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Case Report

CASE REPORT

A right atrial myxoma presenting with misleading features of acalculous cholecystitis

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Abstract

Diffuse thickening, a layered appearance of the gallbladder wall and the accumulation of surrounding fluid are considered as sensitive and relatively specific imaging findings of gallbladder inflammation. In the absence of gallstones, the diagnosis of acalculous cholecystitis can be further supported by the presence of fever, epigastric pain, right upper abdominal quadrant (RUQ) tenderness on inspiration and elevated markers of inflammation. In this report, we describe a 35-year-old schoolteacher who presented with all of the above clinical, laboratory and imaging findings that were eventually attributed to gallbladder oedema and liver congestion (abdominal imaging and RUQ tenderness) caused by an atrial myxoma interfering, with the atrioventricular circulation of the right heart and causing constitutional manifestations (fever and elevated markers of inflammation).

INTRODUCTION

Acalculous cholecystitis is a life-threatening form of gallbladder inflammation representing 10% of all cases of acute cholecystitis, affecting mainly hospitalized patients, like intubated intensive care unit (ICU) patients and individuals with critical illness [1, 2]. It is uncommonly described in patients admitted directly from the community [3]. Ultrasound findings include diffuse gallbladder wall thickening, a layered appearance and fluid surrounding the gallbladder [1]. Diffuse wall thickening, however, is not specific for cholecystitis, as it can be associated with oedema in cases of portal hypertension and right heart failure [4]. In this report, we describe a 35-year-old female, initially treated for acalculous cholecystitis, whose clinical findings were eventually attributed to the haemodynamic and constitutional manifestations of a right atrial myxoma.

CASE REPORT

A 35-year-old schoolteacher presented to the emergency department (ED) in September 2016 with fever for 10 days and epigastric discomfort for 5 days that worsened on inspiration. A course of doxycycline (100 mg every 12 h) prescribed by her family doctor 5 days prior to admission did not relief her symptoms. She had noticed a recent increase in body weight of 6 kg. She had a past history of irregular menstrual periods due to polycystic

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Table 1: Most pertinent laboratory values on admission days 1 and 8 and on postoperative days 12 and 180 (6 months)

Test	Day 1	Day 8	12 days post-op	180 days (6 months) post-op
White blood count. (4–10.5 × 10^3/μL)	7.09	6.30	11.11	9.84
Neutrophils (2–7.7 × 10^3/μL)	4.18	3.86	7.82	7.97
Haemoglobin (12–15 gr/dL)	8.6	8.8	9.5	12.4
Platelets (140–450 × 10^3/μL)	400	429	468	196
INR	1.36	1.40	(–)	1.04
Creatinine (0.6–1.4 mg/dL)	0.6	0.61	0.54	0.71
Urea (10–50 mg/dL)	15	5	26	20
S. albumin (3.5–5.5 gr/dL)/PF album	3.1/(–)	3.0/1.7	4.1/(–)	(–)/(–)
S. Globulin(2–4 gr/d L)	2.97	2.52	2.54	(–)
Serum AST (5–37 IU/L)	17	10	21	24
S. ALT (5–40 IU/L)	23	8	27	19
S. ALP (35–104 IU/L)	85	56	87	86
S. γGT (7–32 IU/L)	28	22	36	(–)
S. LDH (<225 IU/L)/PF LDH	143/(–)	172/69	175/(–)	261/(–)
Total bilirubin (<1 mg/dL)	0.35			
S. amylase (10–100 IU/L)	31	54		65
Urine amylase (< 460 IU/L)	39			
CRP (<0.5 mg/dL)	7.63	4.98	1.49	0.05
ESR h (<30 mm/h)	98	103	73	(–)
Pregnancy test (urine HCG)	Negative			
Tests for HBsAg, anti-HCV and HIV	All negative			
Blood culture (4 in total)	No growth (1)	No growth (3)		
Urine analysis (3 in total)	Unremarkable (1)	Unremarkable (1)		

Normal values are shown in parenthesis in the first column. PF, Pleural Fluid; S, Serum; AST, aspartate aminotransferase; ALT, alanine aminotranferase; ALP, alkaline phosphatase; γ GT, γ-glutamyltransferase; LDH, lactate dehydrogenase; HCG, human chorionic gonadotropin; HBsAg, Hepatitis B surfaceantigen; HCV, hepatitis C virus; HIV, human immunodeficiency virus; (–), no data available.

