

## CHLAMYDIA TRACHOMATIS AND INFERTILITY

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*Almost one-quarter of 100 asymptomatic men under investigation for fertility has significant titres of Ig-A antibodies (> 1:8) specific for Chlamydia trachomatis (CT) in seminal plasma. No clear association was evident between the presence of these antibodies and sperm quality. The female partners of men with consistently high serum or seminal plasma levels of Chlamydia-specific Ig A also exhibited a positive Ig-A reaction in serum without any clinical indications of infection. The study indicated that chronic asymptomatic infections with CT could be responsible for a large number of cases of infertility. It also implied that any men and women under investigation for infertility should be routinely screened with Chlamydial serology regardless of previous history and clinical findings.*

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**Key words:** *Chlamydia trachomatis*, Ig A, Ig G, serology, seminal plasma, infertility

There is a growing awareness that chronic inflammatory conditions in the reproductive tract of both men and women contribute to a large extent of infertility (1-5,7). In the majority of cases, they should represent asymptomatic conditions, since many patients exhibit sperm pathology or evidence of uterine tube one at the first consultation with no clear history of genito-urinary infection (3,6).

Many reports have testified to the involvement of *Chlamydia trachomatis* (CT) in acute inflammatory diseases of the genital tract in both sexes including epid-

idymitis (5) and salpingitis (7,10). Its involvement in chronic infections is currently being debated.

The availability of serological tests for the demonstration of Chlamydia-specific Ig A and Ig G in biological fluids provides the opportunity of screening large numbers of asymptomatic individuals for the presence of an active or previous infection (4,7,9).

The aims of the present study are: i) to investigate the frequency of CT infections in men under investigation for infertility; ii) to access whether the presence of the infection could be related to the sperm quality of the subjects, and iii) to determine the extent to which an on-going infection is shared by their female partners.

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## MATERIAL AND METHODS

The study involved 100 consecutive men referred for sperm analysis. Aliquots of each ejaculate were taken for detection of Chlamydia-specific Ig A and their presence correlated with the individual's sperm quality. Chlamydial antibodies were detected using a kit IPAzyme Chlamydia (Savyon Diagnostics Ltd., BerSheva, Israel) based on an indirect immunoperoxidase assay. An Ig-A titre of 1:16 and 1:8 was regarded as positive for serum and seminal plasma, respectively. Serum Ig G was considered positive at titres of 1:64. Semen samples were provided by masturbation after an abstinence of 3-5 days. Assessment of sperm morphology was carried out according to WHO criteria. Only leukocyte concentrations =  $1,10^6$ /ml were considered indicative of an inflammatory condition.

**Table 1**

*Sperm characteristics related to Ig A specific for CT (geometric means and 95 % confidence limits)*

Parameter	Chlamydia-negative (n=76)	Chlamydia-positive (n=24)
Sperm concentration ( $\times 10^6$ /ml)	28,9 (19,8-42,2)	18,49 (8,9-38,1)
Volume (ml)	3,2 (2,7-3,7)	2,4 (2,0-3,1)
Total sperm count ( $\times 10^6$ /ejaculate)	92,2 (62,7-135,5)	45,2 (19,3-105,7)
Motility (%)	41,6 (34,4-50,3)	39,3 (26,3-58,4)
Abnormal (%)	62,0 (59,0-65,1)	61,9 (57,1-67,1)

els of Ig A to varying degree. In one case, there was a gradual decline of Ig-A seminal plasma levels throughout the observation period. In two other cases the initial sample had undetectable Ig-A levels which increased during subsequent weeks. All

## RESULTS AND DISCUSSION

Of the 100 men with varying sperm qualities, 24 were found to have significant titres of Ig A in their seminal plasma. In the majority of cases, this could also be related to elevated leukocyte number in the ejaculates: 60 % of Chlamydia-positive patients exhibited seminal leukocytes ( $>1,10^6$ /ml) compared to 10 % in the Chlamydia-negative subjects.

Table 1 summarized the sperm qualities of the Chlamydia-positive groups. There was no significant difference between any parameters after logarithmic data transformation.

Investigation of Chlamydia-specific Ig A in ejaculates taken weekly over a 6-week period from the same individuals indicated a high degree of consistency in the immune response within subjects. Nine men (33 %) exhibited elevated lev-

but one of the men with semen-positive Ig A exhibited elevated serum titres of Ig G. In seven of the nine cases, this was also associated with a positive Ig-A titre. Two men had no evidence of elevated Ig A in the peripheral circulation. All the female

partners apart from one were seropositive for at least one of the immunoglobulins. Five women were positive for both Ig A and Ig G.

The relatively large number of asymptomatic infertile men with evidence of an on-going infection with CT emphasizes the need of re-evaluation of the current diagnostic criteria for suspecting and demonstrating its presence. Indirect support of the existing active infection included the close association between both partners with regard to the demonstration of circulating specific Ig-A antibodies. The lack

of correlation between the seminal antibodies and sperm quality confirmed previous studies (4,6,8,9). On the other hand, whether the infection manifested itself in disturbances of sperm quality presumably depended on other factors including the site of infection and the local immune status in each individual.

The present study indicates that the female partners of Ig-A positive men with normal sperm quality have a risk of being infected by CT and thus the possibility of this being the main cause of their infertility.

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## *Chlamydia trachomatis* и инфертилитет

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**Резюме:** При почти една четвърт от 100 безсимптомни мъже, изследвани по повод на инфертилитет, в спермата се установиха значими титри на Ig-A антитела (> 1:8), специфични за *Chlamydia trachomatis* (СТ). Липсваше ясна корелация между наличието на тези антитела и качеството на спермата. Жените-партньорки на мъжете с постоянно високи серумни или спермални нива на специфичния за СТ Ig A също показаха

положителна реакция за Ig-A в серума без никакви клинични данни за инфекция. Изследването показва, че хроничните безсимптомни инфекции с СТ може би са отговорни за голям брой случаи с инфертилитет. Подразбира се и това, че всички мъже и жени, скенирани за инфертилитет, би трябвало да се изследват рутинно със серологични методи за хламидия, независимо от предишната история на заболяването и клиничните находки.