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# THE CONCEPT OF "TORCH INFECTIONS" IN PREGNANT WOMEN AND NEWBORNS

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***Abstract. Introduction:*** *At the present time, the infant mortality is gradually decreasing in our country, however the increased morbidity associated with infections of neonatal period remains high. Among them, the leading position goes to intrauterine (TORCH) infections, which plays an important role in the development of infectious and inflammatory processes.*

***The purpose of*** *this review was to familiarize neonatologists, gynecologists, neurologists, pediatricians, infectious disease specialists with various options of the transition of TORCH infection to the actual infectious process and to consider issues of pathogenesis, clinical picture and diagnosis.*

***The materials and research methods*** *were a review of local and foreign literature sources, which discussed the problems associated with intrauterine infections and their clinical and laboratory diagnostics.*

***Conclusion:*** *this review article will allow general practitioners and specialized doctors to define such concepts as TORCH (IUI) infection and TORCH (IUI) infection. Consequently, it will help to navigate in the diagnosis of ante- and intrapartum risk factors for infection and possible outcomes of IUI. A generalization of the literature data on the pathogenesis, clinical picture, diagnosis and treatment of TORCH infections will make it possible to timely identify IUI and reduce morbidity, infant mortality, and disabilities among young children due to this pathology.*

***Keywords:*** *intrauterine infection, TORCH infection, newborn.*

Nowadays, it is thought that one of the primary causes of newborn mortality and morbidity is intrauterine infection. In perinatology, TORCH is crucial to the growth of inflammatory and infectious processes [1,4,11].

When a microorganism affects a macroorganism and creates functional abnormalities in the latter, against which the disease's clinical manifestations and symptoms manifest, which can be identified both intranatally and postnatally, we refer to this situation as a thoracic infection, also known as an intrauterine infection [5,6,13]. The way a newborn's body responds to infection differs from that of older children and adults because of the morphofunctional immaturity of their body compared to that of older children. However, it should be highlighted that an infectious process does not always emerge from a macroorganism that has a TORCH infection [7, 8].

Because the terms "intrauterine infection" and "infection" are frequently used interchangeably, experts contend that the former simply denotes the occurrence of intrauterine contact between a microorganism and a macroorganism, not a diagnosis [2,3,10], as supported by literature from both near and far abroad. Additionally, the mother's pathological circumstances linked to a thoracic infection already constitute an intrauterine infection due to the impact of the latter on the placenta, amniotic fluid, umbilical cord, and overall fetal development [8,14].

According to a number of authors, the implementation of intrauterine infection into intrauterine infection is associated with an asymptomatic course of HPV in the mother, while in

the fetus it can cause various kinds of pathologies, as well as manifest itself immediately after childbirth in the form of asphyxia, problems from both the respiratory and cardiovascular systems and various kinds of neurological disorders; it is also possible there is an obvious clinic of the infectious process in the mother, but the child's condition at birth is not disturbed, but the clinic of infection comes later.

Various studies indicate that the incidence of HPV infections varies from 8 to 60%, with up to 72% occurring in premature infants. The prevalence of HPV infections is estimated to be between 10% and 15%, while the frequency of diagnosis is only 2–6%. In 37% of cases, VUI is the cause of newborn mortality [11,12,15].

Microbes in the birth canal colonize the infant for the first time during childbirth. If gram-negative flora, group B streptococcus, and Staphylococcus aureus predominate in crops, then this could include the crop population as a risk category for intrauterine infection [9].

It can be classified as either prenatal or intranatal based on the risk factors for the development of intrauterine infection. Pregnancy-related conditions that are common in the antenatal period include a history of preterm births, stillbirths, premature births, intrauterine fetal deaths, abortions, and miscarriages; frequent infections and somatic illnesses; the pathological course of pregnancy (including metastasis, frequent threats of pregnancy termination, dehydration, polyhydramnios, and anemia); and the genital and extragenital pathologies of expectant mothers. Additionally, a difficult labor and delivery experience, hypoxia or aspiration during delivery, and a breach of the child's temperature and sanitary-epidemiological regime can all be factors in the intranatal and early neonatal period.

Many writers claim that fetal infection happens in an escalating fashion, with bacterial vaginosis being the most common type.

However, there are additional routes of infection, including transdecidual, transplacental, and descending (by the fallopian tubes). When the cervix is opened from 4 cm (least contamination) to 6 cm or greater (highest contamination), bacterial contamination of the amniotic fluid happens. Persistent microorganisms in the amniotic fluid break the fluid's bactericidal characteristics, which leads to neutrophil migration into the fluid and ultimately aids in the release of phospholipase. Thus, during the fermentation process, the latter produces arachidonic acid from amnion cells. This acid is then transformed into glandine E2 and F2, which aid in uterus contraction and cervix opening [4,7,11].

