G32 Transplacental Intrauterine Herpes Simplex Virus Infection Resulting in Cutaneous Calcifications in an Infant

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After attending this presentation, attendees will learn about a unique pathologic presentation of transplacental neonatal herpes infection, which may aid in future clinical diagnoses.

This presentation will impact the forensic community and/or humanity by highlighting a distinctive but rare presentation of Herpes Simplex Virus (HSV). By augmenting the relatively scant literature on transplacental HSV infection, this case may expand the differential diagnoses for infant autopsies with similar gross findings, and possibly aid in earlier detection and treatment of intrauterine HSV infection.

Neonatal HSV infection is often associated with liver necrosis, microcephaly, intracranial calcifications, and brain necrosis, and clinical signs may not be apparent until several days after birth. In many of these cases, transmission occurs during birth. More rarely, transplacental intrauterine HSV infection can occur, with life-threatening effects due to earlier onset in the pregnancy. A literature search reveals some isolated case reports of similar cases, most of which demonstrate unique gross presentations. The authors describe the autopsy case of an infant born at 25 weeks gestation with diffuse cutaneous calcifications. There was microscopic evidence of acute chorioamnionitis and acute funisitis. HSV immunostaining was positive on the tissue sections of placental membranes and umbilical cord. Polymerase chain reaction analysis (PCR) on the same paraffin-embedded tissues was positive for HSV. No viral inclusions were identified in any of the tissue sections.

A pregnant 20-year-old female (G1P0) presented to her obstetrician with spontaneous rupture of membranes at 25 weeks gestation. The patient was transferred to a tertiary care center for probable chorioamnionitis, where she was noted to be febrile with uterine tenderness and an elevated white blood cell count. The fetus began to show signs of distress with decelerations in heart rate, and a caesarean section was planned. However, the infant was delivered vaginally in the operating room, approximately 18 hours after the membranes ruptured. The infant failed to breathe spontaneously and had no heart rate, so resuscitation efforts began, including intubation and 3 doses of epinephrine per endotracheal tube. Resuscitation was discontinued after 15 minutes since the infant could not sustain a heart rate. Apgar scores were 0 @ 1 minute, 1 @ 5 minutes, and 0 @ 10 minutes.

Maternal past medical history was significant for two urinary tract infections during pregnancy, with urine cultures positive for *Escherischia coli*. She was also briefly hospitalized for pyelonephritis one week prior to delivery, with urine cultures again positive for *E. coli*. She was treated with Macrobid and Keflex, and was still taking these medications along with prenatal vitamins at the time of delivery. Prenatal labs were negative for chlamydia, gonorrhea, HIV, and Group B Strep. She denied any history of sexually transmitted diseases. There was no documentation of prenatal HSV testing.

At autopsy, the infant's skin was light tan with extensive areas of dark red discoloration on the back, chest, and head. Additionally, there were irregular, white patchy lesions on the posterior head, back, shoulders, chest, inguinal areas, and over the coccyx. These lesions appeared to be intradermal, were not palpable, and did not scrape off. The remainder of the gross examination was unremarkable. The body was that of a normally formed male infant, consistent with a 25-week gestational age. No other dysmorphic features were noted, and the internal organs were located in their normal anatomic positions. The placenta was significant for a white area on the maternal surface, grossly consistent with an infarct, and encompassing less than ten percent of the maternal surface area.

Microscopically, the skin demonstrated multiple areas of intradermal calcifications, consistent with the white, patchy lesions seen grossly. Hyperkeratosis was present, with amorphous debris visible on the skin surface. However, only minimal inflammation was observed around the calcified areas. The lungs contained multiple areas of lymphocytic infiltration with debris-laden macrophages. The infarcted area on the maternal side of the placenta showed acute inflammation with neutrophilic extravasation and fibrin deposition. The umbilical cord demonstrated funisitis, with neutrophils visible in the walls of the cord vessels, and chorioamnionitis of the placental membranes. Of note, no herpetic viral inclusions were identified in any of the tissue sections.

Sections containing the intradermal calcifications and sections of placental membranes and umbilical cord were sent for special staining. GMS, gram stain, Steiner stain (for spirochetes) and Toxoplasmosis stain were all negative on these sections. However, HSV immunostaining was positive on the placental membranes and umbilical cord. HSV infection was confirmed by PCR at an outside laboratory (ARUP Laboratories, Salt Lake City, Utah). The tissue submitted for HSV PCR was from the formalinfixed and paraffin-embedded sections of placental membranes and umbilical cord.

Herpes (HSV, Herpes Simplex Virus), Transplacental, Cutaneous

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