

## Unexpected newborns in the liver : hemangiomas onset after hepatic resection of a giant cavernous hemangioma

M. Renzulli<sup>1</sup>, D. Ricciardi<sup>1</sup>, A. Clemente<sup>2</sup>, F. Tovoli<sup>3</sup>, S. Cappabianca<sup>2</sup>, R. Golfieri<sup>1</sup>

(1) Radiology Unit, Department of Experimental, Diagnostic and Speciality Medicine, Sant'Orsola Hospital, University of Bologna, Bologna, Italy ; (2) Radiology and Radiotherapy Unit, Department of Precision Medicine, University of Campania 'L. Vanvitelli', Naples, Italy ; (3) Unit of Internal Medicine, Department of Medical and Surgical Sciences, University of Bologna, Bologna, Italy.

### Question

A 47-year old woman underwent liver magnetic resonance imaging (MRI). In 2002, during abdominal ultrasound (US), a 4-cm lesion in liver segment VII typical for hemangioma was incidentally discovered. The lesion did not show any dimensional or morphological changes until 2007. The woman had two pregnancies, in 2008 and 2010 and she was not followed up.

In 2011, the woman underwent US due to the onset of abdominal discomfort, and the hemangioma was seen to be notably increased in size (13 cm). This diagnosis was confirmed by liver MRI performed in 2012 (Fig. 1A). In 2013, the patient underwent surgical resection of the hepatic hemangioma which, due to its large dimensions, was probably responsible for the abdominal pain that disappeared after surgery. The final pathological

### Answer

All MRI features are compatible with the diagnosis of "hemangiomas". This diagnosis is easy to reach but is still "incomplete". Hemangiomas are not rare in the liver parenchyma adjacent to a giant cavernous hemangioma (1). However, in our case, the hemangiomas were not present before the surgical resection of the giant hemangioma. Moreover, the unicity of our case was represented by the complete absence of these lesions in two post-surgical MRI examinations (Fig. 2A). In the literature, only one paper has reported the onset of hemangiomas in the remaining lobe after a hepatectomy (2). However, in that experience, the resected lesions represented hemangiomas. Although a study on mice has demonstrated an increase in Vascular Endothelial Growth Factor (VEGF) after hepatic resection



Fig. 1. — Magnetic resonance imaging performed in 2012 shows a giant hepatic lesion in the right lobe, strong hyperintense in T2-weighted image (A). Magnetic resonance imaging, performed in 2018, demonstrating multiple nodular lesions <1 cm, exclusively diffused in the residual segments of the right hepatic lobe after surgical resection of the hepatic giant hemangioma, appearing strong hyperintense on T2-weighted image (B) and in the arterial phase (C).

diagnosis was a giant cavernous hemangioma without signs of hemangiomas.

In 2018, the MRI showed multiple nodular lesions <1 cm, exclusively diffused in the residual right lobe, strong hyperintense on T2-weighted images (Fig. 1B) and in the arterial phase (Fig. 1C), without wash-out of the contrast media in the portal-venous phases and hypointense in the hepatobiliary phase. Is it possible to reach a correct diagnosis without any previous imaging studies?

(3), a clear relationship between the resection of the giant hemangiomas and the onset of hemangiomas cannot be established.

Correspondence to : Matteo Renzulli M.D., Via Albertoni, 15, 40138 Bologna, Italy. Tel. : +390512142958. Fax : +390512142699  
E-mail : matteo.renzulli@aosp.bo.it; dr.matteo.renzulli@gmail.com

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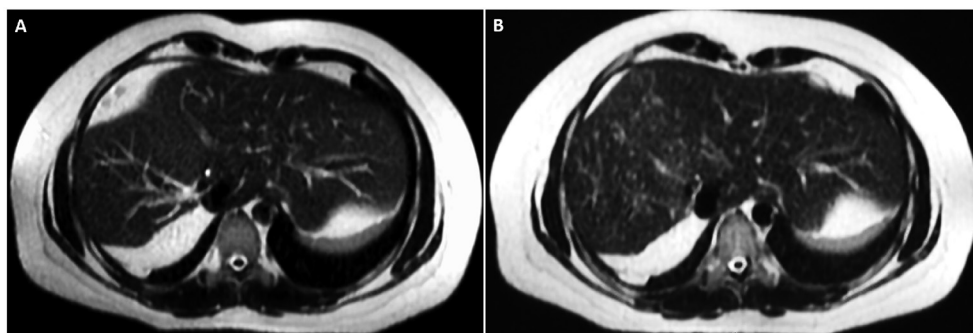


Fig. 2. — Magnetic resonance imaging, performed in 2015 after surgical resection of hepatic giant hemangioma (A), showing the complete absence of lesions in the residual segments of the right hepatic lobe, subsequently affected by the hemangiomas. The magnetic resonance imaging follow-up, performed in 2017 (B), showing that the onset of lesions which were smaller in number and size than the follow-up in 2018 (cfr. Fig. 1B).

Another aspect which makes this case interesting is that the stimulus to the onset of such lesions is probably still active because, in the MRI check-ups in 2017 (Fig. 2B) and 2018 (Fig. 1B), the lesions had increased in number and size.

Therefore, the patient was placed under close follow-up and the hypothesis of insertion onto the transplant waiting list was evaluated because the onset of hemangiomas in the left lobe could not be excluded.

#### Conflict of interest

The authors disclose any potential conflict of interest including any financial activities.

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