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A Case Of Spontaneous Intercostal Artery Hemorrhage

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An Intercostal Surprise

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Introduction

- Spontaneous intercostal artery hemorrhage is rare
- Intercostal artery bleeding is often related to trauma
- We describe a case of spontaneous hemorrhage of multiple intercostal arteries in the setting of liver cirrhosis with coagulopathy and sepsis

Case Summary

History of Present Illness

- 50-year-old male presented to hospital with one day of mild abdominal pain, hypotension, no urine output, poor oral intake, and lightheadedness.
- PMHx: Alcoholic cirrhosis (Child-Pugh Class B) complicated by varices (status-post banding) & mild coagulopathy, T2DM, HTN, HLD, GERD, Seizures
- Home Medications: Lisinopril, Atorvastatin
- No precipitating events, trauma, illnesses, medication changes

Initial Presentation and Course

Vitals: T 36.8℃, P 87 bpm, RR 16, BP 87/57 mmHg, SaO2 96% on room air
GEN: alert, awake, in no distress
HEENT: sclerae icteric, dry MM
CV: regular rate & rhythm, no murmurs
RESP: normal work of breathing, clear
ABD: diffusely tender, no guarding, non-distended
SKIN: jaundiced, no rashes or hematomas

<table>
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<tr>
<th>WBC count</th>
<th>9.9 x 10^9/L</th>
<th>Albinum</th>
<th>3.0 g/dL</th>
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<tbody>
<tr>
<td>Hemoglobin</td>
<td>12.1 g/dL</td>
<td>Alk Phos</td>
<td>203 IU/L</td>
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<tr>
<td>Platelets</td>
<td>137 x 10^9/L</td>
<td>AST</td>
<td>149 IU/L</td>
</tr>
<tr>
<td>Sodium</td>
<td>120 mmol/L</td>
<td>ALT</td>
<td>84 IU/L</td>
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<tr>
<td>Potassium</td>
<td>4.7 mmol/L</td>
<td>Total Bilirubin</td>
<td>8.0 mg/dL</td>
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<tr>
<td>HCO3</td>
<td>13 mmol/L</td>
<td>INR</td>
<td>1.5</td>
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<tr>
<td>Creatinine</td>
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<td>lactate</td>
<td>1.4 mmol/L</td>
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<td>57 mg/dL</td>
<td>Venous pH</td>
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<tr>
<td></td>
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<td>Venous pCO2</td>
<td>28 mmHg</td>
</tr>
</tbody>
</table>

Hospital day 6

- Hemoglobin precipitously decreased from 11.0 to 8.1 g/dl
- Patient complains of new right upper back pain with swelling
- No evidence of GI bleed. Frequency of H&H increased
- Blood pressure stable on vasopressors, hemodialysis daily
- Thoracic surgery evacuates blood from chest wall
- Remains clinical stable and is transferred out of ICU on day 17

Hospital day 7

- Hemoglobin continues to decrease despite transfusion of RBCs, FFP, cryoprecipitate
- CT chest shows large extrathoracic hematoma [Figure 1]
- Interventional Radiology emergently consulted, conservative management initially pursued

Hospital day 8

- Hemoglobin remains low despite 8 units RBCs
- CT angiogram: active hemorrhage from right intercostal arteries 5-7
- IR embolization completed [Figure 2]

Hospital day 11

- Thoracic surgeon evacuates blood from chest wall
- Remains clinical stable and is transferred out of ICU on day 17

Hospital day 1 through day 5

- Initial resuscitation with IV fluids restored BP
- Empiric Zosyn for suspected septic shock
- Urinary output remained minimal despite adequate BP
- Tachypneic and hypoxemic following IV fluids
- Chest x-ray shows evidence of pulmonary edema
- Transferred to ICU for vasopressors and placement of temporary hemodialysis (HD) catheter, daily HD started on hospital day 3 and clinically stabilized
- No microbial growth or source of sepsis identified

Clinical Course

Take Home Points

- Acute anemia in the hospital may represent a life-threatening, active bleed
- When active, uncontrollable significant intrathoracic or extrathoracic bleeding is observed, consider intercostal artery hemorrhage
- A significant amount of blood can be lost into these spaces requiring massive transfusion
- Management requires obtaining appropriate CT imaging and early embolization of intercostal artery hemmorhages should be considered

Discussion

- Intercostal arterial bleeding can be brisk and result in significant blood loss, an estimated 4 liters of blood was already lost when our patient’s hematomas was discovered.
- Potential risk factors for spontaneous bleed in our patient included:
  - Chronic coagulopathy
  - Chronic mild thrombocytopenia
  - Anticoagulation used during hemodialysis
  - Low molecular weight heparin for thromboembolic prophylaxis
- Cases of intercostal artery hemorrhage most commonly involve trauma, but associations with neurofibromatosis type 1 and coarctation of the aorta are also seen1,2 [Figure 3]
- Other cases of spontaneous intercostal artery hemorrhage, though rare, include patients with hepatocellular carcinoma3, intercostal artery aneurysm while in flight6, SLE with antiphospholipid syndrome8, Dengue fever4, as well as causes entirely unknown5,9

Figure 1. Large Right Chest Wall Hematoma measuring 15 x 22 x 15 cm

Figure 2. IR Embolization of Right Intercostal Arteries 5-7

Figure 3. Causes of Intercostal Artery Hemorrhage

More Common:
- Anticoagulation
- Trauma
- Neurofibromatosis Type 1
- Coarctation of the Aorta

Less Common:
- Hemodialysis
- Hepatocellular Carcinoma
- Intercostal Artery Aneurysm
- SLE with antiphospholipid syndrome
- Dengue fever

References