ovaries but was otherwise in good health without known co-morbidities. She was a non-smoker and a prudent consumer of alcohol. On examination she was pale and had a temperature of 38.4°C, a pulse rate of 104 per min, an oxygen saturation of 99%, a weight of 68 kg, a blood pressure of 110/80 mmHg, an atypical systolic murmur best heard at the left sternal border and a sensitivity on inspiration at the right upper abdominal quadrant (RUQ) (compatible with a positive Murphy's sign). Laboratory test results on Admission Days 1 and 8 and Post-op Days 12 and 180 (6 months) are shown in Table 1. Most noticeable were anaemia, a low albumin, prolonged international normalized ratio (INR), an increased C-reactive protein (CRP) and an elevated erythrocyte sedimentation rate (ESR). Cardiac to thoracic width on a frontal view chest X-ray was <50% and costo-phrenic angles were free.

Due to fever, a positive Murphy's sign, raised markers of inflammation, gallbladder wall thickness (11 mm) and layered appearance on the ED ultrasound (Fig. 1), she was admitted to the surgical department with a working diagnosis of acalculous cholecystitis and treated with a combination of ciprofloxacin (500 mg IV every 12 h) and metronidazole 500 mg IV every 8 h. An abdominal computed tomography (CT) (Fig. 2A) performed 5 h post-admission, showed a marginal thickness of the wall, a small amount of fluid surrounding the gallbladder, the right costo-phrenic space and lower liver margin. A moderate amount of ascetic fluid (Fig. 2B) was seen in the lower pelvis (reported as 'absent' by the previous ultrasound). A second ultrasound on Day 5 (Fig. 3) showed marginal gallbladder wall thicknesses (3.5 mm) and remission of the ascites. These findings were, at this point, interpreted as a favourable response to antibiotics.

The right-sided pleural fluid (PF), aspirated on Day 8, proved to be a transudate (Column 3, Table 1). This prompted a medical consultation that resulted in her being transferred to the

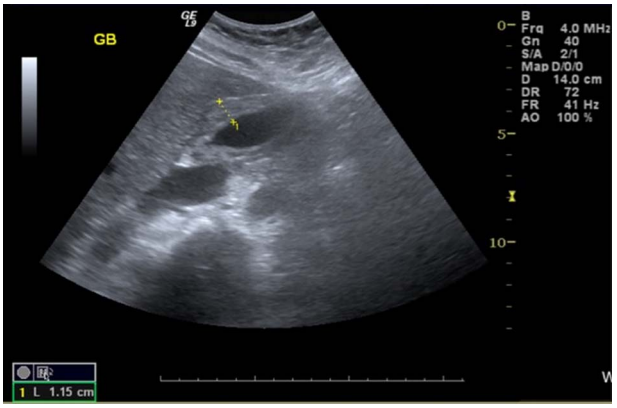

Figure 1: Abdominal ultrasound, on Day 1 (ED), showing increased thickness (11 mm) and layering (hypoechoic regions between the echogenic lines) of the gallbladder wall. The presence of ascites was reported as absent.

Third Department of Internal Medicine. Due to the absence of co-morbidities, usually associated with acalculous cholecystitis, persistent fever, elevated ESR and CRP despite appropriate antibiotic therapy this diagnosis was considered unlikely. Due to fever, a systolic murmur, a transudative pleural effusion and evidence of liver involvement as demonstrated by tenderness on inspiration, transient ascites, prolonged INR and hypoalbuminemia it was thought that an endocarditis-induced valve injury may have caused congestive hepatopathy. Thus, endocarditis was prioritized among other causes of fever of unknown origin considered in the differential diagnosis. After discontinuing antibiotics, three blood cultures (Table 1) and a cardiac ultrasound were requested. A trans-thoracic and a subsequent trans-oesophageal echocardiogram revealed a 48 × 38 mm lesion

