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GESTATION, MATERNITY AND CONGENITAL INFECTIOUS DISEASES: THE REPERCUSSION OF ZIKA, CITOMEGALOVIRUS AND TOXOPLASMOSE INFECTION

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ABSTRACT

The present article aimed to present a brief bibliographical review regarding the categories gestation, maternity and congenital infectious diseases, specifically the cases involving Zika infection, cytomegalovirus and toxoplasmosis. Emphasis is given to the affections in Brazil and in the world, tracing a brief historical panorama of its emergence. The gestational period is extremely important with regard to the health of the baby, but it is also a complicated stage for the mother, considering the sociobiological process to which she has to adapt. Added to these factors mentioned, the risk to which all pregnant women are exposed during pregnancy, especially those related to congenital infectious diseases, such as toxoplasmosis, zika virus and cytomegalovirus. It is necessary to understand how the pregnant woman feels throughout the pregnancy process. It is necessary to consider the relevance of the presence of professionals from various areas working in a joint effort and in an orderly and interdisciplinary way, to support the pregnant women in their fears, expectations and doubts. As well as supporting pregnant women in their fears, expectations and doubts.

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INTRODUCTION

According to Piccinini *et al*. (2004) gestation is a moment of change, where there is an experience of intense feelings that can give vent to unconscious contents of the mother. The relationship between the mother and her child starts from the prenatal period, and occurs through the expectations between them.

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This first relation serves for the mother-child binomial relationship that is established after birth, and therefore deserves to be better understood. Piccinini *et al* (2004) emphasize that the great challenge of generating and caring for a new being also becomes very complex when there are too many or intense external stressors. That is, when there is suspicion of infectious diseases that can be transmitted and cause harm to the fetus. According to information from the Brazilian Ministry of Health, the possibility of the arrival of a baby with congenital malformation produces discontinuity related to the idealization of perfect birth, with collapsed dreams and negative feelings, not only for the couple, but also for the family (BRASIL, 2001). In these cases, proper relations

of support and affection are important for the mother to have her needs fulfilled during the gestation and the infancy of her baby. In fact, all of the above factors are important so that the father, mother and children are well. In Brazil, infectious diseases such as Toxoplasmosis and Cytomegalovirus are relatively frequent during pregnancy, especially affecting disadvantaged populations. At least 50% of infected newborns are asymptomatic. According to the Pan American Health Organization (PAHO, 2007) the fetus may be affected not only by the direct transmission of the agent, but also indirectly by the consequences of maternal infection, such as premature delivery or intrauterine growth retardation. Transmission of infections during pregnancy varies depending on the infectious agent, as well as the gestational age at the time of transmission and the mother's immune status. In general, primary infections with Toxoplasmosis and Cytomegalovirus during pregnancy are much more harmful than reinfections or reactivations of an infection. Likewise, infections tend to cause more severe sequelae the earlier the time of infection, so the lower the gestational age, the greater the risk (OPAS, 2010).

Toxoplasmosis is a zoonosis caused by the protozoan Toxoplasma gondii (T. gondii), an obligate intracellular parasite of the Apicomplexa group. The infection has a global geographical distribution and high serological prevalence. However, 90% of infections are asymptomatic and cases of clinical disease are less frequent (KRAVETZ; FEDERMAN, 2005). In spite of the high frequency of inapparent infections, toxoplasmosis can manifest itself as a severe systemic disease, as it occurs in the congenital form. The mother, when infected for the first time during gestation, may present a temporary parasitemia and infect the fetus with damage of different degrees of severity. Depending on the virulence of the parasite strain, the ability of the mother's immune response and the gestational period in which the parasite is present, it may result in fetal death or severe clinical symptoms (MITSUKA-BREGANÓ *et al.,* 2010). According to results, approximately 40% of pregnant women with acute toxoplasmosis will transmit toxoplasma to the fetus. The risk of congenital infection increases significantly according to the gestational age at which the woman is infected, estimated at 17% when the acute infection occurs in the first trimester, 25% in the second and 65% in the third trimester. Conversely, the disease is most severe when the fetus is infected in the first trimester of pregnancy and generally mild or asymptomatic in the infected fetus during the third trimester (PEREIRA *et al.*, 2015).

