



Congenital hepatic mesenchymal hamartoma associated with mesenchymal stem villous hyperplasia of the placenta: case report

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Abstract A newborn with an unusual association of hepatic mesenchymal hamartoma and mesenchymal stem villous hyperplasia of the placenta is presented. At birth, the large hepatic mass caused severe respiratory distress necessitating early surgical intervention. This report on the association of hepatic mesenchymal hamartoma and mesenchymal stem villous hyperplasia of the placenta strongly suggests a common pathogenetic origin of the 2 lesions.

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Hepatic mesenchymal hamartoma (HMH) is an uncommon benign developmental anomaly arising from the mesenchyma of the portal tract. It is more common in the first year of life (55% of all cases) [1]; a few cases (15%) have been reported in the neonatal period [2]. Although histologically benign, large congenital hamartomas of the liver may present at birth with severe abdominal distension and a respiratory distress. Careful early fetal ultrasound (US) scans in the last trimester of pregnancy may allow prenatal diagnosis, improving clinical evolution of newborns.

Mesenchymal stem villous hyperplasia of the placenta (MSVHP) is a rare anomaly involving diffuse edema of the stem villi with relatively normal terminal villi and is

secondary to vascular malformation of the fetal plate. It has been described in phenotypically normal fetuses but may be occasionally associated with severe fetus anomalies [3,4].

We report on a newborn girl with a prenatal history of placental abnormalities who presented at birth with a huge HMH causing severe respiratory distress. The diagnosis of MSVHP led us to investigate a common pathogenetic origin of HMH and MSVHP.

1. Clinical report

At 18 weeks of gestation of the fifth pregnancy of a 39-year-old woman, US scans revealed an anechoic lesion occupying more than 50% of the placenta. Amniocentesis was not performed. Maternal serum α -fetoprotein and hCG levels at 22 weeks were high. No polyhydramnios or fetal hydrops was present. At 38 weeks, when the woman referred to our department, fetal US scans showed multiple cysts in the fetal liver (107 × 95 mm) (Fig. 1). A 3150-g infant girl

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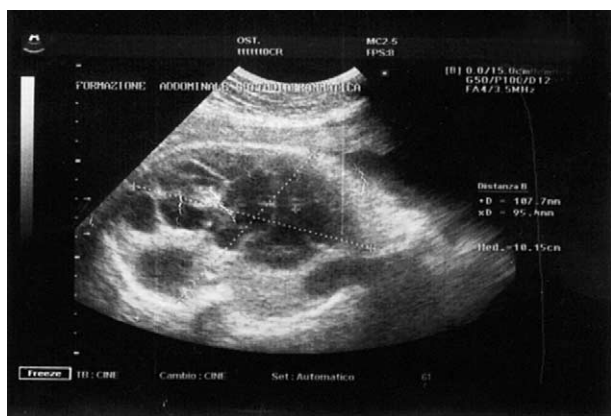


Fig. 1 Fetal US scan at 38 weeks demonstrating multiple cystic lesions (\varnothing , 107.7 \times 95.4 mm) in the fetal liver.

was delivered through cesarean delivery; the apgar score was 5 at 1' and then the baby required immediate intubation for respiratory distress. The abdomen was markedly distended because of a large palpable mass involving almost the entire abdomen. Abdominal US at birth showed a solid mass (15 cm) with many cystic lesions (the largest being 30 mm in diameter) apparently arising from the liver. Renal and cardiac US scan results were normal. Hematochemical investigations revealed slightly increased levels of liver enzymes and a high serum level of α -fetoprotein (9592 UI/ml). Cytogenetic analysis of peripheral T lymphocytes showed a normal female karyotype (46,XX).

The large mass determined a severe impairment to the respiratory function in spite of intubation and mechanical ventilation; therefore, the baby underwent surgical resection at 10 hours of age. At laparotomy, a multicystic and solid mass (120 \times 70 mm) was totally occupying the right hepatic lobe and some cysts involved the left hepatic lobe. The entire right hepatic lobe and the 2 bigger cysts of the left hepatic lobe were resected. After surgery, mechanical ventilation was necessary for 6 days. In relation to the large hepatic resection, the baby developed cholestasis, jaundice, and generalized edema, which gradually recovered. A transient hypothyroidism was observed.

Pathological findings demonstrated an enlarged (weight, 970 g; \varnothing , 15 cm) and multicystic placenta (Fig. 2A). At microscopy, the main histological finding was the presence of hydropic stem villi with normal terminal villi and no trophoblast proliferation (Fig. 2B). This histological picture indicated the diagnosis of MSVHP, excluding the first hypothesis of partial hydatiform mole.

The liver mass (weight, 130 g; \varnothing , 10 \times 6 \times 2 cm) appeared as a multiloculated lesion composed of solid and cystic areas at macroscopy (Fig. 3A); the cut surface showed yellow-green gelatinous material. At histology, the lesion was characterized by many fusiform and star-shaped cells in a myxomatous connective tissue that compresses the normal hepatic parenchyma (Fig. 3B). These findings were consistent with the diagnosis of HMH.

Clinical and ultrasonographic follow-up to 8 months demonstrated good growth and no development of new abdominal masses; the cysts in the left hepatic lobe do not tend to enlarge.

