. Of the remaining 36 women, 29 (52.7%) had changes of metaplasia and atypia. Six (10.9%) had mild dysplasia-CINI and 1 (1.8%) had moderate dysplasia, CIN II. The Chlamydia infected cells appear large, are multinucleated and metaplastic squamoid or atypical. They occur singly or in groups of 2 to 6 cells. Usually the cytoplasmic changes are localised to the perinuclear region although they could be diffuse. The cytoplasm in the porous areas contains finely granular, uniform sized acidophilic "coccoid bodies". These correspond to the infective stage of the disease. This is followed by condensation and transformation of these particles into larger inclusions which tend to be basophilic. This is the non-infective replicative stage (See Figs. 1, 2 and 3). However the inclusions should be distinguished from other

degenerative vacuoles and fluid accumulation.

TABLE II
Cytological Changes

Smear	No.	%
Class I: with inflammation	19	34.5
Class II: Metaplasia & atypia	29	52.7
C.I.N. I: Mild dysplasia	6	10.9
C.I.N. II: Moderate dysplasia	1	1.8

TABLE III
Other Organisms Detected

Organism	No.	%
Trich. vaginalis	10	18.3
N. Gonorrhoea	2	3.6
T. Pallidum	1	1.8
Candida	7	12.7
Human papilloma virus	4	7.2
Herpes simplex virus	1	1.8
H. vaginalis	2	3.6

The most active drugs against C. trachomatis are tetracyclines, macrolides, rifampin, sulfonamides and clindamycin of Vibramycin (doxycycline) has made it the antimicrobial of choice, given in the dose of 100 mg twice a day for seven days. The patient who was pregnant received Erythromycin in the dose of 250 mg four times a day for ten days. Patients with CINI and II underwent colposcopy.

Discussion

The incidence of C. trachomatic infection is rising in most developed countries of the world. Prevalence of infection in asymptomatic women is 3 to 5% to over 20% in women seen in S.T.D. clinics (Brunham, 1981; Amortegul and Meyer, 1986). Also the increase in the number of infected adolescents can be explained by the greater susceptibility of developing cervical epithelium, distaste for barrier contraception and sexual promiscuity. Besides, Chlamydia can co-exist in 30 to 40% of women with gonorrhoea and hence it is important to prevent postgonococcal morbidity (Judson and Tavelii, 1986). Although tissue culture, antibody and immunoabsorbent assay tests are very specific and sensitive these may not be readily available. Gupta's study prompted us to examine smears for cytological changes and evidence of Chlamydia infection in Papanicolaou smears. More than 50% of the women were less than or equal to 30 years of age. 7.2% had acute urethral syndrome, 5.3% had abdominal pain, 45% had evidence of at least one other sexually transmitted disease. Of the smears 29 (52.7%) had changes of metaplasia or/ and atypia and 7 (12.7%) had dysplasia. Chlamydia associated atypia may represent a reparative or defensive mechanism or an atypia of an infectious nature.

Proper management of cervical atypia and associated changes need further investigation. The replicative and infective stages of infection were seen in the smears studied.

Conclusion

The importance of diagnosing and treating Chlamydia infection cannot be overemphasized. We have presented a simple, easy, economic and readily available screening procedure which can be used in the absence of more sophisticated tests.

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See Figs. on Art Paper III