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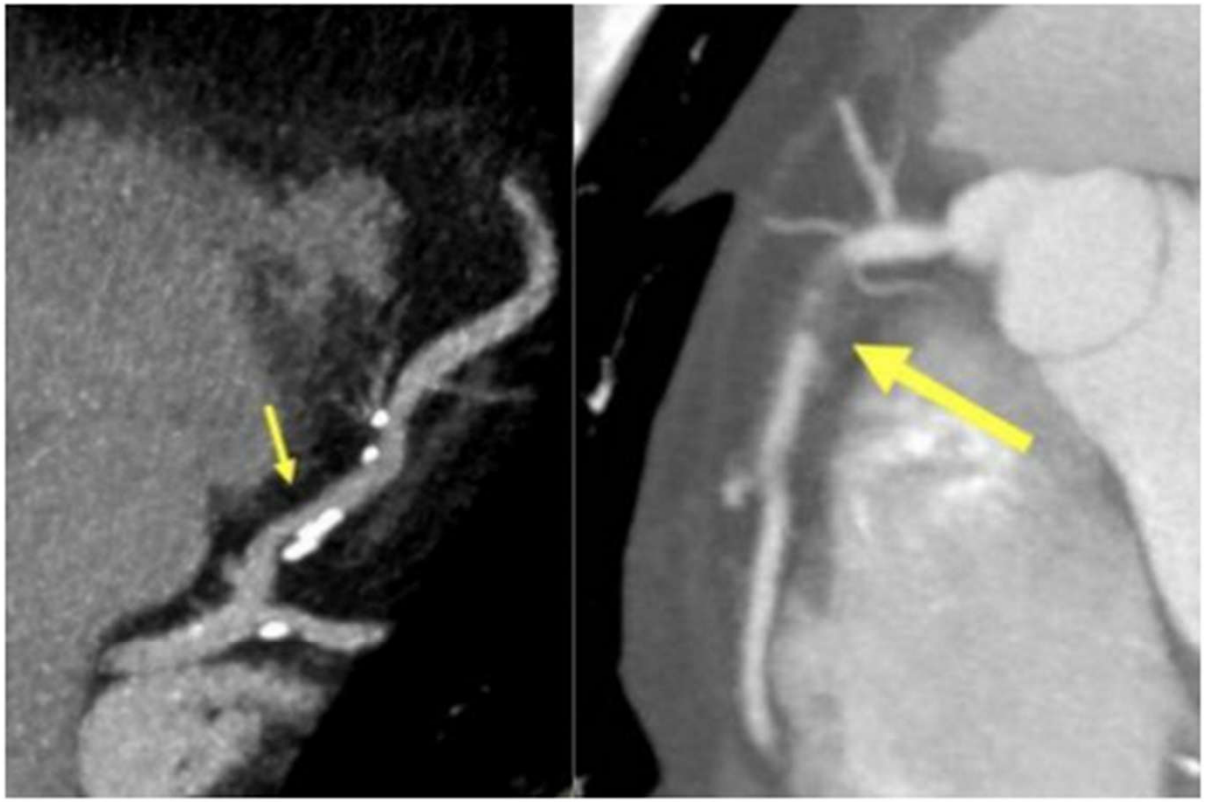
New CAD-RADS 2.0 reporting for coronary CTA offers patient management recommendations

Dave Fornell | July 08, 2022 | Computed Tomography



Examples of new plaque reporting in the CAD-RADS 2.0 document. Left, an example from CAD-RADS 2 / P2 plaque burden with mild coronary stenosis (25-49%). Right, example of a CAD-RADS 5/ P3, with a focal, non-calcified occlusion of the proximal RCA (arrow) and severe amount of plaque (P3).

Image courtesy of the American College of Radiology

July 8, 2022 — The Society of Cardiovascular Computed Tomography (SCCT) has released a new expert consensus document on Coronary Artery Disease – Reporting and Data System (CAD-RADS) in collaboration with the American College of Cardiology (ACC), the American College of Radiology (ACR) and the North America Society of Cardiovascular Imaging (NASCI).

The expert consensus document 2022 Coronary Artery Disease – Reporting and Data System, or CAD-RADS 2.0, expands on the first version, which was created in 2016 to standardize reporting system for patients undergoing coronary CT angiography (CCTA) and to guide possible next steps in patient management.

The collaboration was led by Ricardo Cury, MD, MBA, FACC, FACR, FAHA, MSCCT and Ron Blankstein, MD, FACC, MSCCT, FASPC with a goal to update and improve the initial 2016 reporting system for CCTA by incorporating the latest technical developments as well as recent clinical trials and guidelines in cardiac computed tomography (CCT).

