Positive Analysis of Screening for TORCH Infection in Eugenic and Eugenic Children

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Abstract: To explore the clinical analysis of Torch infection and post infection in eugenic and eugenic children. METHODS: 1200 pregnant women were screened by Torch serological screening in our station from 2012 to 2013. Fasting venous blood was collected and all of them were detected by enzyme linked immunosorbent assay (ELISA). Results: Cytomegalovirus and rubella virus infection were higher in the population. Increasing TORCH screening could be used as a basis for recent infection. Detection of specific antibodies to Torch is of great significance for the diagnosis of early (acute) infection, judgment of severity of the disease and prevention of the birth of defective fetuses. Early confirmation of mother's infection can help them to identify invasive or non-invasive prenatal diagnosis as early as possible. In view of the current situation of no specific treatment for pregnant women infected with Torch, we should strengthen the popularization of Torch knowledge and strengthen prenatal eugenics examination.

1. Torch Infection Status

TORCH infection refers to Toxoplasma infection, rubella caused by Rubella, herpes simplex virus (HSV) infection of reproductive tract, cytomegalovirus (CMV) infection and other microorganisms infection. Ten items of TORCH examination are necessary for every pregnant mother, because if the mother has TORCH infection, it may cause misfortune abortion or stillbirth, fetal malformation and other problems. What are the ten TORCH tests? TORCH is actually a group of pathogens, T is Toxoplasma gondii, O is other pathogenic microorganisms, R is rubella virus, C is cytomegalovirus, H is herpes simplex virus. T. gondii is a parasite that mainly infects cats. Acquired mild infections are often asymptomatic, but antibodies can be found in the serum; pregnant women infected with Toxoplasma gondii will cause stillbirth and preterm birth through intrauterine placenta infection. After birth, the fetus will show a series of central nervous system symptoms and congenital damage to the eyes and viscera, and serious cases will cause mental retardation. (Xiaobian reminds: pregnant women who have cats and other pets at home must pay more attention to the examination before pregnancy.) R rubella virus is usually transmitted through the respiratory tract. After infection, cough, runny nose, sore throat, headache and other discomforts will occur. A rash may appear on the face, and it will spread all over the body in one month. Congenital rubella syndrome may occur in fetuses with intrauterine infection during pregnancy. Cytomegalovirus C can be transmitted sexually as well as through droplets and body fluids. Mothers infected with the virus can cause fetal dysplasia, congenital immune deficiency, mental retardation, visual impairment, premature delivery, abortion, stillbirth and other problems. Cytomegalovirus is an important virus causing congenital malformation.

Herpes simplex virus (HSV) infection generally does not cause abortion and stillbirth, but genital herpes in late pregnancy can lead to premature delivery, as well as postpartum neonatal infection, meningitis and other central nervous system diseases, but also accompanied by important organ damage, serious developmental disorders and central nervous system sequelae. How to Understand

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TORCH Inspection Report IgM antibody of a pathogen in TORCH test was negative (the test report showed "-"), indicating no recent infection. The positive IgM antibody of some pathogen in TORCH test (the test report shows "+") indicates that the pathogen is in the period of infection at present. It is suggested that the treatment and re-examination should be negative for at least 3 months before pregnancy. Generally, it can be cured after 6 weeks of treatment.

2. Toxoplasma Infection

Toxoplasma gondii is mainly infected by contact with feline feces or eating contaminated raw meat. The average mother-to-child transmission rate was 40%, which increased with the increase of gestational weeks. Although the rate of mother-to-child transmission in early pregnancy (10%-25%) is low, it causes serious damage to the fetus, often leading to fetal death and spontaneous abortion. The rate of mother-to-child transmission in the second and third trimesters of pregnancy was 30% - 50% (72% - 79% asymptomatic) and 60% - 65% (89% - 100% asymptomatic), respectively. Toxoplasma gondii mainly invades the central nervous system, causing hydrocephalus, microcephaly, brain calcification, hepatosplenomegaly, ascites, fetal growth restriction (FGR), etc. The incidence of toxoplasma gondii infection during pregnancy in foreign countries is about 0.2%-1%. The reported infection rate of Toxoplasma gondii in China ranges from 4.9% to 8.4%, which may be related to the use of immunoassay rather than etiological examination in China.

