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Case Report

HEPATIC SUBCAPSULAR HEMATOMA FOLLOWING LAPAROSCOPIC CHOLECYSTECTOMY: A CASE REPORT

HEMATOMA SUBCAPSULAR HEPÁTICO POSTERIOR A COLECISTECTOMÍA LAPAROSCÓPICA: REPORTE DE UN CASO

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Abstract

Background: Hepatic subcapsular hematoma is a rare complication of laparoscopic cholecystectomy, with few cases reported in the literature. Injury to the liver parenchyma or liver capsule tears during gallbladder traction, anatomical variations in the hepatic vascular system and coagulopathy due to NSAIDS have all been proposed as possible associations.

Methods: We report a case of a 56-year-old female patient who developed a subcapsular hepatic hematoma after undergoing laparoscopic cholecystectomy, who was successfully treated by endovascular embolization.

Conclusion: Hepatic subcapsular hematoma is an infrequent complication of laparoscopic cholecystectomy that could be treated endovascularly.

Resumen

Antecedentes: el hematoma subcapsular hepático es una complicación rara de la colecistectomía laparoscópica, con pocos casos reportados en la literatura. Se han propuesto como posibles asociaciones la lesión del parénquima hepático o el desgarro de la cápsula hepática durante la tracción de la vesícula biliar, las variaciones anatómicas en el sistema vascular hepático y la coagulopatía por AINE.

Métodos: Presentamos el caso de una paciente de 56 años que desarrolló un hematoma hepático subcapsular tras ser intervenida de colecistectomía laparoscópica, que fue tratada con éxito mediante embolización endovascular.

Conclusión: El hematoma subcapsular hepático es una complicación infrecuente de la colecistectomía laparoscópica que puede tratarse por vía endovascular.

Keywords: Laparoscopic Cholecystectomy, Hepatic Subcapsular Hematoma, Postoperative Complication, Endovascular Embolization.

Introduction

General surgery was revolutionized in 1985 with the introduction of laparoscopic surgery, (1) a minimally invasive approach with multiple advantages over open surgery. Today, laparoscopic cholecystectomy is the gold standard treatment of symptomatic cholelithiasis and acute cholecystitis, and it is one of the most practiced procedures (2–4). The main complications include: hemorrhage (0.11 – 1.97%), bile leak (0.3 – 0.9%), bile duct injury (0.26 – 0.6%), abscess (0.14-0.3%), bowel injury (0.14-0.35%) and port hernia (0.77%) (5). Hepatic subcapsular hematoma is a rare complication of laparoscopic cholecystectomy, as it is most commonly seen as a result of trauma. However, it is important for surgeons to recognize it and treat it early in order to avoid fatal outcomes, such as rupture and massive bleeding (4,6). We present the case of a giant subcapsular hematoma in a patient who underwent laparoscopic cholecystectomy for symptomatic cholelithiasis.

Case Presentation

The patient was a 56-year-old female with a past medical history of high blood pressure, metabolic syndrome, and breast cancer, she did not receive chemotherapy. Due to cholelithiasis with recurrent biliary colic, she was scheduled for a routine laparoscopic cholecystectomy. It was performed by using a 3-port technique and critical view of safety was adequately achieved. Among the intraoperative findings, the gallbladder was found with calculi inside and adhesions to the greater omentum, the liver had a normal macroscopic aspect. There were no intraoperative complications.

Due to adequate postoperative evolution, the patient was discharged 6 hours later. She attended our emergency department approximately 12 hours later with right upper quadrant pain associated with abdominal distension, nausea, and vomiting. On physical examination, patient had mild tachycardia (106 beats per minute) and right upper quadrant tenderness without signs of peritonitis. She also presented with mild leukocytosis and neutrophilia, AST was 255 U/L, ALT 251 U/L and hemoglobin level of 12 g/dl. Hepatobiliary ultrasound showed a heterogeneous hypoechoic collection with a volume of 593 ml in the right liver lobe compatible with subcapsular hematoma. Since the patient was stable, we decided to admit her for clinical observation and IV fluid therapy. A Second blood count was done 6 hours later showed stable values. However, on postoperative day 2, she presented exacerbation of pain, desaturation (86%), tachycardia and a hemoglobin level drop to 7.4 mg /dl. CT angiography showed an increase in the volume of the hematoma to 2500 ml, but without extravasation of contrast or free fluid on the abdominal cavity *(Figure 1)*.

