INTRODUCTION

- Infective endocarditis (IE) is a rare but potentially lethal infection, with an estimated mortality of 14-37%\(^1\).
- Predisposing factors: \(^2\),\(^3\)
  - Intravenous (IV) drug use
  - Structural cardiac defects and prosthetic heart valves
  - Poor dental hygiene and dental procedures
  - Cardiac implantable electronic devices
  - Hemodialysis
  - Uncontrolled diabetes
  - HIV
- Most cases of IE are left sided and involve a single valve. \(^4\)
- Timely diagnosis of bivalvular IE is imperative to prevent complications and improving mortality.

Case description

- A 22-year-old male was transferred to our medical intensive care unit (MICU) due to fulminant liver failure and upper gastrointestinal (GI) bleeding. He initially presented the emergency department with hematemesis and dyspnea. He reported symptoms of lethargy, fevers, and night sweats for four weeks.
- His initial blood pressure was 117/40 mmHg, heart rate was 102/min, respiratory rate was 37/min, oxygen saturation was 100% on room air, and temperature was 94.8° F. Electrocardiogram (EKG) revealed sinus tachycardia without significant conduction abnormalities. His laboratory analysis revealed anemia, elevated D-dimer, lactic acidosis, elevated creatinine, and significantly elevated INR and aminotransferases (Table 1). A computed tomography (CT) angiography of the lungs was negative for pulmonary embolus. CT of the abdomen showed hepatomegaly.
- Given history of recent use of acetaminophen and significantly elevated liver enzymes, he was suspected to have acute acetaminophen toxicity and started on IV N-Acetylcysteine. He was also given empiric antibiotics, IV fluids, packed red blood cells, and transferred to our MICU. Here, he was noticed to have a wide pulse pressure and a grade III/VI diastolic murmur over the left upper sternal border.

Table 1. Laboratory Values on Presentation

<table>
<thead>
<tr>
<th>Blood Tests</th>
<th>Result</th>
<th>Normal Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>White blood cell count, k/uL</td>
<td>19.18</td>
<td>&lt;50 - 150</td>
</tr>
<tr>
<td>Hemoglobin, g/dL</td>
<td>9.7</td>
<td>13.0 - 18.0</td>
</tr>
<tr>
<td>Platelet, k/uL</td>
<td>189</td>
<td>150 - 440</td>
</tr>
<tr>
<td>INR</td>
<td>2.5</td>
<td>&lt;1.1</td>
</tr>
<tr>
<td>Albumin, g/dL</td>
<td>2.3</td>
<td>3.5 - 5.2</td>
</tr>
<tr>
<td>Fibrinogen mg/dL</td>
<td>264</td>
<td>173 - 454</td>
</tr>
<tr>
<td>D-dimer, ng/mL</td>
<td>19,180</td>
<td>&lt;500</td>
</tr>
<tr>
<td>Potassium, mEq/L</td>
<td>5.7</td>
<td>3.5 - 4.5</td>
</tr>
<tr>
<td>Creatinine, mg/dL</td>
<td>2.2</td>
<td>0.72 - 1.25</td>
</tr>
<tr>
<td>Lactic acid, mmol/L</td>
<td>8.7</td>
<td>0.5 - 2.0</td>
</tr>
<tr>
<td>AST, U/L</td>
<td>8290</td>
<td>5 - 34</td>
</tr>
<tr>
<td>ALT, U/L</td>
<td>5552</td>
<td>0 - 55</td>
</tr>
</tbody>
</table>

![Figure 1: TTE showing a large echogenic mass attached to the aortic leaflet (A) with resultant severe AR (B).](image1)

![Figure 2: Perforated anterior mitral valve leaflet with severe eccentric mitral regurgitation seen on (A) TTE and (B) intraoperative transesophageal echocardiogram.](image2)

DISCUSSION

- Patients with IE can display a wide variety of symptoms, and many may not have any clearly definable risk factors.
- In left-sided IE, aortic regurgitation causes a “jet” of blood which can lead to inoculation of organisms in other areas of the heart producing secondary lesions. \(^6\)
- Higher rates of embolic events and heart failure have been reported in patients with bivalvular IE. \(^7\)
- A delay in diagnosis and treatment can lead to severe complications, including heart failure, septic embolization, stroke, renal infarcts, and possibly death.
- A recent study found that early surgical intervention in patients with mitroaortic IE was associated with a reduced 30-day as well as long-term mortality. \(^7\)
- In conclusion, this case report highlights the atypical presentation of bivalvular IE with fulminant liver failure. It also emphasizes the importance of utilizing POCUS and a multi-disciplinary approach for the timely diagnosis and optimal management of bivalvular IE, leading to favorable outcomes.

REFERENCES