Toxoplasmosis in newborns is mainly transmitted through close contact by first-time infected lactating mothers or other relatives and nurses. Neonatal infection with toxoplasma gondii may include convulsions, cerebral palsy, visual and auditory impairment, mental retardation, etc. The mortality rate is 72%. The later the onset, the lower the incidence of central nervous system damage and mental retardation. Toxoplasmosis in children is mainly caused by contact with cat pets. More than 85% of the infected children are asymptomatic. Toxoplasma gondii infection in children can cause headache, vomiting, delirium, encephalitis, myocarditis, pneumonia, hepatitis, gastroenteritis and so on.Rubella is a respiratory infectious disease, which will be immunized for life. Rubella infection during pregnancy, such as congenital rubella syndrome (CRS) caused by fetal involvement, manifests as congenital heart disease, glaucoma, cataract, deafness, mental retardation, microcephaly, jaundice, etc. It is very important to determine the time of rubella infection during pregnancy. The incidence of CRS is 85% within 8 weeks of gestation, 52% in 9-l2 weeks, and it is very rare after 20 weeks. Since rubella vaccine was injected into infants and children at home and abroad, the incidence of rubella has been very low (below 0.1%).

3. Cytomegalovirus (CMV) Infection

The primary CMV infection rate during pregnancy is 0.7%-4%, of which 30%-40% can be transmitted to the fetus. Recurrent CMV infection during pregnancy ranges from 1% to 14%, of which 0.2% to 2% can be transmitted to the fetus. Infected fetuses may have cerebellar malformations, chorioretinitis, neuroatrophy and so on. Serious cases can lead to abortion or stillbirth. Neonatal signs include jaundice, hepatosplenomegaly, thrombocytopenic purpura, hemolytic anemia and various degrees of nervous system damage, namely giant cell inclusion disease (CID). Some of the infected persons may have symptoms of deafness and mental retardation from months to years after birth.

Recessive infections of pregnant women in the late pregnancy if CMV is activated can be discharged from the urethra and cervix, during delivery through the birth tract to the baby. Breast-feeding mothers can transmit milk to infants and young children. CMV is mainly transmitted in children and adults through close contact, such as kissing, sexual intercourse and blood transfusion, and in adults through sexual contact. At present, there is no effective treatment for CMV infection.

4. HSV Infection

The incidence of HSV infection in the reproductive tract during pregnancy was 7%-8%. The mother-to-child transmission rate of HSV infection during pregnancy was less than 1% before 20 weeks of gestation, while the transmission rate of primary HSV infection in reproductive tract during childbirth was 30%-50%. In fact, neonatal HSV infection mainly depends on the presence or absence of virus in the birth canal.

Children aged 0.5 to 10 years are prone to be infected with HSV1 by sharing toys (46%) and intimate contact. About 50% of the first infected children will have obvious herpes symptoms. Asymptomatic recessive infections may reactivate many years later to cause ganglion and visual impairment, and very few can cause incurable encephalitis and enteritis.

Adolescents and adults are mostly infected with HSV through sexual contact, and more than 85% of the infected persons are asymptomatic. About 3% of asymptomatic infections can detect live viruses in urine, semen and reproductive tract secretions.

5. Torch Is Screening

At present, there are two different opinions worldwide: ToRCH does not need routine screening and needs to be used as routine screening;

The former holds that the detection of serum specific antibodies in pregnant women can not clearly diagnose when pregnant women are infected, whether the fetus is involved in malformation and whether there are sequelae in the long run, nor can it be used to determine whether termination of pregnancy is necessary.

