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Letter to the Editor

Diffuse metastatic liver involvement of congenital neuroblastoma without primary mass and mimicking chronic liver disease

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Dear Editor,

Neuroblastoma (NBL) is the most common extracranial solid tumor in childhood and the most frequently diagnosed neoplasm during infancy (1). NBLs may occur anywhere along the sympathetic chain and are located in adrenal gland, retroperitoneum, posterior mediastinum, neck or pelvis. The heterogeneity and biological characteristics of the tumors means that prognosis is very variable at different ages. Some act aggressively, while infantile and congenital cases typically regress on their own (2).

A mass may be determined; however, generally diagnosis is metastatic so symptomology may change. The most common metastasis localizations are bone, liver and lymph nodes. Metastatic disease has a variety of patterns. Liver metastasis may present as diffuse infiltration or parenchymal nodules (3). With the typical radiological appearance of metastasis together with primary mass, diagnosis is generally easy. However, in the regression stage of the disease, metastatic appearance without primary mass observed may be confusing and mimics some different diseases. Herein, we present a rare congenital NBL case with primary mass not observed, but diffuse metastatic liver infiltration radiologically mimicking chronic liver disease.

A three-month-old male applied with complaints of discomfort and not feeding. He was born at 38 weeks and 1 day gestation via spontaneous vaginal delivery to a 29-year-old gravida-3 para-2 mother. The birth weight was 2.9 kg. There was minimal abdominal distention immediately after birth. There was 2nd degree consanguineous marriage between mother and father. Maternal medical history and pregnancy were normal. Prenatal abdominal ultrasonography was not performed during pregnancy.

On initial examination, the infant was alert and active. Admission vital signs were as follows: temperature 36.2 °C, blood pressure 62/44 mmHg, heart rate 158 beats per minute, respiratory rate 40 breaths per minute with oxygen saturation of 96% on unassisted room air. With the normal bowel sounds, the abdomen was relaxed. The remainder of the physical examination was normal.

Abdominal and chest radiographs were normal with regular intestinal gas distribution. On abdominal ultrasound, there was rough granular heterogeneity forming patchy hypoechoic areas in parenchyma together with contour irregularity. The portal vein was slightly dilated and minimal splenomegaly was present. Intraabdominal collateral vascular structure or acid was not identified. The paraaortic region had few millimetric lymph nodes without pathologic size or appearance.

Blood tests found aspartate aminotransferase (AST) and alanine aminotransferase (ALT) were 54 U/L and 48 U/L with minimal elevation. Neuron-specific enolase (NSE) was 15 ng/ml and at the upper limit. Sedimentation and CRP were normal. Other blood parameters and urine tests were normal.

On abdominal magnetic resonance imaging (MRI), T2 and STIR sequences found uncertain boundaries to the liver,

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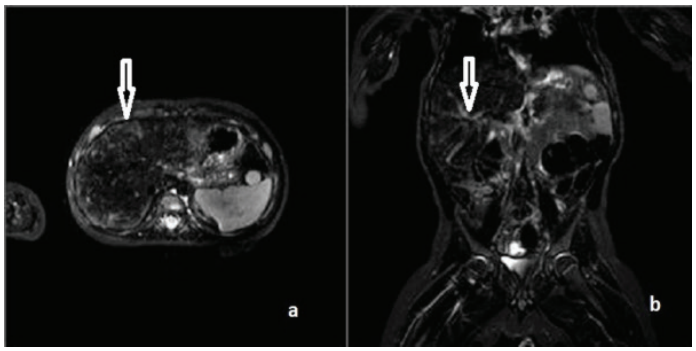
peripheral weighted signal increase and periportal region edema (Figures 1.a and b). In parenchyma there were fine septa with contrast involvement, heterogeneity linked to reticular appearance and contour irregularity of the liver (Figure 2). There was no intraabdominal mass identified in the paraaortic area or adrenal glands. Radiological appearance initially evaluated cirrhotic liver linked to congenital hepatic fibrosis.



Figures 1. a-b. Abdominal MRI. Axial STIR shows signal increase in subcapsular areas on the periphery of the liver accompanied with splenomegaly (a). On coronal STIR periportal edema is observed (b). Findings are similar to cirrhotic liver

