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Case report of symptomatic giant liver hemangioma treated with embolization

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ABSTRACT

Hemangiomas measuring 10 cm or larger are known as giant hemangiomas. They can cause symptoms such as pain and manifestations of an inflammatory reaction syndrome and coagulopathy; in these cases, they require treatment ranging from endovascular therapies to open surgery. Imaging studies estimate a prevalence of around 5%, but up to 20% values have been reported in autopsy series. They are often solitary and small, although they can reach up to 20 cm in diameter. A case of hepatic hemangioma with a 15-year history of development was presented. Following COVID-19 infection, the patient complained of abdominal pain in the right hypochondrium. Imaging studies showed a significant increase in size and atypical ultrasound findings. The patient was treated with embolization, showing a reduction in size and favorable outcome.

Keywords: Hepatic hemangioma; Giant hemangioma; Embolization

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Informe de caso de hemangioma hepático gigante sintomático tratado con embolización

RESUMEN

Los hemangiomas que miden 10 cm o más se conocen como hemangiomas gigantes y pueden producir síntomas, como dolor y manifestaciones de un síndrome de reacción inflamatoria y coagulopatía; en cuyo caso requieren tratamiento que puede ir desde terapias endovasculares hasta cirugía abierta. En series de exploraciones de imagen se estima una prevalencia de alrededor de un 5%, pero se han descrito valores de hasta un 20% en series de autopsias. Con frecuencia suelen ser únicos y de pequeño tamaño, aunque pueden alcanzar hasta 20 cm de diámetro. Se presentó un caso de hemangioma hepático de 15 años de evolución que después de infección por COVID-19 refirió dolor abdominal hacia hipocondrio derecho. En los estudios imagenológicos se observó incremento significativo de su tamaño y hallazgos ecográficos de atipicidad. Fue tratado con embolización, presentándose reducción de su tamaño y evolución favorable.

Palabras clave: *Hemangioma hepático; Hemangioma gigante; Embolización.*

Rapport de cas d'hémangiome hépatique géant symptomatique traité par embolisation

RÉSUME

Les hémangiomes mesurant 10 cm ou plus sont appelés hémangiomes géants et peuvent provoquer des symptômes tels que des douleurs et des manifestations d'un syndrome réactionnel inflammatoire et d'une coagulopathie. Dans ces cas, ils nécessitent un traitement pouvant aller des thérapies endovasculaires à la chirurgie ouverte. Les études d'imagerie estiment leur prévalence à environ 5 %, mais des valeurs allant jusqu'à 20 % ont été rapportées dans des séries d'autopsies. Ils sont souvent solitaires et de petite taille, bien qu'ils puissent atteindre jusqu'à 20 cm de diamètre. Un cas d'hémangiome hépatique évoluant depuis 15 ans a été présenté. Suite à une infection par COVID-19, le patient s'est plaint de douleurs abdominales dans l'hypochondre droit. Les études d'imagerie ont montré une augmentation significative de la taille et des résultats échographiques atypiques. Le patient a été traité par embolisation, ce qui a montré une réduction de la taille et une évolution favorable.

Mots-clés: *Hémangiome hépatique; Hémangiome géant; Embolisation*

Relatório de caso de hemangioma hepático gigante sintomático tratado com embolectomia

RESUMO

Os hemangiomas que medem 10 cm ou mais são conhecidos como hemangiomas gigantes e podem produzir sintomas, como dor e manifestações de um síndrome de reação inflamatória e coagulopatia; nesse caso, requerem tratamento que pode variar desde terapias endovasculares até cirurgia aberta. Em séries de exames de imagem, estima-se uma prevalência de cerca de 5%, mas foram descritos valores de até 20% em séries de autópsias. Com frequência, costumam ser únicos e de pequeno tamanho, embora possam atingir até 20 cm de diâmetro. Apresentou-se um caso de hemangioma hepático com 15 anos de evolução que, após infecção por COVID-19, relatou dor abdominal na região do hipocôndrio direito. Nos estudos de imagem, observou-se um aumento significativo de seu tamanho e achados ecográficos de atipicidade. Foi tratado com embolização, apresentando redução de seu tamanho e evolução favorável.

