Hepatitis B: what do you need to know if trying to conceive

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Hepatitis B is relatively common in the US and worldwide. There are approximately one million individuals living in the US with chronic hepatitis B. According to the CDC, the highest rate of infection occurs among those 20 to 49 years old. Approximately 5% to 10% of adults and children older than age 5 with hepatitis B infection go on to develop chronic infection. Globally, 350 million individuals live with chronic hepatitis B infection, according to WHO and other sources. One third of those infected reside in China (乙型肝炎). It is more common in Asia, Saharan Africa and some areas in South America. Migration and medical tourism may increase the magnitude of hepatitis B problem in the US. In Asian countries the prevalence is slightly higher in men and is about 10% of adult population. Universal vaccination of all infants at birth and vaccination of at risk individuals e.g type I and II diabetes, sex partners of hepatitis B infected individuals, men who have sex with men, travelers to high risk areas, can prevent transmission of hepatitis B.

Reproductive endocrinologists and fertility specialists are responsible for detection of hepatitis B in partners and prevent the transmission of hepatitis to non infected partner and newborn. Women and men are tested for hepatitis B at the time of initial fertility consultation. Abnormal results are interpreted and measures are taken to avoid transmission to others, during natural conception and with the use of assisted reproduction (IVF).
Hepatitis B Discordant Couples Discovered Prior to Fertility Treatment

One of the major means of transmission of hepatitis B is sexual intercourse. At initial consultation if one partner is hepatitis B Surface antigen positive (HBsAg) indicating chronic infection, vaccination of the other partner will most likely prevent the transmission of hepatitis B during attempts of natural conception and fertility treatment. The vaccine is administered three times at 0, one month and 6 months. High levels of Hepatitis B surface antibody (anti-HBs) indicates immunity.

During fertility treatment, when the male partner is infected and female partner is not, modification of sperm washing techniques minimize the risk of hepatitis B transmission. These include separation of sperm from seminal fluid and then testing of the sperm for hepatitis B before use IUI or intracytoplasmic sperm injection (ICSI). The use of ICSI may reduce but not eliminate the transmission of hepatitis B virus (controversial).

Prevention of Hepatitis B transmission from Egg Donors

Egg donors are initially screened through careful history to exclude those exposed to risk factors, then a complete physical examination. They are also initially screened for viral infections including hepatitis B. Within one month of egg retrieval, donors are retested using conventional labs as well as DNA based testing for hepatitis B (and hepatitis C and HIV) to further minimize the risk of transmission.

Prevention of Hepatitis B transmission
from Sperm Donors

Sperm donors undergo a careful questionnaire related to risk factor, followed by examination and laboratory screening. Sperm is obtained and frozen and quarantined. Donors are then retested using FDA approved laboratories to further minimize the risk of transmission of infectious diseases including hepatitis B.

Prevention of Hepatitis B transmission to Gestational Carriers

Male and female partners (intended parents) are tested in a manner similar to sperm and egg donors. If testing was not possible, the carrier is carefully counseled that FDA mandated testing is not followed. In case of a hepatitis B carrier partner, the carrier is vaccinated prior to transfer of embryos.

Low Temperature Storage of Cells & Tissue from a Hepatitis B infected individual

There were few reported cases of transmission of hepatitis B from frozen tissue. Those cases did not involve sperm, eggs or embryos. As a precaution, reproductive cells from infected individuals are frozen in separate tanks than those not infected. More recently, the use of closed systems that do not allow cells to touch liquid nitrogen in the tank, the use of nitrogen vapor instead of liquid and the sterilization of nitrogen using ultraviolet rays can further minimize the risk of transmission.

Hepatitis B Discovered During Pregnancy

A hepatitis B infected mother have a small risk of transmission of the virus to the fetus during pregnancy. The risk of transmission, however, is significant at the time of delivery. Sometimes medical treatment of mothers is indicated
with anti-viral medications to minimize this risk after consultation with a maternal and fetal medicine specialist.

All newborn to a hepatitis B infected mother should receive at birth

i. Hepatitis B immune globulin (HBIG) to neutralize a virus acquired from the mother and ii. Hepatitis B Vaccine to produce long term immunity.

Careful screening of intimate partners, egg and sperm donors can markedly reduce the chance of hepatitis B transmission during natural conception and IVF.