CHLAMYDIA INFECTION

A common sexually transmitted disease (STD) caused by the Chlamydia trachomatis bacteria that can lead to serious reproductive morbidity.

診断

Related Diagnoses:

- Fallopian tube blockage
- Hydrosalpinx
- Pyosalpinx
- Pelvic Inflammatory Disease
- Orchitis

About Chlamydia infection

Chlamydia is a very common, curable sexually transmitted infection (STI) caused by the Chlamydia trachomatis bacteria (Pic. 1). It is spread by vaginal, anal or oral sex with someone who has the infection. It most commonly affects the urethra (the tube from the bladder that urine passes through), cervix (neck of the womb) the anus and can also occur in the throat. In women it may spread to the uterus (womb) and fallopian tubes. Chlamydia can also be transferred to the eyes (Pic. 2) through rubbing or touching with unwashed hands that have touched the genital area. This type of infection should not be confused with Trachoma which is an eye infection caused by a related type of chlamydia.

The prevalence of chlamydial genital infections is similar in males and females; however, most current research in the field and screening strategies have been mainly focused on females. Many infections are asymptomatic, resulting in a large reservoir of undetected, untreated infections. Untreated chlamydia infection may result in long term sequelae in women including pelvic inflammatory disease (PID) and ectopic pregnancy.

Chlamydia could be tested by:

- taking a urine sample and sending it to the laboratory for testing (it usually takes a few days for the result to come back). This is the most common way to test for chlamydia.
- taking a swab from the vagina or cervix in women, or from the opening of the penis in men who have a discharge. It is also recommended that men who have sex with men have an anal and throat swab taken if they have had unprotected anal or oral sex (this is done with a cotton bud or similar device and does not usually hurt).
- laparoscopy where a fiber optic telescope is inserted through the belly button under general anesthesia is used to detect pelvic adhesions by undergoing a surgical procedure to look inside of the abdominal cavity. Since laparoscopy is a much more invasive procedure, it is desirable to avoid it whenever possible.

Chlamydia infection can be effectively cured with antibiotics. Following treatment people should be tested again after three months to check for reinfection.

Associated diseases

- gonorrhea
- HIV (human immunodeficiency virus) infection
- pelvic inflammatory disease (PID)
- ectopic pregnancy
- hydrosalpinx (a distally blocked fallopian tube filled with fluid)

Complications

In women, urogenital chlamydia initially infects the cervix (Pic. 3), causing symptoms of inflammation of cervix (cervicitis) which can then spread to the upper reproductive tract and cause pelvic inflammatory disease (PID).
Untreated urogenital infections can lead to other serious complications such as chronic pain, ectopic pregnancy, and infertility.

The presence of gonorrhea or chlamydia at any site also increases the risk of acquiring HIV in both men and women. Complications specific to men include epididymitis (inflammation of epididymis), prostatitis (inflammation of prostate), and proctitis (inflammation of the anus and the lining of the rectum). Both men and women with symptomatic urogenital infection most commonly present with urethritis, characterized by dysuria and urethral discharge as the commonest presenting symptom of a sexually transmitted disease in men. Reactive arthritis may also occur, often as part of a triad of other symptoms including urethritis and conjunctivitis (Pic. 4).

Eye disease

Chlamydia conjunctivitis or trachoma was once the most important cause of blindness worldwide. The infection can be spread from eye to eye by fingers, shared towels or cloths, coughing and sneezing and eye-seeking flies. Newborns can also develop chlamydia eye infection through childbirth.

Infants

As many as half of all infants born to mothers with chlamydia will be born with the disease. Chlamydia can affect infants by causing spontaneous abortion; premature birth; conjunctivitis, which may lead to blindness; and pneumonia. Conjunctivitis due to chlamydia typically occurs one week after birth (compared with chemical causes (within hours) or gonorrhea (2-5 days)).

Risk factors

- unprotected sex
- smoking
- bacterial vaginosis
- human papillomavirus
- age <20 years

Impact on fertility

Chlamydia infects both sexes; however, chlamydial infections constitute primarily a female health issue since the consequences are more damaging to the reproductive tissue in women than in men. Recent studies also have shown that Chlamydia infection may result in sperm DNA damage, which has been associated with a low potential for natural male fecundity, reduced fertility potential in vivo and in vitro, decreased embryo quality, and lower implantation rates.