Palavras-chave: *Hemangioma hepático; Hemangioma gigante; Embolização.*

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INTRODUCTION

Benign liver tumors are, in most cases, detected incidentally during abdominal imaging; such is the case of hemangioma, the most common benign mesenchymal tumor. Di Carlo et al. suggest that the reported worldwide incidence is 0.7% to 1.5%, with a higher prevalence in women than men (5:1.7), with a coexisting age between 30 and 50 years. Based on size, their diameter is usually less than 3 cm; when they measure more than 10 cm, they are called giant hepatic hemangiomas. [1.2]

However, other authors consider them significant lesions when they are 6 to 10 cm in diameter. In up to 27% of cases, their large size can cause abdominal discomfort, cough, hepatomegaly, and a mass effect. When classifying them, not only size is considered, but other ultrasound findings also confer atypicality. Thus, they are also considered giant when they reach a size greater than 4 cm with atypical imaging findings. The latter are less common and are reported in the literature to represent up to 10% of all hepatic hemangiomas. [3]

There is a wide range of diagnostic imaging modalities for the detection of this pathology, such as ultrasound, computed tomography (CT), magnetic resonance imaging, and angiography; in the case of the latter, it plays an important role, as it provides essential information for planning the technique to be used, thus giving it a high preoperative value. [4]

In most cases, hemangiomas do not require treatment but, instead, follow-up unless they cause symptoms or show atypical signs on imaging studies. However, a smaller proportion of them can develop complications with hemorrhage or thrombosis, or even undergo malignant transformation or grow large and cause symptoms that require surgical procedures. [4]

In the literature consulted, no similar case was reported in the institution where the case was detected, which motivated the report.

INFORMATION ABOUT THE PATIENT OR THE CASE TO BE STUDIED

A 54-year-old female patient with a personal history of high blood pressure, for which she received regular treatment and a healthy lifestyle. She had been diagnosed with hepatic hemangioma for 15 years. She suffered from COVID-19 in 2020.

CLINICAL OR CASE STUDY FINDINGS

She presented acute abdominal pain in the right upper quadrant, unrelated to meals and unrelated to other symptoms. Physical examination revealed only tenderness on deep palpation in the right upper quadrant.

CALENDAR

Events	
Initial diagnosis of hepatic hemangioma	2006
COVID-19 infection	2020
Acute abdominal pain Diagnosis of atypical signs Embolization	2021

DIAGNOSTIC EVALUATION

Complementary clinical laboratory tests showed mild anemia and elevated GGT, AST, and ALT levels.

Given the persistence of abdominal pain, an abdominal ultrasound was requested (Figure 1), which revealed, using B-mode and color Doppler, a large, solid, hyperechoic mass with little peripheral vascularization occupying segments VIII and IVa of the right hepatic lobe, with a heterogeneous texture and hypoechoic areas within that did not show a color Doppler signal concerning areas of necrosis; compatible with hepatic hemangioma with atypical characteristics.

The patient was transferred to another institution where the imaging diagnosis was completed with multiphase computed tomography (Figure 2), in which a sizeable hypodense tumor was observed, with areas of lower density concerning necrosis, which included segments IVa and VIII of the right hepatic lobe, with well-defined limits and regular contours of 13 cm in maximum diameter, said lesion slightly displaced the left hepatic artery. The baseline study was somewhat heterogeneous, with hypodense areas in its medial portion and towards the periphery. After administering intravenous contrast, it revealed

peripheral enhancement in the arterial phase, with centripetal filling in the successive venous phases and the permanence of a central hypovascularized area. The lesion was suggestive of atypical hepatic hemangioma.

In coronal reconstructions (Figure 3), the right hepatic artery was observed as the main feeding artery. In addition, 3-dimensional reconstructions and digital subtraction calculated the volume of the hemangioma at 1010 cc.

