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Case Report

Giant Gallbladder: First Case Reported in Venezuela and Literature Review

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Abstract

Introduction: First reported case of giant gallbladder in Venezuela treated with exploratory laparotomy and cholecystectomy.

Case Presentation: A 61-year-old male patient admitted due to increased abdominal circumference, associated with cramping abdominal pain in the mesogastrium region and radiated to both flanks, of moderate intensity. Abdominal ultrasound showed a tumor involving the lower lobe and middle hepatic part but did not show conclusive results of the gallbladder. Subsequently, a tomographic study was carried out where a lesion with dimensions of 20.7 x 20.3 x 23.4 cm and a volume of 5,231cc was observed. Emergency exploratory laparotomy was performed with operative finding of a giant vesicle. We proceeded to perform a puncture to drain its contents, obtaining approximately 8000cc of purulent, thick and non-fetid liquid, also performed a cholecystectomy, obtaining a surgical piece of approximately 30 x 25 cm.

Discussion: Giant gallbladders are very rare, there are few cases reported in the world. The pathogenesis is unknown but it has been hypothesized that it may occur due to a progressive increase in intraluminal pressure due to a check valve. It usually occurs in the female sex; in this case, it is a male patient. The important findings found were the thickening of the gallbladder wall, presence of generalized lympho-plasmacyte and polymorphonuclear neutrophil inflammatory infiltrate and purulent fluid.

Conclusion: There are few surgical treatments for giant gallbladders, in our case, the patient underwent cholecystectomy and his postoperative recovery underwent without complications.

Keywords: Gallbladder; Giant; Cholelithiasis; Cholecystectomy

Introduction

Worldwide reports of giant gallbladders with extreme dimensions are very rare. Fewer than 30 cases have been described in the literature since 1962 to the present [1]. The giant gallbladder is a pathology of unknown origin, usually related to biliary obstructive disease of tumoral etiology and gallbladder lithiasis [2]. There is no agreed definition of the concept of a giant gallbladder, though Kuznetsov., *et al*. define it as "an increase in its volume, which exceeds 1.5 L" [3]. However, this definition may not be adequate because there are cases in the literature, such as those of Elkbuli., *et al*. [4] and Uemura., *et al*. [5], which have been reported as giant gallbladders due to their large dimensions even though their liquid content is even less than 1L.

One of the first manifestations in the clinical profile is suggestive of a tumor or cyst of the abdominal cavity [3].

In most cases, patients have presented chronic cholecystitis as base pathology, demonstrating thickening of the wall and atrophy of the gallbladder [6]. A gallbladder in its normal range measures approximately 10 x 7 cm in diameter, with a storage capacity of 30-50cc of biliary content [7].

We present a case of a 61-year-old male patient, with a history of chronic hypertension, with no other associated comorbidities, who presented a progressive increase in abdominal circumference, operated successfully and without complications by exploratory laparotomy and cholecystectomy. In Venezuela, there is no reported evidence of a giant gallbladder.

Case Report

We present a case of a 61-year-old male patient from the urban area, with a history of chronic arterial hypertension, without other associated comorbidities, who was admitted to the emergency department for presenting a progressive and insidious increase in the abdominal perimeter, associated with cramping abdominal pain in the mesogastrium region and irradiating to both flanks, of moderate intensity and that subsided after the administration of analgesics. Concomitantly, he presented nausea and emetic episodes of food content.

On physical examination, an abdominal mass located at the mesogastrium level extending from the right flank to the left flank was palpated (Figure 1), painful to mobilization; hydro-aerial noises were present, without visceromegaly. Laboratory results showed Hb: 12 g/dL, Leu: 9.200/mm^3, Neu: 41%, TP: 12,3 s (C 9,3 s), TPT: 34,5 s (31,5 s), TGP: 19 U/L (H: 38), TGO: 43 U/L (H: 39), FA: 99 U/L (H: 100), GGT: 57 U/L (<55), total cholesterol: 162 mg/dL. The other parameters were within normal range.

Figure 1: Patient's abdomen where there is a significant increase in the abdominal perimeter of right predominance.

Initially, an abdominal ultrasound was performed in which a large tumor was observed that took the lower lobe and middle hepatic part, of heterogeneous content without aggregates inside. The gallbladder could not be observed because the mass obstructed its visualization during the ultrasound, concluding the presence of a giant mass occupying the entire lower lobe of the liver that hinders the complete visualization of the gallbladder.