Female fertility

In women, untreated infection can spread into the fallopian tubes and cause the tubes to become blocked (hydrosalpinx). They can also develop scar tissue around the fallopian tubes that makes it more difficult for the tube to “pick up” the egg at the time of ovulation. The problems can lead to infertility and an increased risk for ectopic (tubal) pregnancy.

Male fertility

C. trachomatis can cause inflammation of urethra (urethritis), epididymis (epididymitis), and testes (orchitis) in men, and it is also found to affect sperm by decreasing sperm motility, deteriorating sperm morphology and viability and increasing proportion of sperm abnormalities. Nongonococcal urethritis (NGU) is the most common clinical genital syndrome seen in the male. Both acute and chronic infection can cause partial or complete obstruction of sperm transport (oligozoospermia (a low concentration of sperm) or azoospermia (a semen contains no sperm)). Chronic inflammatory changes in the seminiferous tubules (the site of the germination, maturation, and transportation of the sperm cells) in orchitis expected to disrupt the normal process of sperm production (spermatogenesis) and cause alterations in sperm number and quality.

Inflammation may act as a co-factor of infertility. Pressure-induced rupture of the epididymal duct will disrupt the blood–testis barrier, activate an immunological defense reaction, and induce the production of antisperm antibodies (ASA). There is a correlation between C. trachomatis infection and some important sperm...
parameters, such as sperm concentration and motility. Chlamydial pathology may alter male fertility since male genital organs are potential targets for Chlamydia infection.

Prevention

The best way to avoid getting Chlamydia is to practise safe sex - that is to use a condom when having vaginal or anal sex and to use a condom or dental dam for oral sex. People who have had unprotected vaginal, anal or oral sex may be at risk of chlamydia infection. The only way to know that they do not have an infection is to get a sexual health check. Practise safe sex. Using a water based lubricant with condoms is recommended. If people have more than one sexual partner and do not use condoms, they should have regular sexual health check-ups.

Unceasing efforts are conducted for the development of a chlamydial vaccine. Nevertheless, until now, no effective chlamydial vaccines are available. The knowledge of bacterial factors involved in pathogenicity will help in addressing optimal vaccine design that prevents not only chlamydial infection but also progression to infertility.

Symptoms

If symptoms do occur, they usually develop about two to 14 days after having unprotected sex with someone who has a chlamydia infection.

Women with a chlamydia infection may notice that they have:

- a change in their vaginal discharge (more discharge or a change in colour and smell)
- crampy pain in the lower abdomen (just above the pubic bone)
- menstrual changes including longer, heavier periods which may be more painful
- pain when passing urine
- bleeding or spotting between periods or after having sex
- pain during or after sex

Men with a chlamydia infection may notice:

- a discharge from the penis (Pic. 5)
- discomfort or irritation at the tip of the penis (urethra)
- pain when passing urine
- swollen and sore testes if the infection goes up the urethra (the testes are where sperm are produced in the scrotum)

In men and women, chlamydia can be spread through oral sex, causing infection of the throat. Chlamydia can also be spread through anal sex, causing infection of the rectum (back passage). Sometimes this can cause pain in the rectum and discharge from the anus. Mostly, it does not cause any symptoms. These anal infections should not be confused with a more serious type of anal infection called Lympho granulum venereum (LGV), caused by a related type of chlamydia. More rarely, chlamydia can also affect the joints, resulting in joint pain, swelling and stiffness. It can also cause inflammation of the eyes or a rash.

Therapies

Self therapy

Not used.

Conventional medicine

Treatment of chlamydia infection is considered to be effective in preventing transmission to sexual partners and several drugs are active against C. trachomatis while surgical therapy is in untreated
Pharmacotherapy

Antibiotics

Chlamydia infection can be effectively cured with antibiotics once it is detected. Current guidelines recommend azithromycin, doxycycline, erythromycin, or ofloxacin. Agents recommended for pregnant women include erythromycin or amoxicillin. The effectiveness of therapy relies on timely treating sex partners and to abstain from sexual intercourse until completing the whole antibiotic scheme.

Surgical therapy

Untreated chlamydia can cause complications, such as an abscess. Surgery may be used to drain or remove the abscess. Women may undergo laparoscopy to find pelvic adhesion and tubal damage due to inflammation.