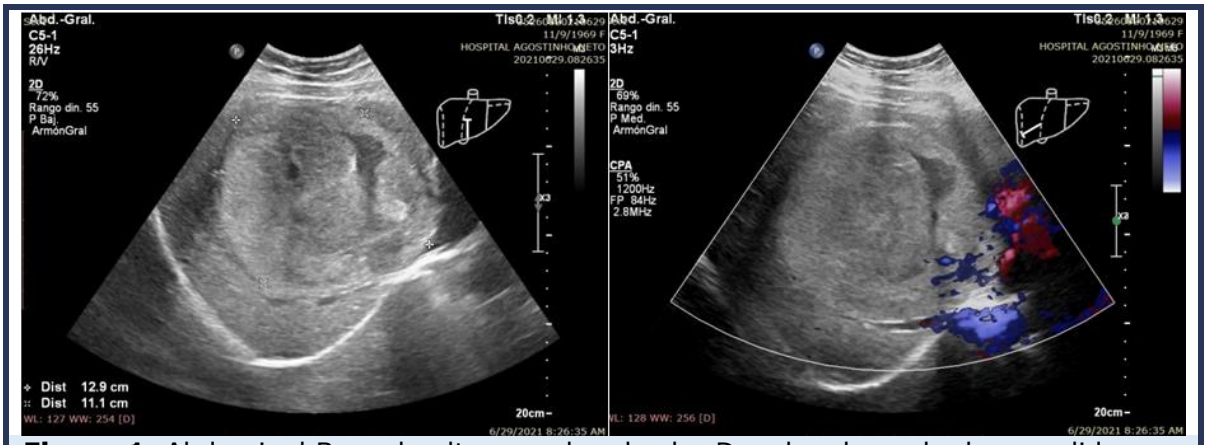

Figure 1. Abdominal B-mode ultrasound and color Doppler showed a large solid mass compatible with hepatic hemangioma with atypical characteristics.

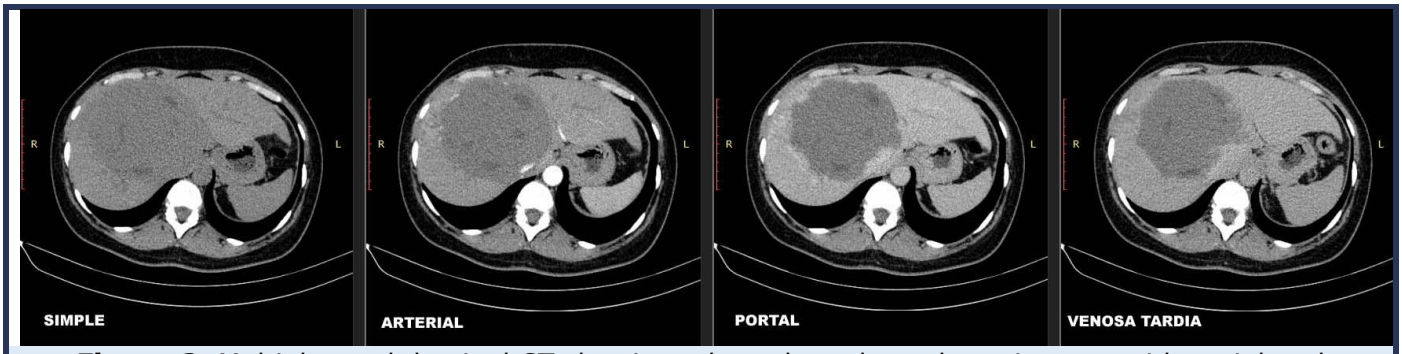

Figure 2. Multiphase abdominal CT showing a large hypodense hepatic mass with peripheral enhancement after contrast injection, related to atypical hepatic hemangioma.

Figure 3. MPR and digital subtraction reconstructions revealed a large hemangioma (1010 cc).

THERAPEUTIC INTERVENTION

Since it was a benign lesion but large and with a risk of complications (especially hemorrhage), it was decided to treat it by percutaneous embolization (Figure 4) of the hemangioma via the femoral artery with particles and micro coils, achieving embolization of the proper hepatic artery, the main feeding artery of said hemangioma.

Figure 4. Embolization of a giant hepatic hemangioma demonstrated a progressive decrease in vascularization of the lesion during the procedure.