The latter holds that, firstly, because of the changes of hormone levels in pregnant women and immature autoimmune system in children, the incidence of TORCH infection is higher. For example, the infection rate of Toxoplasma gondii in pregnant women in China is 4.9%-8.4%; the epidemic of rubella is periodic, such as a regional rubella outbreak in the United States in 1999; the primary infection rate of CMV in pregnant women is 0.7%-4%, while the recurrence infection rate can be as high as 14%; the incidence of HSV infection in reproductive tract of pregnant women is 7%-8%[1-5]. Secondly, TORCH infection is harmful to fetus and infant. For example, TORCH infection can lead to abortion, premature birth, cerebral palsy [6-10], congenital heart disease of newborns, and other birth defects [11,12]. Third, TORCH screening and diagnosis technology is mature, and targeted treatment based on screening and diagnosis results can effectively block mother-to-child transmission, protect the fetus and prevent or reduce the occurrence of sequelae.

6. Screening for Toxoplasma Gondi Infection

Toxoplasma gondii infection in pregnant women has no obvious symptoms. Serological screening can only be used to help determine whether the infection is active or not. Toxoplasma gondii infection during pregnancy has an average of 40% chance to infect the fetus. If the fetus is infected without effective treatment, the proportion of teratogenesis and mental retardation is very high, and the mortality rate after birth is as high as 75%. Screening found that the high risk of Toxoplasma gondii infection in the fetus, can be further examined after 20 weeks of pregnancy, such as amniocentesis, percutaneous umbilical cord blood and B-ultrasound to determine whether the fetus is infected, but also after 12 weeks of pregnancy, sulfadiazine and pyrimidine intrauterine treatment. These positive diagnostic and therapeutic measures can reduce the incidence of congenital Toxoplasma gondii infection by 70%. At the same time, the incidence of sequelae of central nervous system, mental retardation and retinopathy of fetuses infected with Toxoplasma gondii is significantly reduced.

7. Rubella Virus Infection Screening

More than 50% (85% in 8 weeks and 52% in L2 weeks) of rubella virus infection before 0 weeks of gestation can cause congenital rubella syndrome (CRS) in fetuses, including congenital heart

disease, glaucoma, cataract, deafness, mental retardation, microcephaly, etc. If women of childbearing age are screened two months before pregnancy, rubella vaccine can prevent the occurrence of CRS in negative women. If not screened before pregnancy, should try to screen before 12 weeks of pregnancy, vaccination can also reduce the incidence of CRS.

8. Cytomegalovirus Infection Screening

About 30%-40% of pregnant women with primary infection and 1% of pregnant women with recurrent infection can infect the fetus, and the proportion of CMV infection in newborns is about 1:150. The proportion of cerebellar malformations, chorioretinitis, neuroatrophy and even abortion or stillbirth after CMV infection is very high. Amniotic fluid or umbilical cord blood from high-risk pregnant women were taken for IgM antibody test or virus culture test, or ultrasonography after 20 weeks to observe whether the fetus had hydrocephalus, brain calcification, microcephaly, fetal growth restriction (FGR), hepatosplenomegaly or ascites to confirm the diagnosis. For high-risk pregnant women, appropriate protective measures can effectively reduce the risk of fetal and neonatal infection.

9. Screening for Herpes Simplex Virus Infection

The rate of mother-to-child transmission of HSV in pregnant women with active infection of the obstetric tract during childbirth is 30%-50%. Through serological screening, pregnant women at high risk can be screened for further viral antigenicity tests. After diagnosis, cesarean section can minimize neonatal HSV infection. In addition, for newborns with HSV infection in relatives, the necessary protective measures can prevent and reduce the risk of neonatal infection.

10. Conclusion

Early confirmation of a mother's infection can help her to identify invasive or non-invasive prenatal diagnosis as early as possible.Eugenic birth and good childbearing is an important part of promoting family happiness and harmony. Pre-pregnancy eugenic health examination is a practical measure to improve the quality of the birth population and reduce the risk of birth defects. Therefore, we must not omit this step. Pre-pregnancy check-ups can be done in 3-7 days with clean menstruation. If you want to have a healthy baby, you can do a eugenic check-up before pregnancy. Besides general physical examination, routine blood and urine tests, hepatitis B surface antigen and some special pathogens should also be carried out. Chromosome detection should be carried out where conditions permit, so as to avoid hereditary diseases. In view of the current situation of no specific treatment for pregnant women infected with TORCH, we should strengthen the popularization of TORCH knowledge and strengthen prenatal eugenics examination.

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