Takotsubo Cardiomyopathy Precipitated by Anaphylaxis to Ketorolac Following Laparoscopic Cholecystectomy: A Case Report

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INTRODUCTION

Drug-induced anaphylaxis with subsequent Takotsubo cardiomyopathy (TCM) is a rare and potentially fatal complication in the perioperative setting.

TCM, also known as stress-induced cardiomyopathy or "broken heart syndrome," is characterized by acute systolic heart failure with left ventricular dilation in the absence of acute coronary syndrome.

In perioperative TCM, hypokinesis most commonly affects the ventricular apex and rarely affects the mid-chamber segments.

CASE PRESENTATION

In this case report, we outline a previously healthy 28-year-old female who underwent an uncomplicated elective laparoscopic cholecystectomy and, upon extubation, experienced flash pulmonary edema that was later determined to be a sequela of TCM triggered by Ketorolac-induced anaphylaxis.

CONCLUSIONS

This case highlights several unique features of TCM. It is the first report of TCM in a patient undergoing robotic-assisted laparoscopic cholecystectomy precipitated by anaphylaxis to Ketorolac. There are no other reports of non-steroidal anti-inflammatory drug-induced anaphylaxis leading to TCM.

Additionally, it represents a rare case of mid-chamber TCM in a premenopausal patient. Although infrequent, this is an important reversible etiology to keep on your differential.

RESOURCES

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5.Alhuarrat MAD, Barzallo D, Seo J, Naser A, Alhuarrat MR, Minuti A, Kokkinidis DG, Schizas D. Meta-Analysis and Clinical Features of Perioperative Takotsubo Cardiomyopathy in Noncardiac Surgery. Am J Cardiol. 2023 Aug 15;201:78-85. doi: 10.1016/j.amjcard.2023.06.015. Epub 2023 Jun 21. PMID: 37352669.

HOSPITAL COURSE

The patient was emergently re-intubated, transferred to the ICU, and treated with high-dose vasopressor and inotrope support.

→ A transthoracic echocardiogram showed reduced left ventricular function with an estimated ejection fraction <30%. There was normal motion at the base and apex of the left ventricle, however, **mid-chamber hypokinesis was present**.

→ Electrocardiography showed sinus tachycardia without ST segment changes or any other indicators of acute coronary syndrome or myocardial infarction. On postoperative day one, high-sensitivity troponin peaked at 227 ng/L.

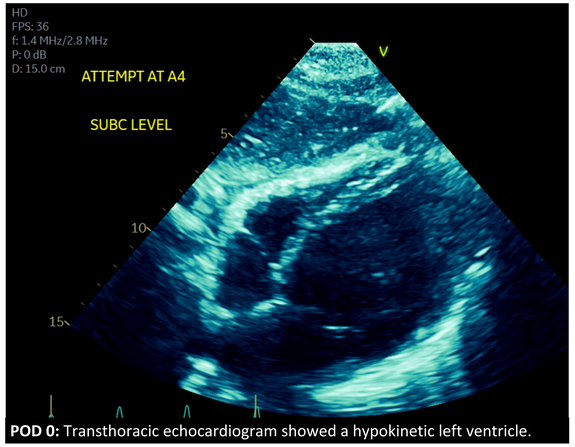
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Additional workup showed decreased SVR despite adequate fluid resuscitation, indicating **distributive shock**. Infectious and neurogenic causes were ruled out.

The patient responded well to epinephrine and high-dose steroid treatment.

→ Guideline-directed medical therapy for heart failure with reduced ejection fraction was initiated, and the patient was discharged home in stable condition on hospital day 6.

→ On review of her chart, Ketorolac was the only new medication administered during the perioperative period. This was determined to be the cause of her anaphylaxis and subsequent TCM.



POD 0: Transthoracic echocardiogram showed a hypokinetic left ventricle.

TEACHING POINTS

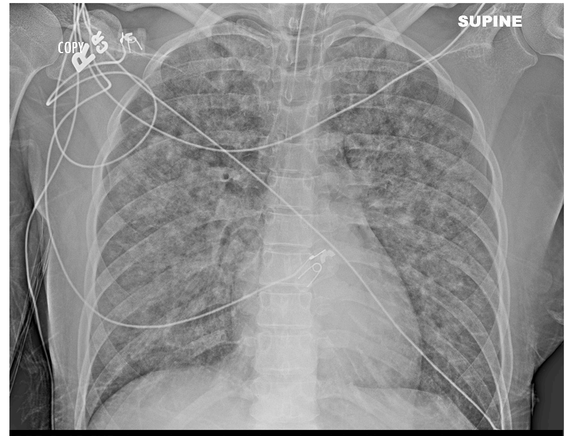
Point 1: TCM is an important reversible etiology to consider in patients with unexpected acute perioperative hemodynamic instability and flash pulmonary edema.

Point 2: Anaphylaxis to commonly used medications can be the unexpected etiology of this rare and fatal condition.

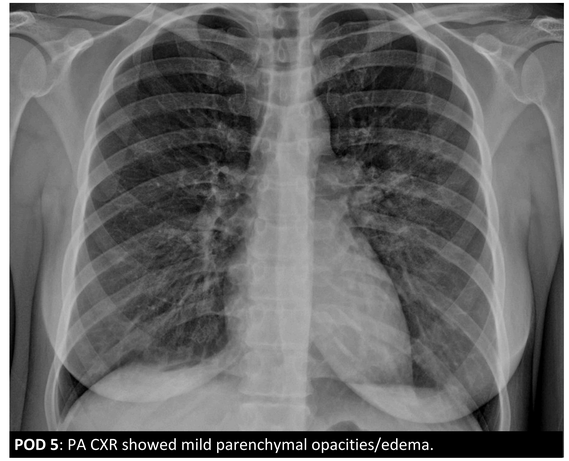
Point 3: The majority of perioperative TCM cases in the literature occur upon emergence from anesthesia or during the first 24 hours post-operatively in non-cardiac surgical patients.

Point 4: In premenopausal women, apical-sparing variants of TCM may be more common.

IMAGING FINDINGS



POD 0: AP CXR showed extensive bilateral nodular-like parenchymal opacities.



POD 5: PA CXR showed mild parenchymal opacities/edema.

** Note: we are comparing AP versus PA chest rays.*

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