2. Discussion

In spite of only a few reports of MSVHP and about 40 reports of neonatal HMH in the literature, there have been already described 2 newborn patients with the association of neonatal HMH and MSVHP [5,6]. Only the patient reported by Kitano et al [5] had a prenatal US detection of both hepatic and placental mesenchymal lesions as we describe in the present report. Tsao et al [7] described an infant with an HMH associated with extensive vascular disease in the intermediate and stem villi of the placenta. Most of the reports in the literature lack some clinical (prenatal and neonatal US, follow-up) or laboratory data (placental microscopy, α -fetoprotein level, liver function tests), probably because the common pathogenetic origin of the 2 lesions was not suspected. The present patient gives new and stronger evidence to the hypothesis of a common pathogenetic origin of HMH and MSVHP.

In the past, an abnormal focal overgrowth of vascular and epithelial elements isolated from the normal mesenchyma of

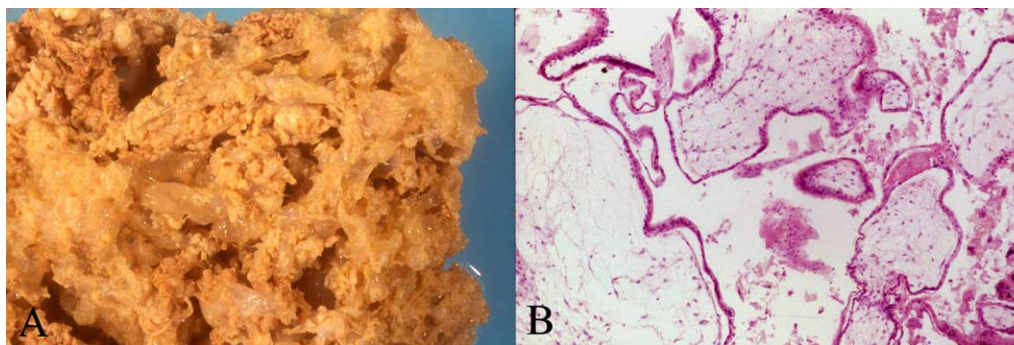


Fig. 2 Macroscopic and microscopic studies of the placenta showing mesenchymal stem villous hyperplasia. A, Macroscopic view of the placenta with severe vesicular degeneration, normal villi are mixed with vesicular ones. B, Histological section showing hydropic and cavitated stem villi and normal terminal villi (original magnification, \times 10).

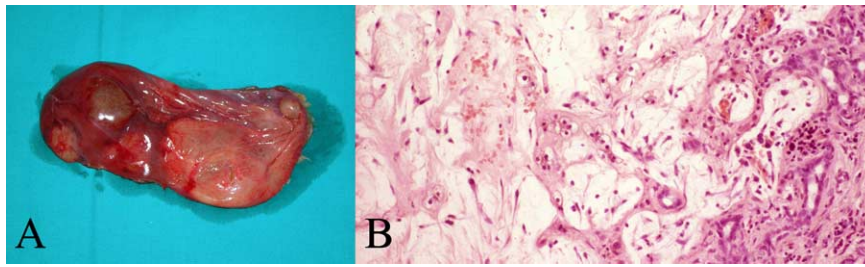


Fig. 3 Macroscopic and microscopic studies of HMH. A, Resected liver mass composed of solid and cystic areas containing yellow-green gelatinous material. B, Histological section showing many fusiform and star-shaped cells in a myxomatous connective tissue with many vessels and focal microcystic cavitations; this lesion compresses the adjacent normal hepatic parenchyma where extra medullary erythropoietic foci and ductal-biliary hyperplasia are visible (original magnification, $\times 40$).

the portal tract was suggested [8] for the pathogenesis of HMH. Therefore, HMH was considered a developmental anomaly rather than a true tumor and the association of HMH and MSVHP may represent a synchronous abnormal development of the mesoderm. The first step of the lesion in MSVHP may be a continuous inadequate blood supply that causes both severe aneurysmal dilatations of the chorionic vessels and hyperplasia of placental stem villi producing cystic structures. The consequent vascular thrombosis on the fetal plate of placenta may cause ischemic lesions of the fetal liver producing, as a reparative response, the proliferation of bile ducts and the obliteration of the central veins, which may lead to HMH [9]. Placental lesions are not observed until the second trimester of gestation and precede the development of hepatic ones, confirming the common pathogenetic mechanism.

The patient we report on showed an unusual clinical presentation with severe respiratory distress and compromised hepatic function. The rapid liquid collection in the hepatic cysts increased pressure over the lungs, causing respiratory distress. The benign nature of the lesion, the reported spontaneous regression [10], and the risks of surgery in newborns could represent elements for choosing a conservative approach. The severity of symptoms forced us to conduct a surgery, but the massive involvement of both lobes did not allow complete excision. In the literature, it has been described that both hepatic lobes are involved in 3% of all pediatric hamartoma cases. Recurrence or malignant transformation has been rarely observed [11]; therefore, a careful follow-up of any residual lesion has been guaranteed.

When a placental vascular anomaly is observed along with mesenchymal stem villous hyperplasia, pregnancies usually result in healthy neonates [4,12]. However, Kitano et al [5] reported 2 newborns with a mesenchymal hamartoma of the liver and 1 infant with a hepatic hemangioma associated with pregnancies with MSVHP. The present report provides further support of the possible association of a gestational trophoblastic disease with fetal hepatic mass. We believe that the association of HMH and MSVHP has been underdiagnosed; in many patients with

neonatal HMH, MSVHP was probably present especially when the benign, slowly progressive nature of the hepatic lesion has led to the diagnosis only several months after birth. To verify a common pathogenetic origin and address a specific prognosis of the 2 lesions, a careful histological investigation of the placenta in any newborn with a hepatic mass is very important.

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