Assisted reproduction

Chlamydia can be easily treated and cured with antibiotics. Having multiple infections increases a woman’s risk of infertility. If conservative medical treatments fail to achieve a full term pregnancy, the physician may suggest the patient undergo in vitro fertilization (IVF). IVF and assisted reproductive techniques (ART) generally start with stimulating the ovaries to increase egg production. Most fertility medications are agents that stimulate the development of follicles in the ovary. Examples are gonadotropins and gonadotropin releasing hormone. After stimulation, the physician surgically extracts one or more eggs from the ovary, and unites them with sperm in a laboratory setting, with the intent of producing one or more embryos. Fertilization takes place outside the body, and the fertilized egg is reinserted into the woman's reproductive tract, in a procedure called embryo transfer.

Chlamydia can also be transmitted by donor insemination, likely by direct transmission adherent to sperm, and is not always removed by centrifugation prior to insemination or intracytoplasmic sperm injection (ICSI). Sperm-Chlamydia interaction may be an unrecognized cause of fertilization failure during IVF, and if this is the case, then routine sperm testing prior to advanced reproductive procedures is warranted.

Find more about related issues

Diagnoses

Fallopian tube blockage
An obstruction prevents the egg or sperm from traveling down the tube, thus making fertilization impossible. Learn more at: www.fertilitypedia.org/therapy/diag/fallopian-tube-blockage

Hydrosalpinx
A hydrosalpinx is an abnormal pouch containing liquid in a fallopian tube. Learn more at: www.fertilitypedia.org/therapy/diag/hydrosalpinx

Pyosalpinx
A distally blocked Fallopian tube filled with pus. Learn more at: www.fertilitypedia.org/therapy/diag/pyosalpinx-do-rf

Pelvic Inflammatory Disease
Infection of the upper part of the female reproductive system and a common complication of some sexually transmitted diseases. Learn more at: www.fertilitypedia.org/therapy/diag/pelvic-inflammatory-disease-do-rf
Orchitis
An inflammation of the testes, involving swelling and heavy pains.
Learn more at: www.fertilipypedia.org/therapy/diag/orchitis

Therapies

Egg donation
Process by which a woman donates eggs for purposes of assisted reproduction or biomedical research.
Learn more at: www.fertilipypedia.org/edu/therapies/egg-donation

ICSI
A micromanipulative fertilization technique in which a single sperm is injected directly into an egg.
Learn more at: www.fertilipypedia.org/edu/therapies/icsi

Sperm donation
The procedure in which a man (sperm donor) provides his sperm for fertility treatment.
Learn more at: www.fertilipypedia.org/edu/therapies/sperm-donation

Standard IVF
A process in which an egg is fertilised by sperm outside the body: in vitro. Own or donated gametes may be used.
Learn more at: www.fertilipypedia.org/edu/therapies/standard-ivf

Gallery

Pic. 1: Chlamydia trachomatis
Pap smear showing C. trachomatis.

Pic. 2: Blindness due to Chlamydia infection
Pic. 3: Inflammation of the cervix in a female from chlamydia infection characterized by mucopurulent cervical discharge, redness, and inflammation

Pic. 4: GC or chlamydia conjunctivis

Pic. 5: Chlamydia trachomatis – male

Sources


“Assisted reproductive technology” [https://fertilitypedia.org/edu/therapies/assisted-reproductive-technology] — sourced from Fertilitypedia licensed under CC BY-SA 4.0

“Chlamydial Infection and Its Role in Male Infertility” [https://www.hindawi.com/archive/2014/307950/] — by Samplaski et al. licensed under CC BY 3.0


“Chlamydia trachomatis neither exerts deleterious effects on spermatozoa nor impairs male fertility” [https://www.nature.com/articles/s41598-017-01262-w] — by Suarez et al. licensed under CC BY 4.0

“Extragenital Infections Caused by Chlamydia trachomatis and Neisseria gonorrhoeae: A Review of the Literature” [https://www.hindawi.com/journals/idog/2016/6758387/] — by Chan et al. licensed under CC BY 4.0

“Developing a realistic sexual network model of chlamydia transmission in Britain” [https://tbiomed.biomedcentral.com/articles/10.1186/1742-4682-3-3] — by Turner et al. licensed under CC BY 2.0


“Chlamydia infection” [https://en.wikipedia.org/wiki/Chlamydia_infection] — sourced from Wikipedia licensed under CC BY-SA 3.0

“Frequency and risk factors for incident and redetected Chlamydia trachomatis infection in sexually active, young, multi-ethnic women: a community based cohort study” [http://sti.bmj.com/content/early/2014/08/06/sti.2014-051607] — by Aghaizu et al. licensed under CC BY 4.0


“Management of Chlamydia trachomatis genital tract infection: screening and treatment challenges” [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3108753/] — by Taylor and Haggerty licensed under CC BY 3.0