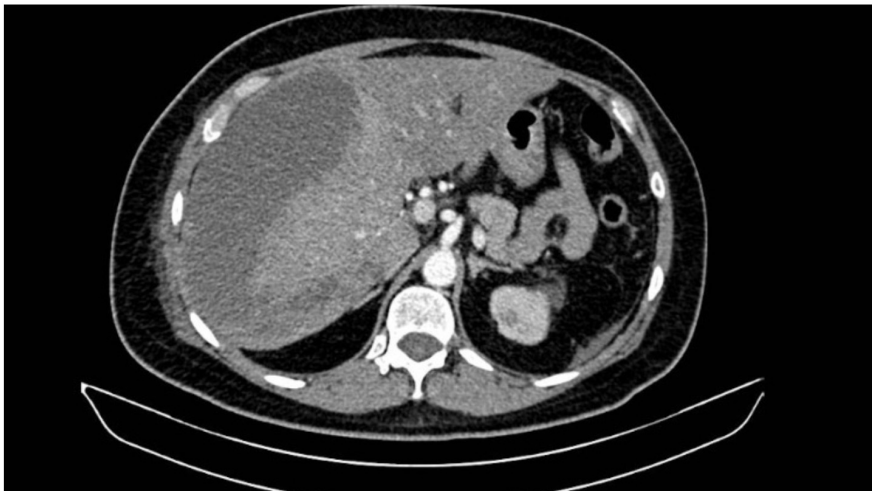

Figura 1. CT showing giant 2500 ml subcapsular hematoma.

Two units of red blood cells were transfused. Hemoglobin levels increased to 10.5 mg/dl, and vital signs were stable. At postoperative day 3, there was no further drop on hemoglobin levels, and vital signs were within normal range. However, the patient was still complaining of right upper quadrant pain. Since the patient was stable, we decided to perform a selective arteriography for therapeutic purposes. Through a puncture of the right femoral artery, the superior mesenteric artery was canalized, finding a gastroduodenal trunk connected to the hepatic artery without alterations or evidence of bleeding. The celiac trunk and hepatic artery were canalized, and arteriography showed a great displacement of all the right arterial structures towards the midline due to the subcapsular hematoma *(Figure 2)*.

Figura 2. Arteriography shows displacement of all the right arterial structures towards the midline because a great hematoma.

With a microcatheter, cannulation of the common hepatic artery and all the right hepatic trunks was performed, without finding direct or indirect signs of active bleeding. However, given the volume of the hematoma and the clinical evolution it was decided to embolize all the right distal arterial trunks with a temporal hemostatic agent (plugs of gelatin sponge). Adequate occlusion of the distal right hepatic arteries was confirmed, (Figure 3) maintaining patency of the central trunks and the left hepatic artery. After this, the clinical evolution of the patient was favorable, with stable control hemoglobin and resolution of pain, and the patient was discharged a week later.

Figure 3: Arteriography post embolization of distal right hepatic arteries.