Within this context, about 70% of the children affected by toxoplasmosis are asymptomatic at birth and approximately 10% have severe manifestation in the first days of life. They may also present multisystem disease or isolated disease in the nervous system and / or ocular form, and the condition may be characterized by micro or hydrocephalus, cranial calcifications and chorioretinitis (PEREIRA *et al.*, 2015). Considering that 80% to 90% of the individuals, including pregnant women with acute T. gondii infection are asymptomatic, serological screening before or at the beginning of gestation can identify women with negative tests and with chances of acute infection during pregnancy (PINHATA and YAMAMOTO, 1999). Therefore, serological tests during prenatal care are essential for research, diagnostic definition and the necessary therapeutic and psychological support. Cytomegalovirus (CMV) belongs to the herpesvirus family and is present in several regions of the world, however, it varies with local socioeconomic conditions. In developing countries and among the poorest classes of the population there are higher seropositive rates. In fact, in less-favored countries infection rates at younger ages are higher (Junqueira *et al*., 2008). Congenital CMV infection can occur before birth, ie intrauterine or still perinatal, during or after birth, through exposure to cervical secretion in the birth canal or through breast milk (PINHATA; YAMAMOTO, 1999). CMV is the most common cause of viral congenital infection, occurring in approximately 1% of all newborns (GUINDES *et al*., 2008). The risk of transmission of the fetal infection resulting from the primary maternal infection is 40 to 50%, but if it results from secondary (recurrent) infection, the risk is 0.5 to 2%. However, the clinical manifestations are almost exclusively of newborns of mothers with primary infection during pregnancy (BRASIL, 2012).

The World Health Organization (PAHO, 2010) estimates that many newborns with congenital CMV infection appear to be normal, but approximately 10% will be symptomatic at birth.Infection in symptomatic infants ranges from mild to severe life-threatening disseminated disease and accounts for up to 20% of perinatal mortality. More than 80% of symptomatic newborns may present sequels such as mental retardation, cerebral palsy, convulsions, visual problems and sensorineural hearing loss. Approximately 90% of babies are asymptomatic at birth, but only 8 to 15% of these babies will present complications, especially hearing loss. Most people infected with CMV are not diagnosed clinically. However, in 90% to 95% of pregnant women, anti-CMV IgG antibodies are detected. Detection of anti-CMV IgG and IgM antibodies does not result in the occurrence of primary gestational infection or increased risk of fetal transmission. (BRASIL, 2012). The presence of CMV in the urine (viruria) or saliva of the newborn in the first 3 weeks of life, detected by viral isolation or viral DNA identification by PCR, is considered the definitive marker of CMV congenital infection. Detection of the virus from the fourth to the twelfth week of life indicates infection acquired in the perinatal or early postnatal period (BRASIL, 2011). Although there is no maternal treatment modality that prevents or reduces the chance of occurrence of fetal disease (BRASIL, 2012), measures for supportive therapy and symptomatic relief for pregnant women can be evaluated and implemented. The Zika virus is a flavivirus, and was first identified in Uganda in 1947 in Rhesus monkeys through a monitoring network for wild yellow fever. Subsequently in 1952, it was identified in humans in Uganda and the United Republic of Tanzania. However, in 2007 cases related to Zika virus were documented outside the Asian and African continents, highlighting an epidemic in French Polynesia and the circulation of the virus by several countries in Oceania (FAYE *et al*., 2008).

In April 2015, the Pan American Health Organization confirmed in Brazil the first 16 cases of Zika virus infections. ZIKV is mainly transmitted by Aedes aegypti and Aedes albopictus mosquitoes. However, in the scientific literature there is the occurrence of perinatal and sexual transmission. Other possible forms of transmission of the Zika virus, such as transmission through breast milk, as well as through urine and saliva, need to be evaluated in more depth, based on scientific studies (BRAZIL, 2015). Zika virus infection affects all age groups and both sexes. However, currently, the incidence of cases of zika virus infection imposes the intensification of care to a specific group such as pregnant women. Thus, it is

imperative that careful follow-up during prenatal care is undertaken, due to the possible association between the current cases of microcephaly in newborns and the infection of pregnant women with the Zika virus (BRAZIL, 2016). Zeca virus-related microcephaly is a new disease that is being described for the first time in history and based on the outbreak in Brazil (PAHO, 2015). In Brazil, information from the Live Birth Information System (Sinasc) shows that there was a substantial increase in the prevalence of microcephaly at birth in 2015. As reported by the Brazilian Ministry of Health of the state of Paraíba in 2015, the detection of Zika virus in samples of amniotic fluid collected from two pregnant women, and fetuses with fetal microcephaly, demonstrate the transplacental transmission capacity of the virus and the possibility of infection of the fetus (BRAZIL, 2015). However, there is still no way to state that the presence of the Zika virus during pregnancy inevitably leads to the development of microcephaly in the fetus. The ongoing investigations conducted by public health authorities in Brazil also continue to examine additional hypotheses among known etiologies of microcephaly such as Toxoplasmosis and Cytomegalovirus. (BRASIL, 2015).

