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Background

- Serum bilirubin is regarded as ‘thermometer’ of hepatobiliary diseases.
- Its prognostic significance is demonstrated by inclusion in various scoring models such as the Model for End-Stage Liver Disease (MELD), Maddrey-Discriminant Function (MDF), and Albumin-Bilirubin Grade (ABG).
- The ASGE categorizes patients with total serum bilirubin > 4 mg/dl and concomitant CBD dilation as high risk — direct procession to ERCP is warranted.
- Patients age > 55 with suspected hepatobiliary disease should be assessed with MRCP.
- This case depicts an elderly patient presenting with abdominal pain and bilirubin > 4 mg/dl with delayed diagnosis of perforated gallbladder not identified on initial US.

Case Description



Demographic data: age 87 yrs; Gender: male; Ethnicity: Caucasian.



Past Medical History: T2DM, pulmonary embolism, inguinal hernia with repair.



Chief Complaint: Abdominal Pain, nausea, vomiting.

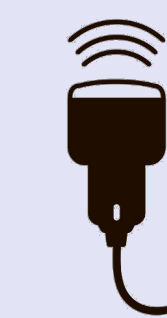
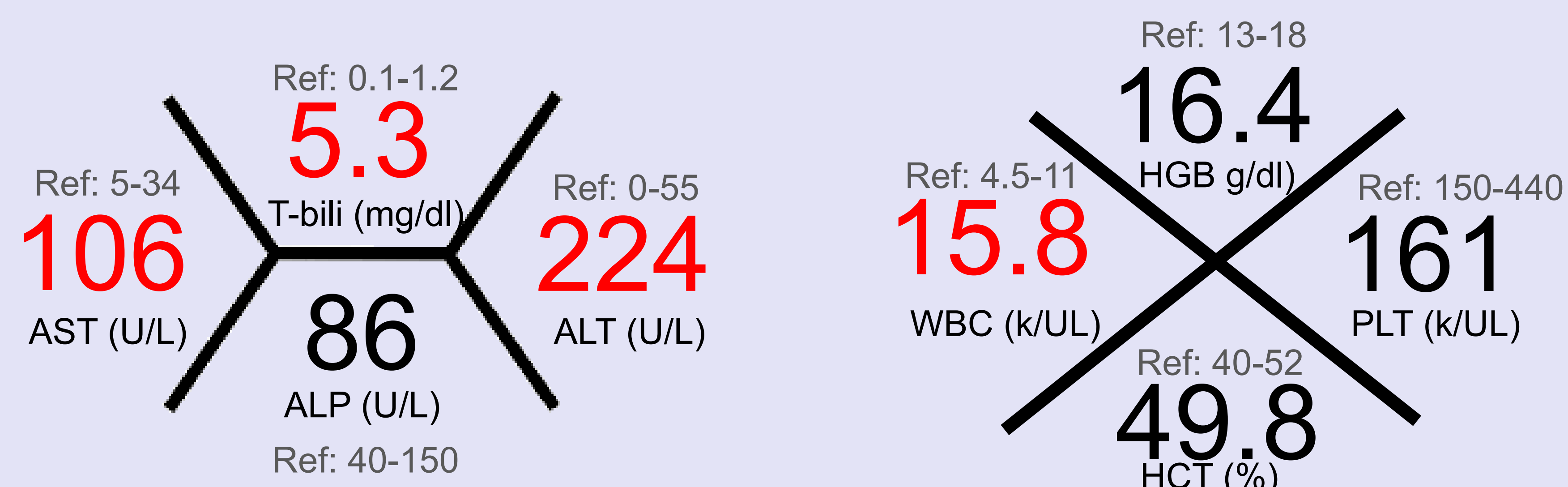
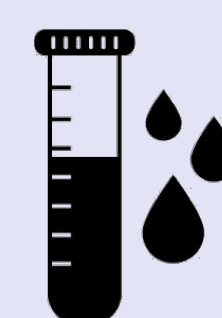
- Presented 2-days before with similar symptoms.
- Serology and CT imaging provided no explanation at that time.
- Discharged from the ED as pain subsided with IV analgesics.



Abdominal Exam: RUQ tenderness.