Subsequently, an abdomino-pelvic computed tomography was performed in which a lesion of homogeneous liquid content of thin and regular walls in the hypochondrium and right flank was evidenced (Figure 2A and B). The lesion measured 20.7 x 20.3 x 23.4 cm and had a volume of 5,231 cc. At the bottom of this large pouch, a calcification was identified. The liver had normal size and configuration, homogeneous parenchyma with no evidence of space-occupying lesions. The bile ducts were not dilated, both hepatic ducts (right and left) and the common hepatic duct were observed rejected upwards along with the proximal part of the common bile duct. From there, the anatomical configuration of the extrahepatic bile ducts was lost. In the absence of the gallbladder, the study concluded a giant common bile duct cyst vs chronic hydrocholecyst.

Figure 2: Abdominal-pelvic CT from an axial slice (A) and a sagittal slice (B) in which Homogeneous liquid content lesion of thin and regular walls in hypochondrium and right flank is observed.

In view of these imaging findings and with progressive pain intensity, vomiting and probable risk of perforation, it was decided to undergo emergency surgery by performing an exploratory laparotomy, in which, a blunt and cutting adherenceolysis was performed between gallbladder, greater omentum, ascending colon, transverse and stomach, through which it was observed that the giant space-occupying lesion detected was a gallbladder of approximately 30 x 25 cm, with thickened walls. The gallbladder

was drained with a #18 Jelco catheter, obtaining approximately 8000 cc of purulent, thick, non-fetid fluid. The bile ducts and cystic duct were not dilated. No lesions were observed in the rest of the intra-abdominal organs. The procedure was completed without immediate complications. A silicone drain was left in order to monitor the liver bed.

The patient's postoperative period underwent favorably, starting with complete oral tolerance on the second day due to the absence of abdominal distension and the presence of hydro-aerial sounds. Octreotide was indicated attributable to outflow of hematobilious output through drainage. In the absence of complications, the patient was discharged on the sixth day of the postoperative period. Both early outpatient follow-up and outcome at 30 days of the postoperative period demonstrated excellent recovery.

The extracted surgical specimen was fixed in alcohol for histopathological study. Because the alcohol dehydrates the surgical pieces, the specimen received by the histopathological diagnostic center reduced its size to 21 x 19 cm (Figure 3A and B), in which a calculous formation of 1.5 cm in diameter was observed inside. On microscopic observation, an increase in wall thickness, lympho-plasmacyte and polymorphonuclear inflammatory infiltrate, and areas of mucosal denudation accompanied by fibrin meshes and intermixed erythrocytes were detected. No criteria indicative of neoplasia were observed. The histopathological study concluded the diagnosis of exacerbated chronic cholecystitis, vesicular lithiasis and giant gallbladder.

Figure 3: Macroscopic vision of the surgical specimen for its anatomopathological study after its fixation.

Discussion

Giant gallbladders are very rare, with few cases of this type reported to date [8]. Grosberg (1962) reported the first giant gallbladder published in the literature [9]; meanwhile, Tessier., *et al*. (2005) were the first to report the removal of a huge gallbladder by laparoscopic surgery [10], while Panaro., *et al*. (2012) presented the largest gallbladder in the world, reported so far, in a patient with Byler's disease (a group of diseases known as progressive familial disease) [11]; this patient had chronic diarrhea and severe pruritus and was referred for liver transplantation.

Although the pathogenesis of the giant gallbladder is unknown, it has been hypothesized that it may be attributable to a progressive increase in intraluminal pressure due to a check valve, which would allow the chronic intraluminal accumulation of bile fluid that is incapable to drain properly, thus causing distension of the gallbladder [4]. According to this hypothesis, this type of pathology could be associated with a tumor, cyst or calculus of the gallbladder [3]. The wall of the gallbladder may have a normal thickness, although in cases of long evolution, the mucosa atrophies and the wall thins, sometimes even becoming transparent; however, thickening of the wall can occur with recurrent attacks of cholecystitis. The contents, on the other hand, are usually sterile and any bacterial contamination ends up in gallbladder empyema [12].

In order for a gallbladder to enlarge extremely without life-threatening complications, or even without significant clinical manifestations, there must be exclusively favorable conditions: 1-. Low bacterial contamination of bile in the gallbladder; 2-. Good vascularization; 3-. Adequate regeneration of the gallbladder wall, allowing it to continue its distension at a steady rate [3].

Compared to the previously reported cases, the clinical presentation of this report exposes a gallbladder of 30 x 25 cm with a volume of 8000 cc (8 Liters) of non-foul-smelling purulent fluid, considered one of the largest in relation to volume, being surpassed by the case of Bahra., *et al*. (2019), whose reported giant gallbladder contained a total of 15,000 cc of purulent bile fluid (Table 1) [13].