MONITORING AND RESULTS

A multiphase CT study performed 7 months after embolization (Figure 5) with coronal, three-dimensional, and digital subtraction reconstructions showed a 15% decrease in the hemangioma's weight. This was associated with a reduction in the vascularization of a large part of the lesion, as well as its size, with an initial volume of 1010 cc and a progressive volume of 765 cc.

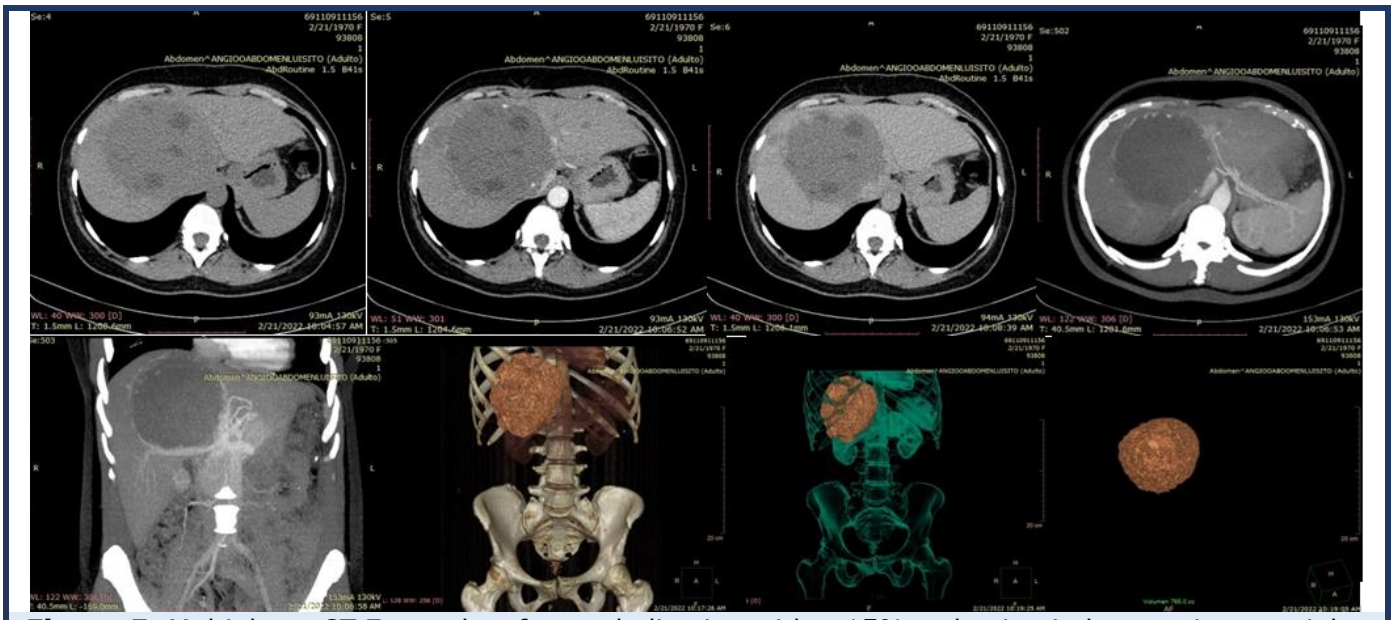

Figure 5. Multiphase CT 7 months after embolization with a 15% reduction in hemangioma weight.

Laboratory tests also showed improvement with an increase in Hb levels and a decrease in transaminases.

DISCUSSION

The most common benign liver lesion is the hemangioma, followed by simple cysts, often multiple. This benign vascular lesion consists of vascular structures embedded in a connective tissue stroma supplied by the hepatic artery or its branches. Therefore, their internal blood flow is slow, and they lack newly formed vessels or arteriovenous shunts. [5]

Hepatic hemangiomas often appear as solitary lesions but can also occur in multiple forms. Depending on their size, they are classified as small, those measuring 1 cm to 2 cm; typical, those measuring 2 cm to 10 cm; and giant, those measuring more than 10 cm. [6]

It was striking that the case involved a giant hemangioma, which reached a maximum size of 13 cm and revealed atypical findings in the imaging tests. While it is true that the patient reported noticing an increase in its size after the COVID-19 infection, no conclusions can be drawn to determine their relationship due to the lack of scientific evidence.