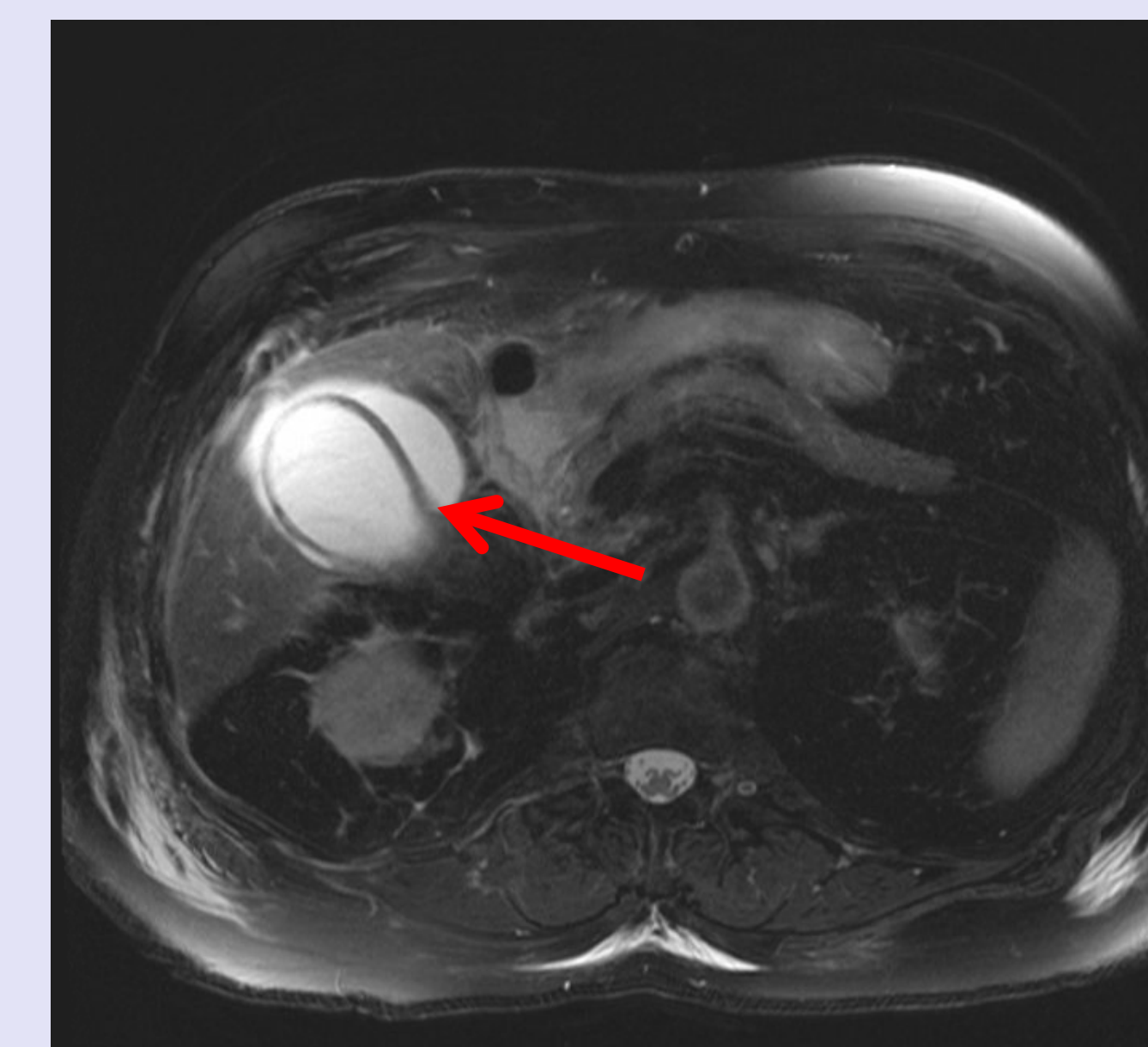


Dermatological Exam: jaundice with icteric sclera.



Abdominal Ultrasound – slightly coarsened hepatic echotexture; gallbladder sludge without findings of acute cholecystitis, no ductal dilation of the biliary system.

- Pain again improved with IV analgesics; admitted for observation.
- Pain recurred prompting MRCP.



MRCP showing marked gallbladder wall edema with contained perforation (red arrow)



- General surgery consulted; taken to OR; intraoperatively, gallbladder appeared gangrenous with bile spillage.
- Monitored in ICU post-op; recovered well and later safely discharged.

Discussion

- Uncomplicated acute cholecystitis typically does not result in hepatobiliary enzyme elevation except when accompanied by choledocholithiasis.
- It is important to note that hyperbilirubinemia can occur due to causes other than common bile duct (CBD) stones.
- Severe gallbladder inflammation as occurs in gangrenous cholecystitis (GGC) may result in transient hepatocellular injury with bilirubin elevation proportional to degree of inflammation.¹
- In a retrospective cohort study of cholecystitis patients without CBD stones, those with GGC exhibited significantly higher mean serum bilirubin levels compared to patients with simple cholecystitis, despite aminotransferase levels not showing significant elevation.²
- Ultrasonography is limited by operator dependency and CT scan has high interpretive variability with sensitivity of only 29.3% in diagnosis of GGC.³
- MRCP can precisely outline the extent of inflammation, identify the presence of necrosis and abscesses, and detect other potential complications within the biliary tract.⁴
- A high clinical suspicion for GGC should be maintained in elderly patients with hyperbilirubinemia and abdominal pain. MRCP may earlier elucidate perforation, preventing delays in intervention.

References

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4. Watanabe, Yuji, et al. "MR imaging of acute biliary disorders." Radiographics 27.2 (2007): 477-495.