Is Imaging Reliable? Radiology and Pathology Correlation of Biliary Disease

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INTRODUCTION

- 500,000-750,000 cholecystectomies are performed in the US annually.
- Radiographic imaging is essential to distinguish underlying disease processes.
- Providers depend on radiologic interpretations to guide management of biliary disease - it is important that findings correlate to final pathology.
- Ultrasonography has been the accepted gold standard for identifying cholelithiasis since the early 1990s and recent sensitivity estimates remain low despite improvements in quality and resolution.
- The aim of this study is to evaluate patients who underwent cholecystectomy and review the accuracy of preoperative imaging and correlate findings to final pathology.

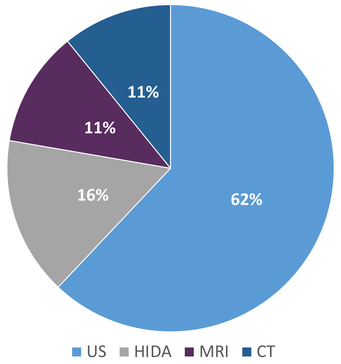
METHODS

- Retrospective case control study
- Inclusion criteria:
  - All adult patients who underwent cholecystectomy at the Walter Reed National Military Medical center between 2015 and 2016
  - Abdominal imaging obtained within one year preceding surgery
- Exclusion criteria:
  - Missing data
- Chart review for imaging obtained of the abdomen most proximal to surgical intervention (OR) as well as all ultrasonography of the right upper quadrant.
- Correlation between imaging interpretations and final pathology was determined for each patient.
- Data was analyzed using Chi square test and independent T test in R Version 4.0.3.

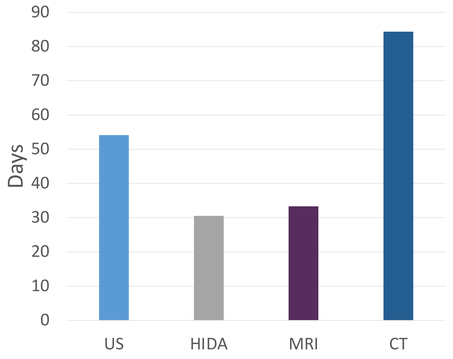
RESULTS

- 210 patients underwent a cholecystectomy.
- **166 patients** had abdominal imaging obtained within a year of surgery.
- 141 (84.9%) patients underwent ultrasonography (US) within a year of surgery.
- Imaging obtained most proximal to the time of cholecystectomy included ultrasonography (US), computed topography (CT), magnetic resonance imaging (MRI, to include MRCP), and cholescintigraphy (HIDA).
- On average, preoperative imaging was obtained 51.3±60.7 days prior to cholecystectomy.
  - CT scans were obtained further from surgical intervention (84.3 ± 80.7 days) whereas HIDA scans were performed closer to the OR (30.5 ± 24.1 days).

Imaging Closest to Cholecystectomy



Average Time from Imaging to Cholecystectomy

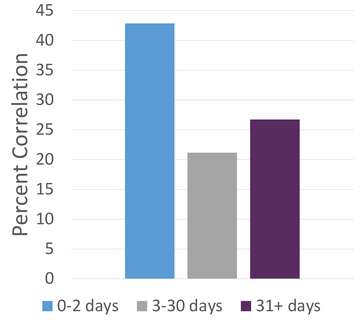


Overall, preoperative radiologist impressions were found to correlate with pathology only 27.7% of the time.

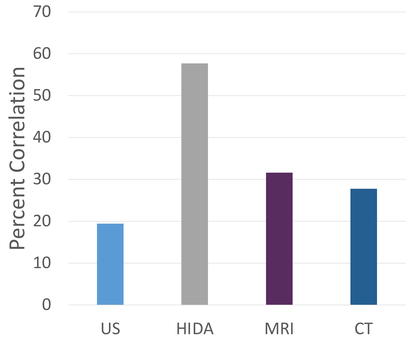
RESULTS

- Imaging was discordant with pathologic findings if
  - Ultrasound was the imaging modality obtained in closest proximity to operative management (19.4%)
  - Imaging was obtained in the subacute period, from 48 hours to 30 days prior to surgery (21.2%).

Radiology to Pathology Correlation by Imaging Proximity to Surgery



Radiology to Pathology Correlation by Study



CONCLUSION

- There is significant discordance between imaging and final pathology.
- Ultrasound was the least effective modality in predicting pathology.
- Quality improvement should be directed at standardizing the interpretation of imaging to improve diagnostic accuracy and facilitate timely surgical care.

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