Chlamydia

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Disease: Chlamydia; etiological agent - *Chlamydia trachomatis*

MEANS OF TRANSMISSION:

The disease is spread by oral, vaginal, or anal sex, and if you touch your eyes with a contaminated hand, you may also develop conjunctivitis (4).

RESERVOIRS:

The mucous membranes of the genital region, throat and eyes in the human body are the usual reservoirs for *Chlamydia*. The disease is also transmitted to newborns through vaginal birth by an infected mother. Similar to a virus, this organism grows inside the host cell.

GENERAL CHARACTERISTICS:

*Chlamydia* are microorganisms from the domain of bacteria and taxonomically fall under the phylum, class, order, family, and genus of Chlamydiae, Chlamydiales, Chlamydiaceae, and Chlamydophila. *Chlamydia trachomatis* was discovered by Stanislaus von Prowazek in 1907. The genus part of the name, *Chlamydia*, comes from the Greek word chlamys, which means cloak and the species part of the name, trachomatis is also Greek and means rough or harsh (1).

Exhibiting characteristics intermediate between bacteria and viruses. *Chlamydia* is widespread in the natural world, intracellular parasites of people and animals. They are capable of independent reproduction, because they do not synthesize ATP, in its development cycle using the host cell metabolic pathways (3).

SIGNS AND SYMPTOMS:

To diagnosis *chlamydia* one can use two screening tests; a swab for a *pap test* and more sensitive *nucleic acid amplification tests* (12). Now *chlamydia* is a *labile* bacteria, and viability can be maintained by keeping specimens cold and minimizing the time between specimen collection and processing in the laboratory. It is useful, therefore, to test swab types for toxicity in cell cultures or interference in nonculture assays (12). A swab can be easily collected by the patient and is needed from the discharge from the cervix of a women and men involve a swab around the urethra/anus for culture and antigen testing or nucleic acid detection (2).

*Chlamydia* shows signs of inflammation in the adult urethra and cervix with the possibility of serious complications (9). It can affect both men and women but most of the time does not cause any symptoms. When it does produce symptoms they may not appear until weeks later from the infection. Symptoms that would arise in women include burning with urination and an abnormal vaginal discharge and blood in the urine. Symptoms present for a male would present discharge from their penis a burning sensation when urinating swelling and/or pain in
one or both testicles. It is also noted that both sexes can get infected with *chlamydia* in their rectum, either by having receptive anal sex or spread from another infected site (4).

**VIRULENCE MECHANISMS:**

*Chlamydia* is a gram–negative, aerobic, intracellular pathogen having a unique cell wall consisting of an outer LPS membrane but no peptidoglycan (10). They are commonly coccoid or rod-shaped and require growing cells to remain viable. It cannot synthesize its own ATP, and can also not be grown on an artificial medium. It contains instead cysteine-rich proteins which are functionally equivalent to peptidoglycan. The results of which inhibit phagosome fusion (10). *Chlamydia* replicates within vacuoles. A developmental cycle is then started in the host cell and is established by the transformation of *elementary bodies*. Then develops into larger, non-infectious reticulate bodies. Analysis of the *C. trachomatis* genome has revealed that chlamydia possesses genes that may encode a type III secretion mechanism. In other Gram-negative pathogens, the type III secretion mechanism is used to target virulence factors directly to the host cell cytoplasm and is essential for full virulence (10). These virulence mechanisms show a primary role for the plasmid in infection and suggest that virulence is controlled, by the plasmid's ability to regulate the expression of chromosomal genes (5).

**CONTROL AND TREATMENT:**

*Chlamydia* is treated with antibiotics and to control and prevent an outbreak of *Chlamydia* one can simply abstain from sexual activities. Otherwise use condoms, have few sexual partners, regular screenings, and douching (3). It has also been identified that 5 T cell antigens, 5 B cell antigens, and 2 T/B cell antigens that are potential components for a future *chlamydia* vaccine (7).

**CURRENT EVENTS:**

Total combined cases of *chlamydia* reported in 2015 reached an all-time high reaching the highest number ever, according to the annual Sexually Transmitted Disease Surveillance Report released today by the Centers for Disease Control and Prevention (6). There were more than 1.5 million *chlamydia* cases reported 1,526,658.

To prevent and control STDs, Maintaining and strengthening STD prevention systems provided by the CDC to the state and local authorities will be essential to respond to the recent increases in reported cases. In 2015 in the state of Texas claimed 133,850 reported cases of *Chlamydia* (8).

Cited from PLOS, “In 2012, among women aged 15–49 years, the estimated global prevalence of chlamydia was 4.2%”. Estimates of the global prevalence and incidence of *chlamydia* in adults. With nearly one million new STI that can be cured each day. These estimates highlight the urgent need for the public health community to employ effective interventions solutions for STI prevention, screening, diagnosis, and treatment are made more widely available (11).
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