Because it is a poorly described disease, the clinical characterization and natural history of zika virus infection are based on a limited number of case reports. In general, it is estimated that less than 20%, about 2 in 10 of the human infections result in clinical manifestations, being more frequent asymptomatic infection (BRAZIL, 2015). It is impossible to know the actual number of Zika virus infections because it is a disease in which about 80% of the infected cases will not show signs or symptoms of the disease and most patients will not seek health services, making it even more difficult to know the magnitude of this disease. In addition, there is currently no serological test (IgM and IgG) in quality and quantity available, restricting itself only to virus identification by isolation or PCR (Polymerase Chain Reaction) in the acute disease (BRASIL, 2016). Although the embryonic period is considered the most risky for multiple complications due to infectious process, it is known that the central nervous system remains susceptible to complications throughout pregnancy. Thus, the severity profile of the complications of Zika virus infection in pregnancy will depend on a set of factors, such as: development stage of the concept, dose-response relationship, maternal-fetal genotype and pathogenic mechanism specific to each etiological agent (BRASIL, 2015). The expansion of the Zika cases has prompted the World Health Organization (WHO) to issue a global warning and officially acknowledge the link between infection and cases of microcephaly (which can also be caused by cytomegalovirus and toxoplasmosis). Since then in Brazil, ministerial measures have been established for the control of Aedes aegypti, with repercussions on state and municipal actions, which justifies the development of research whose results can generate subsidies for the effective approach of factors related to Zika and others diseases whose impacts are equally relevant. The literature indicates both positive and negative repercussions of the presence of the mother's expectations for motherhood, the baby's psyche and the relationship between the two. The positive aspects involve, mainly, the need for the baby to be invested with desires and fantasies on the part of the mother to begin to exist as a human being. Expectations are considered negative when there is no room for the baby to assume its own identity, that is, when the mother can not accept the uniqueness of her child and abandon her massive load of projections (BRAZELTON; CRAMER, 1992; CARON *et al.,* 2000; SZEJER; STEWART, 1997). The fear of losing the baby, having a disabled child, not knowing how to take care of him, or having to see him suffer from prejudices, is often experienced by pregnant women. These factors demand not only family support, but multidisciplinary health team. Doubts, anxieties, fantasies and fears need to be expressed and reduced consistently.

Conclusions

In view of the above and considering mainly that these infections may cause future sequelae, it is evident and necessary the early identification of infected pregnant women for the implementation of specific measures. This situation creates challenges for public health to plan strategies for screening these diseases in a practical and comprehensive way, facilitating not only the clinical management but also the psychological management of pregnant women. In addition, access to quality health services and consistent information about their health and baby development are as fundamental as family support. Otherwise, if a pregnant woman does not receive consistent information and if there are risks in pregnancy, she is extremely vulnerable, in suffering and despair, and can become ill with physical, psychological and social losses, at a time when she needs to take care of herself and her baby newborn as well as other children. Diante do exposto, é necessário compreender a importância do diagnóstico das doenças infecciosas congênitas (Toxoplasmose, Zika vírus e Citomegalovírus) para gestantes, e quais as repercussões e expectativas desse diagnóstico em suas vidas. Desde então, equipes multidisciplinares atualizadas com profissionais que trabalham em conjunto e de forma alinhada, transdisciplinar, podem ser bastante eficazes, para apoiar as gestantes em seus medos, expectativas e dúvidas. The knowledge and identification of such feelings will favor understanding about the psychosocial aspects related to communicable diseases that, in the case of pregnant women, have health impacts on the mother-child binomial and repercussions in the family and social context. In addition, such identification of feelings will allow the support to the pregnant women, in order to offer greater comfort and confidence to face the situation, besides being able to provide greater adhesion to the monitoring protocols seeking improvements in the quality of life and health of the child it's mom.

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