

## Introduction

- Obstructive shock = mechanical obstruction of the heart and/or great vessels, leading to decreased cardiac output and tissue hypoxia
  - Common causes = pulmonary embolism, tension pneumothorax, pericardial tamponade
- We present a case of obstructive shock in a female with a history of polycystic kidney and liver disease

## Case Description

A 62-year-old female presents from home with abdominal pain and chills.

- PMHx: autosomal dominant polycystic kidney disease complicated by ESRD, polycystic liver disease
- Vitals on admission: afebrile, HR 110, BP 85/52-105/68, RR 18, O<sub>2</sub> saturation 97% on room air
- Physical exam: dry mucous membranes and soft abdomen with moderate, diffuse tenderness to palpation
- Labs: bicarbonate 20, AST 22, ALT 14, total bilirubin 1.5, albumin 2.0, lipase 55, lactate 1.6, WBC 3.77; peritoneal fluid was light yellow, cloudy, 1,995 WBCs, 1000 RBCs
- Imaging: CT abdomen and pelvis (see Figure 1) - Hepatomegaly with numerous cysts with few cysts representing rim calcifications, numerous simple and complex bilateral cysts in the enlarged kidneys, a small amount of abdominal free fluid; transthoracic echocardiogram was obtained, but no cardiac windows were found due to hepatic cysts
- Clinical course:
  - She was admitted for management of peritonitis and intravenous (IV) cefepime was initiated.
  - However, the patient was persistently tachycardic and hypotensive. Her peritoneal cultures were positive for pan-susceptible Klebsiella and a 21-day course of intraperitoneal cefazolin was started. IV hydration was continued.
  - Given persistent hypotension, the patient was ultimately diagnosed with obstructive shock secondary to compression by her liver cysts on her right atrium and inferior vena cava.

## Case Description Continued

- The patient was given fluid resuscitation and supported with vasopressors.
- She underwent aspiration, marsupialization, and fenestration of her hepatic cysts in an attempt to decompress her right atrium and inferior vena cava. However, due to her extensive cyst burden, these interventions did not lead to hemodynamic improvement.
- A dual liver-kidney transplant was recommended, but the patient was not amenable to transplant until late in her treatment course.
- The patient expired after a 44 day stay in the hospital.



Figure 1: Abdominal CT demonstrated renal cysts and liver cysts compressing the right atrium and inferior vena cava.

## Discussion

- In the more common presentations of obstructive shock, definitive management consists of stabilization of the patient, followed by an intervention to relieve the underlying cause of the obstruction (thrombolysis for a pulmonary embolism, drainage for a tension pneumothorax or cardiac tamponade).
- In this unique case of compression of the right atrium and inferior vena cava by hepatic cysts, aspiration provided only temporary decompressive benefit, due to the extensive cyst burden replacing normal hepatic parenchyma.
- In this patient's case, the only definitive treatment for her obstructive shock would have been dual liver-kidney transplant.

## Conclusion

- When a patient presents with obstructive shock, finding the cause of the obstruction quickly is essential due to hemodynamic instability.
- In patients with polycystic kidney disease and liver disease and clinical signs of shock, obstructive shock caused by cystic compression is an unlikely but possible cause and should be considered when evaluating the patient.
- Early diagnosis of this condition is necessary to ensure prompt intervention to relieve the cyst burden by dual liver-kidney transplant.

## References

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