Title: PLACENTAL INVOLVEMENT IN CONGENITAL NEUROBLASTOMA: An Autopsy Case Study

Authors: LaShonda D. Hood PA (ASCP)\textsuperscript{CM}, Eric Willis, M.D., Sory J. Ruiz, M.D., Jennifer Brainard, M.D. Camela Tan M.D.

Abstract: Neuroblastoma is the most common solid malignant tumor of childhood, arising from primitive neuroectodermal cells originating in the adrenal medulla or ganglia of the sympathetic nerve system. The clinical course is well known with often spontaneous regression of localized or disseminated tumor in infants, with or without therapy.

Background: The mother is a 25 year old G2P1 with unremarkable previous medical history. A male newborn was delivered at 32w2d on March 2014 with prenatal diagnosis of fetal hydrops, massive hepatosplenomegaly and high cardiac failure. Extensive resuscitation at birth and admission to the NICU were required. Abdominal ultrasound showed an enlarged liver with multiple areas of echogenic foci and a distinct lesion on the left suprarenal region. On day two, the baby developed respiratory and renal failure; he was made DNR and expired.

Discussion: An autopsy was performed, limited to the liver. Careful external examination revealed a non-macerated male fetus. The body weight of the fetus was 3100 grams (normal range for age: 1413\textsuperscript{+} 623 grams). Foot length 6.3 cm (normal for age: 6 +/- 0.6 cm) and crown-heel length 42.5 cm (normal for age: 39.8 +/- 5.4 cm) thus consistent with 32 weeks gestation. Massive hepatomegaly, liver weight 527.8 grams (normal for age: 61.2 +/- 17.0 grams). The liver occupied the four abdominal quadrants. The capsular surface of the liver is nodular, tense with focal areas of subcapsular hematoma. On coronal sectioning, the parenchyma is 90\% replaced by a fleshy pink-tan to brown mass with focal areas of hemorrhage. The remainder of the uninvolved liver parenchyma appeared congested. The gallbladder was present and appears unremarkable.

The placenta was large with a short, eccentric cord insertion. The placental disc measured 21.0 x 18.5 x 3.2 cm and weighed 768.8 grams.

Microscopic Findings: Lobules of small to medium size round cells with hyperchromatic nuclei, coarse chromatin, indistinct nucleoli, scant cytoplasm and indistinct cytoplasmic borders was seen replacing the liver parenchyma. Thin fibrovascular septa are present within the tumor with focal areas of vascular congestion. Scarce pseudorosettes are present. Necrosis is not present. Vascular invasion is noted. Immunohistochemical stains are performed. The tumor is strongly positive for chromogranin, synaptophysin, CD56 andNSE and it is negative for CD45 and CD99.

The placental disc shows extensive involvement of villous blood vessels by neuroblastoma. Neuroblastoma tumor cells fill and distend the villous blood vessels. Stromal invasion is not identified. The disc is markedly enlarged, heavy and hydropic. No masses are seen.

Conclusion: Congenital neuroblastoma associated with placental involvement is a rare occurrence, with approximately twelve prior cases reported in the literature. The placental involvement in this case study
is similar to that described in the majority of prior cases in which tumor emboli are confined to fetal blood vessels.