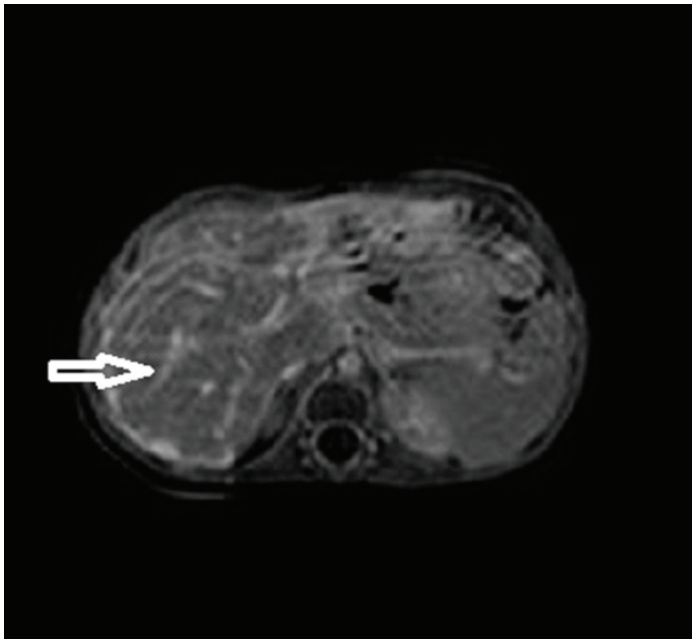


Figure 2. On fat-suppressed postcontrast T1, contrast-involved septa and heterogeneity are observed in parenchyma. Irregular liver contours are present. No mass identified in adrenal glands. Figure 3.Scintigraphy did not show marked MIBG uptake in the liver

Tru-cut liver parenchyma biopsy was performed when the infant was 4 months of age. Under the microscope, small, round, blue cells that are clustered in rosettes were revealed, supporting neuroblastoma. Immunohistochemical staining was positive for NSE and synaptophysin. Metaiodobenzylguanidine (MIBG) scintigraphy was performed to detect occult disease and assess for distant bony spread. Scintigraphy did not show marked homogeneous MIBG uptake in the liver or adrenal glands (Figure 3). Distant bone metastasis was not also identified. Findings were assessed as congenital NBL with primary mass not identified linked to regression and diffuse infiltrative liver and paraaortic lymph node metastasis. Accepted as stage 4S, the patient was monitored without treatment. Abdominal ultrasound and MRI 2 months later observed the liver was normal with homogeneous appearance.

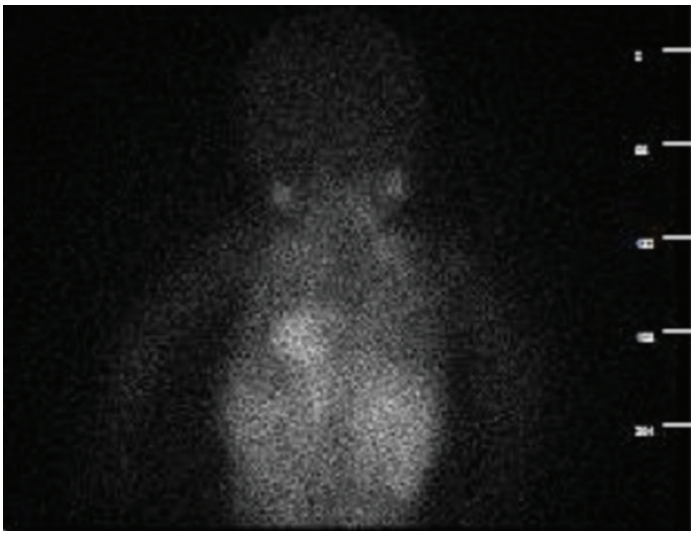


Figure 3. Scintigraphy did not show marked MIBG uptake in the liver

The International Neuroblastoma Staging System (INSS) divides the disease into 4 groups according to localized or metastatic presence (4). Within these, stage 4S occurs in nearly 5% cases. These infants have localized small primary tumors together with liver, skin or bone marrow metastasis. The majority regress on their own and have good prognosis (approximately 90% survival) (4-5). Due to the frequent observation and variable prognosis of NBL in the pediatric period, diagnosis requires clinical approach in addition to careful radiological assessment.

Radiography is not specific for abdominal NBL and is largely unhelpful for diagnosis. Ultrasound is generally the first-stage research in the pediatric period. MRI should be the priority imaging method for all primary NBL in the neck, chest, abdomen or pelvis (6). This is because MRI provides more detailed information more easily about metastatic bone marrow disease, chest wall invasion and spinal channel involvement compared to computed tomography (CT). Metaiodobenzylguanidine (MIBG) scintigraphy is used for diagnosis to identify occult disease and to assess distant bone spread.

We presented a rare case of metastatic neuroblastoma in the form of pseudocirrhosis misdiagnosed based on radiological findings as congenital hepatic fibrosis which has not been demonstrated in medical literature. Similar to our case in the literature there are cases where metastatic disease mimics other diseases. For example, Abo-Elenain A et al. published a case with right adrenal

gland neuroblastoma infiltrating the liver and mimicking mesenchymal hamartoma in a six-month-old female infant (7). Hassanein AH et al. reported a metastatic neuroblastoma mimicking infantile subcutaneous hemangioma (8). Also, Wang J et al. referred to the diagnosis of a left adrenal neuroblastoma accompanied by multiple hepatic metastases preoperatively (9). But postoperative diagnosis was multiple hepatic hemangiomas.

To sum up, diffuse metastatic involvement of the liver in NBL may be confused with other diseases. Medication treatment or spontaneous regression of NBL may cause pseudocirrhosis appearance in the liver. Especially in infants where primary mass is not identified due to regression, NBL must be considered for differential diagnosis when chronic liver disease is identified on radiologic images of the liver.

Competing interests: The authors declare that they have no competing interest.

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