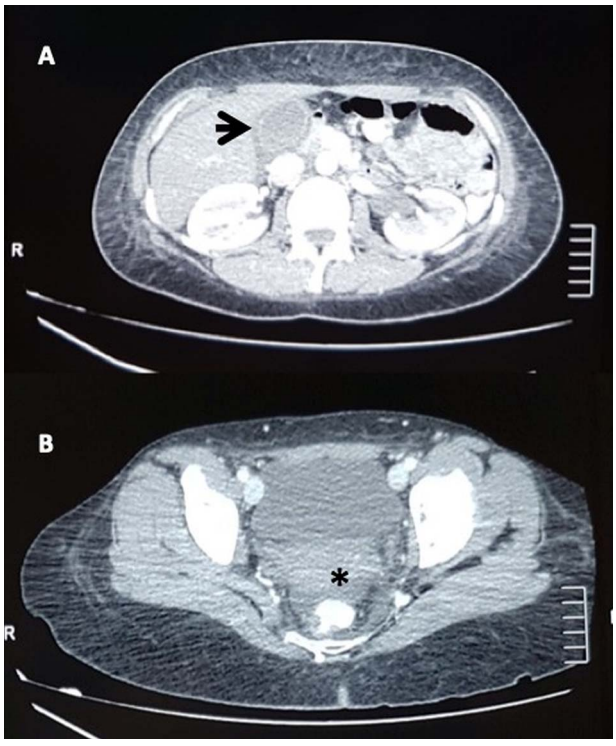

Figure 2: Abdominal CT scan, on day 1 (5 h after admission) showing: (**A**) the presence of a small amount of PF in the right lung base, there was fluid surrounding the gallbladder and liver with a marginal thickness of the gallbladder wall (arrow). (**B**) The presence of a moderate amount of ascetic fluid in the lower pelvis was noted (star).

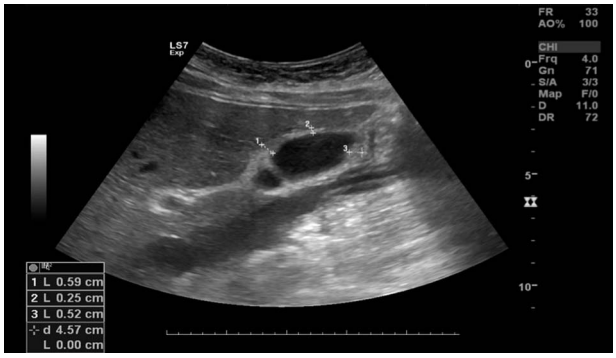

Figure 3: Abdominal ultrasound, on day 5, showing upper normal gallbladder wall thickness (3.5 mm). The presence of ascites is reported as absent.

with rough margins attached by a stalk to the posterior wall of the right atrium and protruding in the right ventricle through the tricuspid valve (Fig. 4). The tumour (Fig. 5) was removed during surgery on day 15 and proved to be a myxoma on histological examination. Post-operatively, the patient became afebrile and within a week lost the extra 6 kg she had gained recently. There was a gradual improvement in acute phase reactants, haemoglobin, albumin and INR that were normal 6 months post-operatively (Table 1).

DISCUSSION

The patient described presented with a combination of clinical, laboratory and imaging findings compatible with acalculous

