TRICHOMONIASIS: ACTUAL QUESTION OF TODAY

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According to the WHO annually 170-180 million of people in the world suffer from trichomoniasis, which far exceeds the rate of gonorrhea and chlamydiasis. In the US 10 million of people are infected by trichomoniasis, while in Europe there are 11 million of infected. Over 150 million of people are infected in developing countries. These indices can be much higher (according to other sources there are 270 million of people infected in the world). Actually, it is the only one sexually-transmitted disease, which is not subject to registration and reporting in majority of countries.

The prevalence of the disease depends on socio-economic conditions of the population and the availability of timely high-quality care, good hygiene, education level of people. For example, in the US black-skinned residents are more often infected with trichomoniasis. All over the world the number of teenagers with trichomoniasis increases, because many of them are sexually active. Trichomonas infection occurs in 29.84% of women (depending on the region), and half of these women have no complaints and symptoms of the disease. Women who have casual sex suffer from trichomoniasis 3.5 times more often than women, having one sexual partner. As for trichomoniasis in men, there a lot of gaps in the medical literature: Trichomonas infection in men is almost unexplored.

Trichomoniasis (trichomonosis) is called by protozoa of the genus *Trichomonas*. Normally, in the oral cavity lives T. tenax, in the colon - T. hominis. Vaginal parasite Trichomonas vaginalis is pathogenic to humans and cause trichomoniasis, which is characterized by a complete injury of the genitourinary system.

Trichomonas vaginalis have a pear-shaped body of 14-30 microns in length, at the front end it has 4 flagellum, undulating membrane to the middle of the body, axostyle through the whole body. After attachment to epithelial cells Trichomonas transform to amoeboid shape. Trichomonas are facultative anaerobes, obligate parasites that have lost the ability to synthesize many macromolecules. These components they obtaine from vaginal and other secretions, during phagocytosis of bacterial cells of the normal flora of the urogenital tract. For cultivation of Trichomonas on artificial media such additives as blood serum lipids containing

essential fatty acids, amino acids, vitamins and minerals are necessarily used. Optimal conditions for growth are 35-37°C and pH-5.5-6.3. T. vaginalis are able to phagocytose red blood cells, bacteria, which are usually digested, but it incomplete phagocytosis is possible and long-term persistence of bacteria inside the Trichomonas, which has captured bacteria (phagosome). Factors of pathogenicity of Trichomonas include adhesins, hemolysins, and proteases. T. vaginalis infects only the squamous epithelium of the urogenital tract. Trichomonas are bladder and tissue parasites, because may inhabit superficial layers of the epithelium, imitating its relief, and penetrate deep enough into the tissue, thanks to the presence of proteases.

Urogenital Trichomonas outside the human body are unstable. Obligatory condition for their viability is the presence of moisture; upon drying they die quickly. These protozoa are highly susceptible to many other environmental factors: temperature increase to 40°C, direct sunlight, osmotic pressure violations, influence of antiseptics and etc. These parasites are more resistant to lower temperatures. Optimal temperature for their growth is 36.5 – 37°C. At 60°C Trichomonas die immediately; at 55°C they die in 30 seconds; at 50°C in 2-4 min; at 45°C in 10-15 min. At a temperature of 5°C they remain viable for 1.5 hours; at 10°C up to 20-45 minutes.

Urogenital Trichomonas live in the human saliva up to 48 hours, in the urine up to 24 hours. In the vaginal secretions they remain for 1-2 days, if the pH is not less than 4.8. Optimal environment for them is pH 5.2-6.2, but they can remain viable in a neutral, acidic and alkaline environment. In Ringer-Locke solution at ambient temperature they retain their mobility and vitality for 96 hours. The latter circumstance is very important in the diagnosis of trichomoniasis, as it helps to avoid using temperature-regulated chamber in the study of these protozoa in native preparation. In fresh water of rivers, lakes and ponds the viability of Trichomonas is maintained for 15-60 minutes. Lifetime of these protozoa in water depend on its osmolality. In the tap water they live for 15-20 min; in 0.1% sodium chloride solution for 1-4 hours; in 0.2% solution for 2.6 hours; in 2% solution for 1 h. In distilled water parasites die almost immediately. In natural water bodies, where there are many swimmers, these protozoa are not found. The disease is transmitted sexually, from mother to fetus during passage through the birth canal. Rarely, contact-household transmission is possible through towels, sponges, contaminated surface. On average, 25-67% of women and men, who are sexually active, are infected with Trichomonas. Both asymptomatic carriage and clinically apparent disease course are possible.

Carriers of T. vaginalis pose a greater epidemiological danger. The disease is ubiquitous and occurs with equal frequency in men and women. In girls trichomonas invasion is extremely rare. Incubation period is usually from 4 to 28 days in approximately 50% of infected individuals, but can be reduced to 1-3 days.
Realization of T. vaginalis pathogenic and virulent properties depends on the state of immune, nervous and endocrine systems of the infected person.

In the clinical practice urogenital trichomoniasis is mainly a mixed protozoal-bacterial infectious process in which initial etiological role is played by T. vaginalis. Primarily, this due to incomplete phagocytosis inside trichomonads: capture and reservation a of great variety of pathogenic and opportunistic microorganisms, leading to their persistence in the cells of Trichomonas. Moreover, since Trichomonas are able to adhere to epithelial cells, and in the area of attachment to the epithelial cells they cause degradation of cellular plasma membranes, which leads to significant loosen of tissue, they facilitate penetration of various microorganisms of accompanying microflora into intercellular spaces, complicating the inflammatory process. Urogenital trichomoniasis as monoinfection occurs only in 10.5% of patients with trichomoniasis, and its mixed forms in association with other infections, are observed in 89.5% of patients: in association with mycoplasmas (47.3%), gonococci (29.1%), gardnerellami (31.4%), ureaplasma (20.9%), chlamydia (18.2%) and fungi (15.7%). It is proven that in trichomoniasis there is a pronounced contamination of genital tract with various nonspecific opportunistic microflora: streptococci and enterococci - 47.2%, fungi of the genus Candida – 30.1%, and staphylococci.

Trichomonad’s ability to phagocytosis of gonococci, chlamydia, mycoplasma, fungi and viruses contributes to quantifiable reduction of the latter in the genital tract, which may lead to a decrease in antigenic and toxigenic effect on the organism, suppression of phagocytic reaction and body's immune response to the infectious factor. In the vagina content sample in female with urogenital trichomoniasis lactobacilli are usually undetectable (normally, present in an amount of more than 107 cells/mL, and 90% of all bacteria inhabiting the vagina). This is due to the fact that Trichomonas are able to utilize lactobacilli, seriously disrupting vaginal microbiocenosis.

Currently, the peculiarity of trichomoniasis is that it occurs three times more often than syphilis, chlamydia and HIV, and pronounced clinical manifestations of the disease are becoming increasingly rare, dominated by sluggish, low-symptom forms, which complicates timely diagnosis and treatment of this insidious disease.