World Journal of Clinical Cases

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Editorial Board Member of *World Journal of Clinical Cases*, Zeid J Khitan, FACP, FASN, MBBS, MD, Academic Research, Director, Full Professor, Department of Medicine, Marshall University, Huntington, WV 25701, United States. zkhitan@marshall.edu

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Case of takotsubo cardiomyopathy after surgical treatment of liver hydatid cyst: A case report

Yakup Altaş, Ülfet Abdullayeva

Abstract

BACKGROUND
Takotsubo cardiomyopathy, also called apical ballooning syndrome, is a disease that is often triggered by stress factors in postmenopausal women and mimics acute coronary syndrome. The aim of this article is to draw attention to takotsubo cardiomyopathy after surgical treatment of liver hydatid cyst.

CASE SUMMARY
A 50-year-old diabetic and hypertensive female patient was evaluated preoperatively before general surgery for liver hydatid cyst, and no cardiac problems were found. The patient was discharged on the 3rd postoperative day without any postoperative complications. On postoperative day 5, the patient presented to the emergency department with fever, shortness of breath, chills, and shivering and was hospitalized with the diagnosis of pneumonia. The troponin levels remained high during follow-up. Echocardiography was performed on postoperative day 7, after which the patient was referred to a tertiary center with the diagnosis of non-ST-elevation myocardial infarction due to akinesia in the apical region. Coronary angiography performed at the tertiary center showed normal coronary anatomy, and the patient was diagnosed with takotsubo cardiomyopathy.

CONCLUSION
Takotsubo cardiomyopathy mimicking myocardial infarction without ST segment elevation may develop after surgical treatment of liver hydatid cyst.

Key Words: Takotsubo cardiomyopathy; Liver hydatid cyst; Noncardiac surgery; Coronary angiography; Echocardiography; Case report
Core Tip: Takotsubo cardiomyopathy is a type of cardiomyopathy triggered by stress. Echocardiography shows akinesia in the apical region and hyperkinesis in other regions. Clinical, electrocardiographic, and laboratory findings mimic acute coronary syndrome. The diagnosis is made by excluding acute coronary syndrome. In our case, cardiomyopathy developed after surgical treatment of liver hydatid cyst.

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INTRODUCTION
Takotsubo cardiomyopathy, also referred to as apical ballooning syndrome or broken heart syndrome, is a disease that mimics acute myocardial infarction triggered by stress[1]. Its pathophysiology is thought to include epicardial coronary artery spasm and myocardial dysfunction due to catecholamine discharge[2]. More than 95% of patients are female and mostly postmenopausal[3]. Takotsubo cardiomyopathy was first described by Dote et al[1] in Japan in 1991. Its name refers to the appearance of the left ventricle on ventriculography, which resembles the vessel used by Japanese fishermen for octopus fishing. In subsequent years, many reports on the disease have been published worldwide. According to the Mayo Clinic diagnostic criteria, takotsubo cardiomyopathy has four diagnostic criteria: (1) Transient regional left ventricular akinesia, hypokinesia, or dyskinesia with or without involvement of the apical region; (2) Absence of obstructive coronary artery disease; (3) Electrocardiogram (ECG) derivations including ST segment change and negative T wave or significant elevation of cardiac troponins; and (4) Absence of pheochromocytoma and myocarditis[4]. Diagnosis of the disease is based on the exclusion of acute coronary syndrome. The symptoms of takotsubo cardiomyopathy are often chest pain, shortness of breath, and sweating. ECG shows ST deviation, negative T wave, QT prolongation, and elevated cardiac biomarkers. Echocardiography may reveal akinesia, hypokinesia, dyskinesia in the apical region, and hyperkinesis in other regions. However, coronary angiography reveals normal coronary anatomy.

CASE PRESENTATION

Chief complaints
A 50-year-old woman presented to our hospital with abdominal distension, nausea, and vomiting for 2 mo.

History of present illness
The patient, who had complaints for 2 mo, was admitted to the general surgery outpatient clinic. Abdominal computed tomography (CT) showed a space-occupying lesion consistent with type II liver hydatid cyst with dissociated germinant membrane in liver segments 8, 7, and 5, which was approximately 12 cm × 11 cm in size. Surgery was recommended (Figure 1). The patient’s preoperative ECG was unremarkable (Figure 2A). Losartan and metformin treatment was continued during the surgical period.

History of past illness
The patient had a history of type 2 diabetes mellitus and hypertension.

Personal and family history
The patient’s personal and family history was unremarkable.

Physical examination
The patient had no remarkable physical examination findings other than a pale appearance.

Laboratory examinations
There were no abnormalities in the patient’s laboratory tests.

