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Case Report

Two-Stage Hepatectomy with Portal Embolization to Treat Bilateral Hepatic Adenomas

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Abstract

Hepatocellular adenomas are rare benign tumors of epithelial origin which consists of hepatocyte proliferation. They usually occur in young women and are associated with prolonged use of oral contraceptives. Surgical treatment is recommended for tumors above 5 cm, but the presence of multiple, large and bilateral lesions is still considered a challenge. We present a case of a 40-year-old female patient, without previous history of either oral contraceptive or steroids use, referred to our surgical department with abdominal pain, feeling of heaviness and the presence of a giant mass on the right side of the abdomen. Imaging showed three hypervascular bilateral hepatic lesions greater than 5 cm, compatible with telangiectatic adenomas. She presented normal tumor markers and an elevation of canalicular enzymes. After liver volumetry, we have concluded that the hepatic remnant would be insufficient for the resection of these lesions in a single time. Therefore, we have proposed a two-stage hepatectomy with portal embolization. One and a half years after the last surgery, she is asymptomatic with an excellent quality of life, besides normal canalicular enzymes and none signs of recurrence.

Keywords: Hepatocellular Adenoma; Hepatectomy; Therapeutic Embolization; Portal Vein; Benign Liver Tumors

Abbreviations

HCA: Hepatocellular Adenoma; CT: Computed Tomography; MRI: Magnetic Resonance Imaging; BMI: Body Mass Index; OC: Oral Contraceptives; US: Ultrasound; PVE: Portal Vein Embolization.

Introduction

Hepatocellular adenoma (HCA) is a rare benign liver neoplasm with great relevance due its potential to present symptoms, complications and malignant transformation in Hepatocellular Carcinoma. It generally occurs in females (90% of cases) between the ages of 20 and 40 years with a classical history of prolonged exposure to the hormonal stimulus. Both estrogen (long-term use of oral contraceptives) and androgen abuse have been associated with your genesis [1]. Moreover, conditions like abnormal metabolism of carbohydrates, glicogenose type 1 and familial diabetes mellitus are also related with HCA [2,3]. Four types of adenoma have been described on literature: the inflammatory or telangiectatic type (40-50%), HNF1 alpha mutation, Beta-catenin mutation, and the indeterminate type. Each one of them presents an individual behavior and divergences like predisposing factors, phenotypic characteristics, potential of the malignant progression and risk of bleeding.

These lesions are usually solitary (70%-80% of cases), and must be differentiated from other focal liver lesions. Diagnosis is made by characteristic imaging findings in computed tomography (CT) and/or magnetic resonance imaging (MRI) with hepatobiliary contrast–Primovist. The standard treatment for tumors above 5 cm is the primary resection; however multiple, large, bilobar lesions, formerly considered unresectable in the past due to the concern with the remaining liver volume, have been the object of recent studies due to current alternatives such as two- stage hepatectomy with portal embolization for a safer resection of the lesions, as in other types of liver diseases [4].

The authors present a case of a 40- year old female patient with three large adenomas localized in the two hepatic lobes, which was successfully submitted to a two-stage hepatectomy with portal embolization.

Case Report

A 40-year-old female patient with overweight (BMI 27.5) was referred to our surgical department with abdominal pain and presence of a giant mass on the right side of the abdomen. She denied neither anticontraceptive nor steroids use, and only mentioned social alcohol consumption in her personal history. Physical exami-

nation revealed a tumor about 10 cm in the upper right quadrant of the abdomen. Both CT and MRI (Figure 1) revealed three hypervascular lesions, all of them only observed at very early arterial phase, which were compatible with telangiectatic adenomas with the following characteristics: 1) 12 cm x 11.5 cm central lesion in right lobe that involved segments IV, V, VIII, pushing both right and middle hepatic veins, besides the vena cava and hepatic hylum, and 2) lesion of 5 cm in segment VI and 3) subcapsular 5.3 cm in segments II, III. At this time, she presented normal tumor markers and elevation of the canalicular enzymes (gamma-gt = 764.5 ng/dl and alkaline phosphatase = 1234.5 ng/dl). After liver volumetry by contrasted CT, we have concluded that the hepatic volume would be insufficient to resect all lesions in a single operation. The final liver remnant after a single procedure would be about 17,8% (250 cc).

Figure 1: Preoperative MRI with paramagnetic contrast showing a giant right lobe HCA, and a smaller one on the left lobe, both indicated by the arrows.

Therefore, the following strategy was finally proposed: 1) non-anatomical laparoscopic resection of the lesion on the segment II, III; 2) embolization of the right portal vein with branches of segment IV and finally 3) open right trisectioniectomy (right trisegmentectomy).

Then, she firstly underwent a laparoscopic non-anatomical S2 + 3 segmentectomy. During intraoperative evaluation it was observed some lesion bleeding, which was controlled. There were no surgical intercurrences, her hospital stay was 24 hours and she presented also none postoperative complication. This lesion was compatible with telangiectatic adenoma without signs of atypia at histopathological evaluation. A mutation of IL - 6 ST protein was also observed at immunohistochemical panel.

While she was waiting for the portal vein embolization, she presented a right tube-ovarian abscess. Thereby, she underwent an open right anexectomy without intercurrences. After her recovery of this last procedure (nearly 1 month), portal embolization was finally performed, and it followed without intercurrences (Figure 2). There was a volumetric increase from left lobe (future liver remnant increased to 350 grams – 25% of total volumetry). So, after two months of this last procedure, an open right trisectioniectomy (intraoperative ultrasound was performed to evaluate vascular involvement) was finally performed by means of the anterior approach, and total vascular exclusion of the liver during 30 minutes. The surgery was uneventful and the patient received two units of red blood cell concentrate.