The intrauterine consequences of thoracic infection on the fetus are specifically caused by hypoxia, the action of metabolic products, and heat. The aforementioned elements do, however, vary depending on how long they affect the fetus. Miscarriages result from gross embryopathies that happen during organogenesis and placentation. Early prenatal malformations are linked to the outcome of proliferative and alternate processes, resulting in different types of hole and channel obturation and narrowing. Following the 27th week of intrauterine development, a particular response to infection may manifest as leukocyte infiltration, humoral and tissue alterations, and delayed intrauterine development. These outcomes may include premature birth, delayed intrauterine development, or even fetal mortality in the womb.

Furthermore, a lot of writers state that thoracic infection in the final trimester can cause harm to certain organs and systems, such as meningitis, meningoencephalitis, myocarditis, hepatitis, and chorioretinitis, as well as lead to the generalization of the infection [10,11, 14]. However, it should be highlighted that the infectious process's presentation is contingent upon the

disease's form and stage as well as the individual's level of immunity. The first three days of infection symptoms are indicative of the early stages of the illness. If childbirth occurs in the latter stages of the illness, maladaptation syndrome with the shift to a chronic process in a newborn against the backdrop of a slow-moving infection occurs more frequently.

Early in the neonatal period, the clinical picture of an acute infection can include breathing and cardiovascular system disorders, low birth weight, a significant loss of body weight, cyanosis or pallor of the skin with exanthemums, and a slow recovery. Reduced tone, muscular activity, reflexes, and—most importantly—the sucking reflex are all signs of neurological diseases. When an intranatal infection has a prolonged incubation time, the clinic usually detects it later [2,6,12]. Therefore, a prenatal (intrauterine) infection is referred to as a "congenital infection" if the kid exhibits the full clinical manifestation of the infectious process at the time of delivery. You can see how serious these illnesses are for the fetus by looking at the acronym for TORCH infection: T-toxoplasmosis, O-other (covers illnesses caused by enteroviruses, syphilis, chlamydia, chickenpox, and other infections), H-herpes (herpes), C-cytomegalovirus (cytomegalovirus infection-CMV), and R-rubella (rubella)

The literature study states that congenital heart abnormalities, hepatosplenomegaly, microphthalmia, chorioretinitis, cataracts, and micro-or hydrocephalus, brain calcifications, are among the classic signs of HPV infection.

Three classes exist for STICK infections based on its etiology: viruses, bacteria, and protozoa. Gram-negative facultatively anaerobic bacteria including Klebsiella, Escherichia, Proteus, and other coliform bacteria play a major part in bacterial pathogens. However, because of its poor virulence, the infectious process can only develop with huge accumulation in the focus. There is a direct infection process because, as is well known, the fetus lacks both passive immunity against the aforementioned illnesses and a microflora that is antagonistic to an opportunistic bacterium [9, 11, 15].

Because group B streptococci naturally resist the antibiotic stated above, their role in the development of fetal disease has expanded in recent years as a result of the extensive use of aminoglycosides in practice. The data from the literature indicates that the cervical canal is contaminated to a level of 100 KOE/ml and that the frequency of identification of group B streptococci in pregnant women ranges from 1-31%, which is considered dangerous for the fetus. Pathogens that were not previously identified in neonatology, such as hemophilic bacillus, group D streptococci, and a-hemolytic streptococci, are becoming more and more prevalent in the body these days. Because they are intracellular parasites and fall into an intermediate category in the taxonomy of microorganisms, mycoplasmas and chlamydia are resistant to treatments that primarily target the membrane of microbes [3,10,14].

Oral and cutaneous symptoms of candidiasis are frequently observed in neonatology, and this is linked to a higher incidence of vaginal candidiasis in females. In the worst situations, depending on the stage of development, it may result in fetal disease. The most common cause of intrauterine infections, which are becoming more common every year, is viral infections in women, according to the most recent data. Adenovirus, chickenpox, hepatitis B and C viruses, parvo and enteroviruses, and the top three viruses (herpes, rubella, and CMV) that most frequently infect fetuses are also present. The ascending channel of infection carries the highest risk of any infection route leading to the fetus [2.12]. Differential diagnosis faces considerable challenges

because of the variety and non-specificity of STICK infection manifestations. Similar symptoms are seen in prenatal hypoxia and maladaptation, with premature newborns experiencing them most frequently [3, 5, 7]. When stigmas from birth, prolonged jaundice, respiratory syndrome, edematous syndrome, asphyxia during childbirth, and neurological disorders (periventricular leukomalacia, cysts, scattered periventricular calcifications, hemorrhages in the ventricles and brain substance) are revealed during the examination of the child's brain, as well as ventriculomegaly, it is assumed that a thoracic infection is to blame.

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