Imaging examinations
The patient’s abdominal CT examination showed a space-occupying lesion consistent with type II hydatid cyst with a dissociated germinant membrane, approximately 12 cm × 11 cm in size in liver segments 8, 7, and 5.
MULTIDISCIPLINARY EXPERT CONSULTATION

The patient was evaluated by multidisciplinary experts in cardiology, internal medicine and pulmonology in the preoperative period. No serious problems were detected, and the patient was considered suitable for surgery with low risk.

FINAL DIAGNOSIS

The final diagnosis according to Mayo Clinic criteria was takotsubo cardiomyopathy.

TREATMENT

The patient underwent surgical removal of the cyst (Figure 3).

OUTCOME AND FOLLOW-UP

The patient did not require inotropic agents nor vasopressors during surgery. She was discharged on postoperative day 2 without any complication. On postoperative day 4, she was admitted to the emergency room with complaints of fever, shortness of breath, and palpitations. Her C-reactive protein level was 105 mg/L, white blood cell count was 21400/mcL, and troponin I level was 1800 ng/mL. The initial ECG showed no significant features except sinus tachycardia. The ECG taken after rate control was achieved showed a long QTc duration (467 ms) (Figure 2B). Echocardiography performed as a result of the cardiology consultation on these findings showed an akinetic apex and ejection fraction of about 40%. However, we did not record an echo because we initially thought the patient had acute coronary syndrome. The patient was referred to a tertiary center for emergency percutaneous coronary intervention with a diagnosis of non-ST-elevation acute coronary syndrome. Coronary angiography performed at the tertiary center revealed normal coronary anatomy. Takotsubo cardiomyopathy was considered and our patient was followed up. Control echocardiography performed on postoperative day 33 showed complete normalization of left ventricular function. After the patient's left ventricular function improved, only antihypertensive and antidiabetic treatments were continued.

DISCUSSION

Takotsubo cardiomyopathy is thought to develop due to coronary spasm and myocardial dysfunction as a result of noradrenaline discharge following illness, emotional, and physical stress. Since the 1990s, there have been numerous studies on this condition, some of which are surgically relevant. Cases of takotsubo cardiomyopathy following infection have been reported. Among these, George et al[5] described a case after influenza a common infection and Achuthanandan et al[6] described a case involving global hypokinesia after coronavirus disease-2019 in a young female. In addition, Izumi[7] reported on a case of takotsubo cardiomyopathy development following drug abuse, and Jalan et al
Figure 2 Electrocardiography. A: Electrocardiography image at admission; B: Postoperative electrocardiography.
Figure 3 Hydatid cyst removal by surgery.

[8] reported on a case developing after a migraine attack. Some cases of takotsubo cardiomyopathy have developed after cardiac valve surgery. Vazhev and Stoev[9] published a case of takotsubo cardiomyopathy developing after aortic and mitral valve replacement. Some cases develop in the preoperative period. Rodrigues et al[10] published a case of takotsubo cardiomyopathy mimicking ST-elevation myocardial infarction that developed in the preoperative period after general anesthesia. There are also cases in the literature of development after liver transplantation[11-13]. Bhoojraj et al[14] published a case of takotsubo cardiomyopathy developing after vaginal hysterectomy. In contrast to takotsubo cardiomyopathy cases, which are frequently seen in the postmenopausal period, Kim et al[15] published a case that developed after cesarean section. The distinctive feature of our case is the development of takotsubo cardiomyopathy after surgery for liver hydatid cyst, specifically in the postoperative period of a noncardiac surgery and which has never before been reported in the literature.

CONCLUSION

Our patient was diagnosed via interdisciplinary coordination. Pneumonia was initially considered according to physical examination and laboratory findings. Subsequently, postoperative non-ST elevation myocardial infarction was considered according to echocardiography and elevated cardiac biomarker findings; however, coronary angiography showed normal coronary anatomy. A diagnosis of takotsubo cardiomyopathy was made according to Mayo Clinic diagnostic criteria. To the best of our knowledge, this is the first reported case of takotsubo cardiomyopathy after surgical treatment of liver hydatid cyst. Additional studies on takotsubo cardiomyopathy developing after noncardiac surgery are needed.

FOOTNOTES

Author contributions: Altaş Y designed the report, and wrote and revised the paper; Abdullayeva U provided a preoperative computed tomography photograph, performed surgery on the patient, and provided a photograph of the surgical material; Both authors read and approved the final manuscript.

Informed consent statement: Consent was obtained from the patient for both the surgery and publication of her anonymized case in this report.

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Country/Territory of origin: Turkey

ORCID number: Yakup Altaş 0009-0001-1679-8147.
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