Figure 2: Portal vein embolization (right portal vein).

Subsequently, she presented an important metabolic acidosis that was reversed with hemodialysis during two days. Finally, she demonstrated a good clinical evolution, being discharged on the 10th postoperative day. Both lesions were compatible with telangiectatic adenomas with no signs of atypia at histopathological evaluation, and mutation of IL- 6 ST protein at immunohistochemical panel.

Currently, 18 months after surgery, she is asymptomatic, with an excellent quality of life and presents no recurrence signs (Figure 3).

Figure 3: CT Scan eighteen months after the second surgery.

Discussion

Although HCA lesions are often solitary, they are frequently large at the time of the diagnosis (5-15 cm). Therefore, multiple lesions can be challenging and must have an individualized approach. The hepatocellular adenomas are divided in four categories, each representing a heterogeneous group with distinct characteristics and possible complications [5]. The telangiectatic (or inflammatory type) is associated to non-alcoholic steatosis, obesity (BMI>25 in 50% of the cases), and metabolic syndrome [6]. In addition, it

can also represent an increased risk of bleeding, which can be even higher in large lesions (>5cm) and subcapsular location, as observed in left lobe adenoma in this case report. These conditions are also associated to multiple HCAs, although the development of the described complications, including malignant transformation, is unrelated to the number of HCA tumors.

The surgical treatment of HCA has traditionally been recommended in literature, due to the risks of hemorrhage (15.8%) and malignant transformation (4,2%) [7]. However, in specific situations when surgical resection is not feasible, some alternatives therapies such as arterial embolization or radioablation may be used to attain HCA control. The formal indications for lesion resection are: woman with HCA size > 5cm, persistent tumor > 5cm after suspension of OC's, and HCA in male gender. In exception, patients with Beta- Catenin mutation must have surgical resection for lesions even smaller than 5cm, because of the greater risk of malignant progression. Woman in fertile age who intend to be pregnant deserve an individualized treatment due the increased risk of bleeding [8]. The HCAs < 5cm can be closely monitored by utilizing ultrasound (US), although the majority of residual HCAs remain stable or undergo spontaneous regression. Biopsy is still controversial. The European Association for study of the Liver and the American College of Gastroenterology have recommended against routine biopsy to diagnose HCA or even for histologic subtype determination, and this procedure is generally reserved for atypical lesions [9-11]. This approach may also be useful in those cases of steatotic lesions arising in unfavorable locations for resection and to assess those cases where there is a major risk of malignant transformation [12].

Because of its benign nature, the non-anatomical or segmental liver resection can be safely performed. Nevertheless, HCA tumors are normally soft and nonpalpable with ill-defined margins between the tumor and the adjacent steatotic hepatic parenchyma, which makes the intraoperative ultrasound, how we made use at this case, usually a helpful and important tool.

Elective surgical treatment can be done either via open or laparoscopic. Studies comparing the two routes have shown many advantages favoring laparoscopy approach, such as shorter hospital stay, lower postoperative pain, and even long-term satisfaction with aesthetic outcome [13,14].

The risk of liver failure increases when it is implausible to preserve at least 20% -25% of the parenchyma. In this scenario, multiple, large, and bilateral HCA are considered a challenge because of the impossibility to resect all tumors at the same time. Some investigators have proposed liver transplantation in conditions like liver adenomatosis, characterized as more than 10 lesions, which was considered an aggressive approach [15]. Nowadays this alternative also presents itself with several challenges in Brazil, such as the long waitlist and rigorous criteria, indicated only in a limited population.

Many clinical studies have been published about the two-stage hepatectomy and the effects of PVE on malignant tumors, but in our knowledge this is the first case in literature which described this possibility for treating bilateral giant HCAs. This approach may be a resolutive treatment to avoid extensive liver resections and minimize the risk of postoperative liver failure. In resume, at the first stage the lesions > 5 cm are completely resected, as it is unnecessary to resect smaller than 5 cm lesions. Then, in a second moment, a portal embolization of the main venous branch of the contralateral lobe is done, with consequent hypertrophy of the remaining liver. Several techniques for portal vein occlusion have been reported, but with the growing availability of radiological interventions options, the percutaneous transhepatic technique has become the standard for PVE. The median interval between the two stages is four weeks for satisfactory growth of hepatic remnant. So finally, on the third moment, a resection of atrophic lobe can be performed, as described in this report. The second hepatectomy is potentially unfavourable because of anatomic changes and the difficulty of re-exposure of the hepatic parenchyma, yet there were no intra operative complications at the second stage in this study. In our point of view, after complete resection of the tumor it is recommended that the patients have a follow up with periodic imaging and serum alpha-fetoprotein, to detect any growths or malignancy.

The two-stage hepatectomy with portal vein embolization may not only increase the pool of patients with HCAs who are candidates for surgical treatment, but it may also increase the safety of the resection. At last, it is important to remember that liver hypertrophy relies on the ability of the hepatocytes to dedifferentiate, expand clonally and respond to hepatotrophic stimuli, therefore patients with liver cirrhosis should always have a careful and individual evaluation before undergoing any procedure.

Conclusion

On this case, we observed that a two-stage hepatectomy may be offered as alternative and safe procedure to the patients with multiples, large and bilobar HCAs.

Conflicts of Interest

None.

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