Concerting to sex, it is not well established as a predisposing factor for developing a giant gallbladder; however, most cases

reported in the literature have occurred in female patients (Table 1), a difference to highlight with respect to this case, which is one of the few reported in a male patient. Additionally, the forms of resolution have not had a preference for a specific surgical technique; in our case, the technique performed was an open cholecystectomy, but in the literature review, this has not been the only technique applied for the solution of this pathology, since mini laparoscopic and laparoscopic cholecystectomy have also been performed with successful results (Table 1).

Wall thickening (0.6 cm) is an important finding in this case: the microscopic study described an increase in wall thickness at the expense of fibroblasts and collagenization areas, in addition to the presence of generalized and dispersed lympho-plasmacyte inflammatory infiltrate and polymorphonuclear neutrophil and chronic erosive cholecystitis.

Year	Country	Author	Age (years)	Sex	Comorbidities	Gallbladder size	Gallbladder volume	Type of surgery performed	Associated pathology
1962	USA.	[9]	95	Female	Unreported	14 x 5,5cm	Not reported	No reported	Acute cholecystitis, cholelithiasis
2012	France	[11]	17	Not mentioned	Chronic liver disease	43 x 21 cm	2.700cc (2.7L)	Laparotomy	Byler's disease
2013	China	[14]	55	Female	Unreported	30 x 18 cm	3.800cc (3.8L)	Open cholecystectomy	Of non-obstructive cause, consider congenital giant gallbladder
2014	Russia	[3]	77	Female	Unreported	24 x 17 cm	3.350cc (3.35L)	Open cholecystectomy	Chronic cholecystitis
2017	India	[12]	46	Female	Unreported	30cm	Not reported	Laparoscopic cholecystectomy	Chronic cholecystitis, gallbladder mucocele with large impacted stone
2019	Iran	[1]	36	Female	Unreported	22 x 6 cm	Not reported	Open cholecystectomy	Chronic gangrenous cholecystitis
2019	Brazil	[8]	85	Male	Alcoholism, smoking, severe heart disease	18 x 17 cm	1.500cc (1.5L)	Cholecystectomy	Chronic cholecystitis
2019	Great Britain	[15]	63	Female	Unreported	24 x 17 cm	3.300cc (3,3L)	Minilaparoscopic cholecystectomy	Perforated gallbladder
2019	Germany	[13]	42	Male	Unreported	30 x 20 cm	15.000cc (15L)	Middle laparotomy	Mirizzi syndrome
2020	USA.	[4]	80	Female	Unreported	12 x 6 cm	500cc (0.5L)	Laparoscopic cholecystectomy	Gastroesophageal reflux, acute cholecystitis

2020	Colombia	[16]	79	Female	High blood pressure, COPD	22.5 x 8 cm	Not reported	Laparoscopic cholecystectomy	Cholelithiasis, associated gallbladder dropsy
2021	Morocco	[17]	53	Female	Unreported	22 x 14 cm	Not reported	Cholecystectomy	Hydrocholecystitis
2022	Japan	[5]	82	Male	Unreported	20 x 7 cm	655cc (0.65L)	Laparoscopic cholecystectomy	Chronic cholecystitis, non-malignant adenomyomatosis in gallbladder neck
2022	Venezuela	Current Case Report	61	Male	Chronic hypertension	30 x 25 cm	8,000cc (8L)	Exploratory laparotomy and open cholecystectomy	Exacerbated chronic cholecystitis

Table 1: Giant gallbladder cases reported in literature.

The purulent, non-foul-smelling fluid contained traces of fibrin, being indicative of active or "recent" hemorrhages and areas of vascular neoformation and fibroblastic stroma. It should be noted that the anatomopathological study discarded any neoplastic process in the sample examined, rejecting neoplastic etiology in our case.

Conclusion

The giant gallbladder is an infrequent pathology, of unknown etiology, which presented in this case reported as an abdominal mass of large diameter, with cramping pain in the right hypochondrium. This entity was approached surgically through a cholecystectomy, which results were satisfactory and without complications.

Analyzing the cases reported to date, the increase in frequency of appearance stands out, being able to guide the existence of changes in the current lifestyle.

This report can serve as a guide for future research on possible etiological causes, comorbidities and risk factors that may predispose the onset of the disease, in order to apply a better approach and prevention.

Conflicts of Interest

According to the ICMJ disclosure form, the authors of this case report declare that no financial support or sponsorship was received from any organization or institution.

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