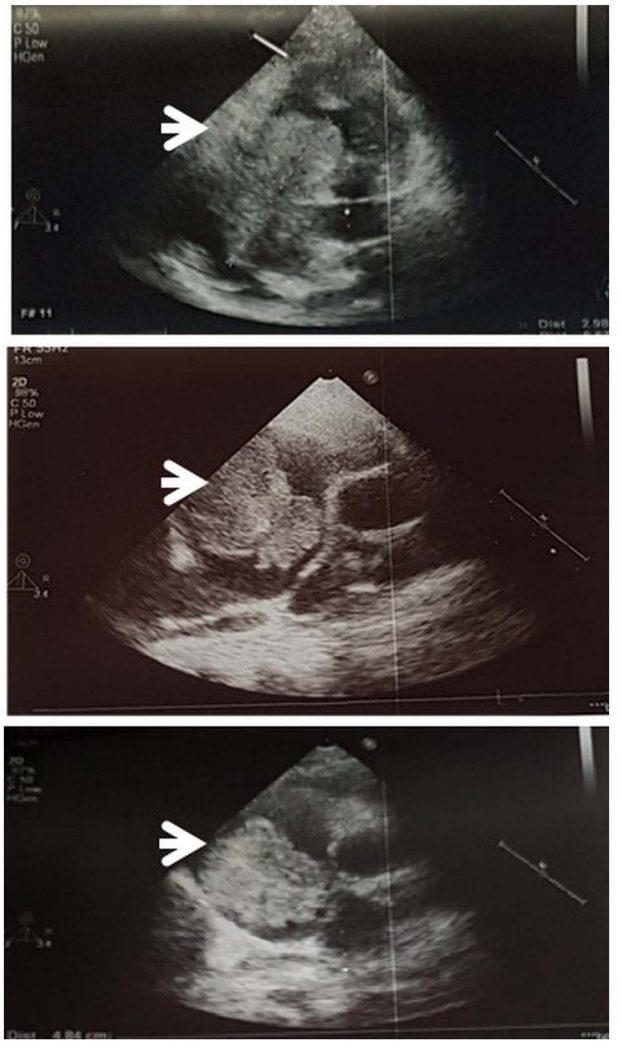

Figure 4: (**A–C**) Echocardiogram views of a right atrial myxoma (arrows) with a size of 48 × 38 mm, with rough margins attached by a stalk to the posterior wall of the right atrium and protruding in the right ventricle through the tricuspid valve.

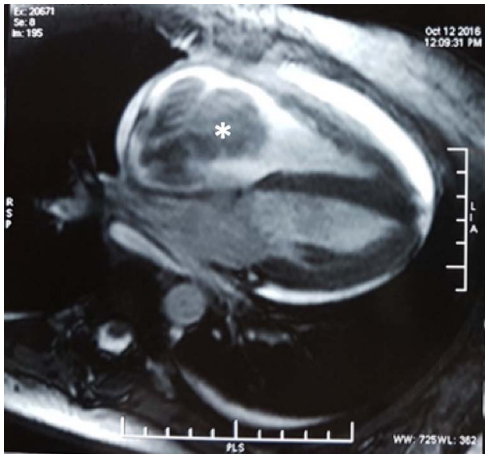

Figure 5: The atrial myxoma (star) as shown on a cardiac magnetic resonance imaging performed pre-operatively.

cholecystitis. The absence of co-morbidities and non-response to antibiotics during the first week of hospitalization questioned

the correctness of this diagnosis. Interestingly, on two sequential imaging studies gallbladder wall thickness (11 mm) on the day 1 ultrasound was rapidly reduced to 'marginal' on CT 5 h later, while a moderate amount of ascites, absent on admission, appeared in the pelvis. A second ultrasound on day 5 showed marginal gallbladder wall thickness (3.5 mm) and the absence of ascetic fluid. Following the identification of the right atrial tumour, these findings were seen from a different perspective. Those rapid changes could be attributed to intermittent interference with tricuspid valve function (due to a mobile myxoma protruding into the right ventricle) or incidental obstructions of the pulmonary circulation due to pulmonary emboli from detached myxoma tissue [5, 6]. A chest CT with a protocol for pulmonary embolism was not performed as it would not alter management (as the potential source of emboli was removed by surgery, [7]. The rapid changes in gallbladder wall thickness in our patient shared similarities to a 2015 case report of a patient with congestive heart failure whose RUQ pain and gallbladder wall thickness seemed to parallel exacerbations of her heart failure [8]. Loss of the extra 6 kg in weight after surgery pointed to the oedematous nature of the preoperative weight gain. Normalization of serum albumin levels and INR 6 months post-op (Table 1) were assumed to represent reversal of congestive hepatopathy. Remission of fever, anaemia and acute phase reactants (Table 1) indicated that they represented constitutional manifestations of the myxoma and were unrelated to gallbladder inflammation [9]. Myxomas are rare benign neoplasms of the heart that uncommonly affect the right atrium. When located there, they can cause symptoms of right heart failure by interfering with the tricuspid valve or by causing pulmonary emboli from detached tissue (particularly when the margins are 'rugged'). They are also known to cause constitutional symptoms, such as fever, anaemia and laboratory abnormalities that suggest the presence of a connective tissue disease [9, 10].

Documenting a right atrial myxoma came as a surprise to us, however, pursuing a broader differential diagnosis from the start, based on the evidence that did not match the working diagnosis, such as the systolic murmur and pleural effusion, may have led to an earlier diagnosis by directing the evaluation towards a cardiac workup. She represents an example of the nonspecific nature of gallbladder wall thickness for the diagnosis of cholecystitis, as all the evidence points towards an oedema-related effect that resulted from her cardiac condition.

SUPPLEMENTARY MATERIAL

Supplementary Material is available at *OMCREP* online.

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CONFLICT OF INTEREST STATEMENT

No conflicts of interest.

ETHICAL APPROVAL

No ethical approval was required.

CONSENT

Written consent was obtained from the patient.

GUARANTOR

The authors accept full responsibility for the work, had access to the data and controlled the decision to publish.

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