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TITLE: Abbreviated Magnetic Resonance Imaging and Biomarker-Based Detection of Early Liver Cancer

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14. ABSTRACT

Hepatocellular carcinoma (HCC) is the second leading cause of cancer-related death worldwide and is the fastest growing cause of cancer death in the United States. Current national guidelines recommend surveillance of all patients at risk for HCC with a lab draw and an Ultrasound (US) examination every 6 months. However, many studies have shown that Ultrasound's ability to detect cancer reliably, especially small tumors, is poor. Many centers in the United States perform contrast-enhanced magnetic resonance imaging (MRI) for HCC surveillance as it has been shown to be more accurate in the detection of HCC than US. However, complete contrast-enhanced MRI is too expensive to be considered a first line surveillance examination. We previously simulated and studied a novel abbreviated MRI (AMRI) protocol, using a unique intravenous contrast agent used for liver MRIs that takes approximately 10 minutes to complete. We found that the accuracy of the AMRI protocol was 20% better than that of US. We have shown that in moderate to high-risk groups, AMRI is more cost effective than US. We now seek to fill remaining gaps by rigorously comparing the performance of AMRI vs. US for HCC screening in a large prospectively assembled cohort of subjects at risk for HCC; assessing the added diagnostic value of clinical biomarkers (AFP, AFP-L3, DCP) and other clinical variables; examine the cost effectiveness of AMRI, US, and of each imaging method in combination with clinical biomarkers; and bank biospecimens for future biomarker discovery studies.

15. SUBJECT TERMS
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Table of Contents

Page

Introduction

Hepatocellular carcinoma (HCC) is the second leading cause of cancer-related death worldwide and is the fastest growing cause of cancer death in the United States. Current national guidelines recommend surveillance of all patients at risk for HCC with a lab draw and an Ultrasound (US) examination every 6 months. However, many studies have shown that Ultrasound's ability to detect cancer reliably, especially small tumors, is poor. Many centers in the United States perform contrast-enhanced magnetic resonance imaging (MRI) for HCC surveillance as it has been shown to be more accurate in the detection of HCC than US. However, complete contrast-enhanced MRI is too expensive to be considered a first line surveillance examination. We previously simulated and studied a novel abbreviated MRI (AMRI) protocol, using a unique intravenous contrast agent used for liver MRIs that takes approximately 10 minutes to complete. We found that the accuracy of the AMRI protocol was 20% better than that of US. We have shown that in moderate to high-risk groups, AMRI is more cost effective than US. We now seek to fill remaining gaps by rigorously comparing the performance of AMRI vs. US for HCC screening in a large prospectively assembled cohort of subjects at risk for HCC; assessing the added diagnostic value of clinical biomarkers (AFP, AFP-L3, DCP) and other clinical variables; examine the cost effectiveness of AMRI, US, and of each imaging method in combination with clinical biomarkers; and bank biospecimens for future biomarker discovery studies.

Body

Recruited 37 patients with cirrhosis or cHBV. One patient was a screen fail, one patient was lost to follow up and two patients voluntarily withdrew from the study.

Due to COVID-19, several patient appointments in March, April and May were canceled. Additionally, patient recruitment and enrollment has also been severely affected by the pandemic. Enrollment and study appointments resumed in June, however because of the continued pandemic, enrollment has been slower than anticipated as patients are not being seen as often in the Gastroenterology department.

Key Research Accomplishment

- A total of 37 patients have been enrolled into the study.
- A total of 31 patients have completed their clinic visit at UCSD.
- Total of 29 patients have completed their imaging visits.
- A total of 29 study patients have completed all study components. Their imaging data has be interpreted.
- Patient images have been de-identified for analysis

Reportable Outcomes - Provide a list of reportable outcomes that have resulted from this research to include manuscripts, abstracts, presentations, etc.

No reportable outcomes to report.

Conclusion

Study enrollment has been steady, although it has slowed down during the pandemic, with a total of 36 patients enrolled since April 10, 2019. A total of 29 patients have completed all study visits and their images have been interpreted. The research team is actively screening patients for study participation. Plans for the upcoming year is to complete enrollment and study visits for all patients. In addition, complete the analysis of images.

References - List any references using standard journal format.

No references to report.

Appendices - Can include copies of journal articles, manuscripts and abstracts, patent applications, study questionnaires and surveys, etc.

No appendices to report.