Discussion

The rate of complications in patients undergoing laparoscopic cholecystectomy is below 7% (4,5,7,8) (8) Postoperative bleeding is present in less than 1% of patients, and can occur in the gallbladder bed, the trocar insertion sites, the cystic artery, the falciform ligament, the hepatic artery, the greater omentum and the liver capsule. (6,9) A hepatic subcapsular hematoma is a rare but serious complication of laparoscopic cholecystectomy that can cause hemo-dynamic instability, shock, or infection. (4,6)

Patients with subcapsular hematoma can present in the postoperative period with right upper quadrant abdominal pain, nausea, fever, hypotension, and tachycardia that does not improve with the administration of intravenous fluids. (4,6,9) The time of presentation in the previously reported cases varies between 7 hours and 6 weeks postoperative. (4) It appears in ultrasound or CT scan as a collection of fluid between the fibrous and serous layer of the liver. (10) Liu et al. presented a review that included 16 cases between 1994 and 2015. Half of the patients presented hemodynamic instability with an average age of 51.5 years, predominantly lo-

cated in the right lobe and extension to the left. 47% of the patients presented hypovolemic shock. Only 6.25% presented rupture and required surgery. There was evidence of liver capsule laceration in 12.5% of the patients. (6)

Given that there are only a few cases reported, no clear association has been identified, however, some contributing factors have been proposed. Injury to the liver parenchyma due to excessive manipulation of the gallbladder, hepatic capsular tears during gallbladder traction, anatomical variations in the hepatic vascular system such as pseudoaneurysms and hemangiomas, and coagulopathy have all been proposed as possible mechanisms. (4,6) The consumption of NSAIDs in the postoperative period has also been proposed as an associated cause, since in several cases the patient used ketorolac (up to 58.8%) or parecoxib in the postoperative period. It has also been associated with anticoagulant therapy. (4,6,10)

Several management plans have been proposed, such as conservative management with strict clinical observation, surgical management (laparotomy or laparoscopy), percutaneous drainage or endovascular embolization. (4,6,10) In a literature review of 18 cases presented by Saad et al. the most frequent approach was to treat surgically, either by laparotomy (7 cases) or laparoscopy (3 cases). Percutaneous drainage was done in 7 patients and only one patient underwent endovascular embolization. The choice of treatment depends on the patient's hemodynamic status, the surgeon's expertise, the resources available, and the patient's preferences. (4)

In this case, we initially admitted the patient for clinical observation, imagological and hemodynamic monitorization because she was stable and the hematoma was relatively small. She later presented an increase in the size of the hematoma, with hemoglobin drop which responded to transfusion therapy. Taking into account the risk of rupture and massive bleeding during laparotomy or laparoscopy, and given that the patient was now stable, with no signs of active bleeding or peritonatis and responding to IV therapy, endovascular approach was preferred over surgery. Although no site of active bleeding was identified during arteriography, embolization of all the right hepatic distal arterial trunks was performed and, in this manner, hemostasis was achieved.

Hepatic subcapsular hematoma is frequently seen in patients with blunt abdominal trauma. Traditionally, management guidelines prompted for surgical intervention and packing, however, the development of imaging technologies have given endovascular techniques an important role in the treatment of these injuries. (11,12) Current guidelines recommend embolization on stable patients who show contrast blush on CT, failure of nonoperative management and continued bleeding after surgery. (13) These guidelines are given in relation to trauma, and there is no consensus for management of subcapsular hematoma as a postoperative complication. We decided to give our patient nonoperative management considering that she was stable, responding to IV therapy, and that surgery represented a high risk of rupture of the liver capsule and massive hemorrhage. Furthermore, having the availability of equipment and trained personnel for selective embolization gave us the option to attempt a safer approach, which had a positive outcome.

Conclusions

Hepatic subcapsular hematoma is an infrequent complication of laparoscopic cholecystectomy. Since it can be potentially fatal, it is paramount that surgeons recognize it early in order to avoid catastrophic outcomes. No clear associations have been established, however, previously proposed risk factors should be taken into account. There is insufficient evidence to establish a treatment recommendation suitable for all patients, clinicians should choose an approach on a case-by-case basis. However, the interventional radiology management through supra selective embolization, in these cases, should be considered as a first-line option, because it has shown good results.

Author's Statements

- Conflict of Interest: the authors declare that they have no conflict of interest.
- Informed Consent: The authors declare that they have the informed consent of the patient for the publication of the clinical images in this article and that they have preserved their personal data, following the institution's protocols.

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