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# Closing the Brief Case: Nystagmus in a 3-Month-Old Leading to a Diagnosis of Congenital Cytomegalovirus Infection

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## ANSWERS TO SELF-ASSESSMENT QUESTIONS

1. Which of the following is the most sensitive and specific laboratory test to diagnose congenital CMV (cCMV) in a pregnant woman who has fetal abnormalities detected during her 20-week ultrasound?
    a. CMV IgG enzyme immunoassay from the mother's serum
    b. CMV IgM enzyme immunoassay from the mother's serum
    c. CMV PCR of the mother's blood
    d. CMV PCR of amniotic fluid

    Answer: d. PCR of amniotic fluid is the preferred method for highly sensitive and specific diagnosis of congenital CMV. IgG and IgM testing can reflect past infection and therefore lack specificity. Detection of CMV DNA in the mother's blood can be supportive evidence, but since only around a third of primary infections are passed to the fetus, detection in the mother's bloodstream does not guarantee that the virus was passed to the fetus.

2. Which of the following is the most sensitive and specific laboratory test to diagnose cCMV in a newborn who has failed their first hearing screen at day 1 of life?
    a. CMV PCR of urine
    b. CMV PCR of swab-collected saliva
    c. CMV IgG testing of the neonate's serum
    d. CMV IgG testing of the mother's serum

    Answer: a. Some states now recommend CMV testing for newborns who fail their first hearing screen. The preferred method is CMV PCR of urine; however, this requires brief catheterization for collection. Swab-collected saliva is also acceptable, but there is the risk of false positivity in breast-fed neonates, as CMV is frequently shed in breastmilk. Thus, a positive saliva result should be confirmed with a urine PCR. IgG testing lacks specificity, as antibodies in the mother can reflect past infection and antibodies in the neonate are likely from transplacental acquisition.

3. Which of the following could be considered to support a diagnosis of cCMV in a 6-month-old infant who has developmental delays and abnormal MRI findings?
    a. CMV PCR of urine
    b. CMV PCR of swab-collected saliva
    c. CMV PCR of the 6-month-old infant's dried blood spot collected 24 hours after birth
    d. CMV IgG testing of the 6-month-old infant's serum

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Answer: c. Detection of CMV DNA in urine or saliva or of anti-CMV IgG antibodies at this age could reflect postpartum acquisition. The most specific approach would be to test the blood spot collected around 24 h after birth, although current testing methods are not 100% sensitive and thus could miss cases. Unfortunately, many states discard the newborn screening card before symptoms are realized.

**TAKE-HOME POINTS**

- Diagnosis of congenital cytomegalovirus infection can be challenging and requires different approaches based upon the stage at which symptoms are observed.
- cCMV is the most common congenital infection, and there is consideration of including detection of CMV DNA from the dried blood spot card as part of newborn screening.
- CMV PCR from saliva and/or urine in newborns that fail their first hearing screen is required in some states and is recommended in many others to diagnose cCMV.
- Avidity testing for CMV IgG antibodies can be considered in pregnant women with concern for transplacental transmission but should not be used as a standalone test.
- Diagnosis of cCMV can allow therapeutic interventions and/or frequent hearing and vision screening.