Hemangiomas tend to appear more commonly in women than in men, with a 5:1 ratio, and in all age groups. However, most cases are detected in people between 30 and 50 (60% to 80%). [7]

Although its genesis is not well understood, a certain effect of estrogen on hepatic

hemangiomas has been observed, a fact that would explain the higher incidence in women and the increase in size in multiparous women and during pregnancy. [8]

Hepatic hemangiomas are usually asymptomatic. Their diagnosis is usually an incidental finding during imaging tests indicated for other reasons. When they produce symptoms, they are nonspecific or shared with different diseases, especially those affecting the digestive system. The most common symptom is pain in the upper right abdomen. Other symptoms include diffuse abdominal discomfort, early satiety, decreased appetite, nausea, and vomiting. [6]

Following what has been described in the literature, the case presented is a female in her fifties who remained asymptomatic for years until abdominal pain in the right hypochondrium was the only symptom.

On macroscopic examination, hemangiomas appear flat, well-defined, blue-red lesions that may partially collapse when cut. [9]

In cavernous hemangioma, irregular borders and multiple hemangiomatous-type vessels in the liver parenchyma adjacent to the vascular mass have been described. [9]

Fibrosis, calcification, and thrombosis may occur in more extensive lesions, which are more common. Microscopically, hemangiomas comprise cavernous vascular spaces lined with a flattened endothelium, overlain by fibrous septa of varying widths. [9]

From an imaging diagnostic perspective, liver lesions pose a challenge, particularly hemangiomas, when they present atypical characteristics. Ultrasound frequently presents hypoechoic lesions with a peripheral echogenic halo and significant flow on color Doppler; a less frequent pattern is heterogeneous lesions that can reach a large size of up to 12 cm. CT displays heterogeneous, hypodense images with progressive centripetal enhancement (from the periphery to the central region). Up to 20% of hemangiomas have atypical characteristics (giant size, sudden filling, calcifications, sclerosis, cystic-necrotic degeneration, pedunculated, with a fluid-fluid level within). [10].

Magnetic resonance imaging (MRI) tends to be accurate in diagnosing hepatic hemangiomas. In most cases, they have a pathognomonic appearance, even without contrast. These tumors behave as homogeneous, well-circumscribed hyperintense lesions on T2-weighted images, with an area of very high signal intensity similar to a cleft and some hypointense internal septa. [10].

Various treatment options exist for some hepatic hemangiomas, including surgical techniques (enucleation, resection). However, treating multiple and/or giant hepatic hemangiomas remains a significant clinical challenge. Sometimes, the first option is not a surgical approach but rather an adjunct to interventional management. [3]

Interventional procedures with selective angiographic embolization are a minimally invasive treatment option reserved for symptomatic hemangiomas, progressively growing hemangiomas, or hemangiomas with a high risk of bleeding. [3]

Embolization should be as selective as possible in the branches that feed the lesion to reduce intraoperative bleeding and tumor growth. Embolization material is used based on the radiologist's experience (Gelfoam, coils, polyvinyl alcohol, and isobutyl cyanoacrylate). Initially, peripheral embolization of vessels within the lesion should be performed with Gelfoam or polyvinyl alcohol, followed by embolization of the main arteries with coils. [3]

In this case, an interventional procedure involving right hepatic artery embolization was performed. The persistent pain indicated its use, and there were no contraindications, such as coagulation disorders, concomitant treatment with antiplatelet and/or anticoagulant agents, or allergy to iodinated contrast media. Follow-up imaging showed a significant decrease in arterial blood flow to the lesion, and no complications occurred. The patient currently remains asymptomatic, with favorable progress, and is under follow-up.

The presentation of this case is considered of great value because it is a rare entity that radiologists must master, given the need for timely diagnosis and treatment to avoid complications that can sometimes be fatal.

PATIENT PERSPECTIVE

The patient was initially distressed by the rapid growth of a lesion she had lived with for several years, which required risky surgical treatment. Therefore, her transfer to another institution was arranged where a more precise diagnosis and conservative treatment could be provided, which generated great satisfaction for the patient.

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Conflict of interest
The authors declare no conflicts of interest.

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