"Even though coronary CTA can be a very useful test when performed on the right patient population, the test itself does not change outcomes. Rather, it is how clinicians act on the test results that ultimately makes a difference. For this reason, it is essential to provide referring clinicians with patient management recommendations which are now part of the CAD-RADS 2.0 statement," explains Dr. Blankstein.

Published in the Journal of Cardiovascular Computed Tomography (JCCT), the updated classification will follow an established framework of stenosis, plaque burden and modifi will include assessment of CT fractional-flow-reserve (CT-FFR) or myocardial CT perfusion (CTP), when performed.

One key update provided in the CAD-RADS 2.0 statement is that plaque burden should be

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FULL LENGTH ARTICLE | VOLUME 16, ISSUE 4, P345-349, JULY 01, 2022

Utility of cardiac CT in infants with congenital heart disease: Diagnostic performance and impact on management

Kwannapas Saengsin, MD • Sarah S. Pickard, MD • Ashwin Prakash, MD

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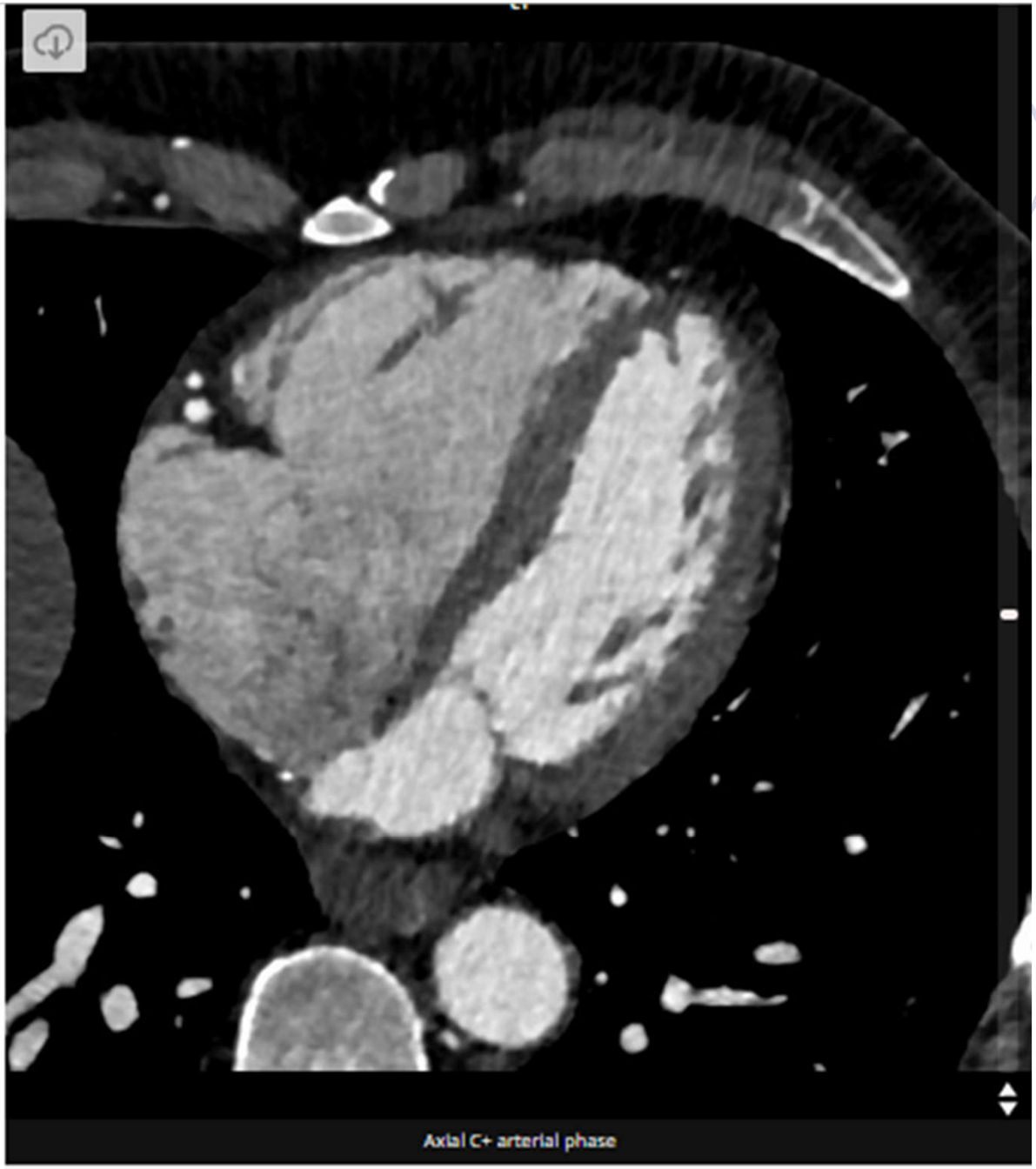
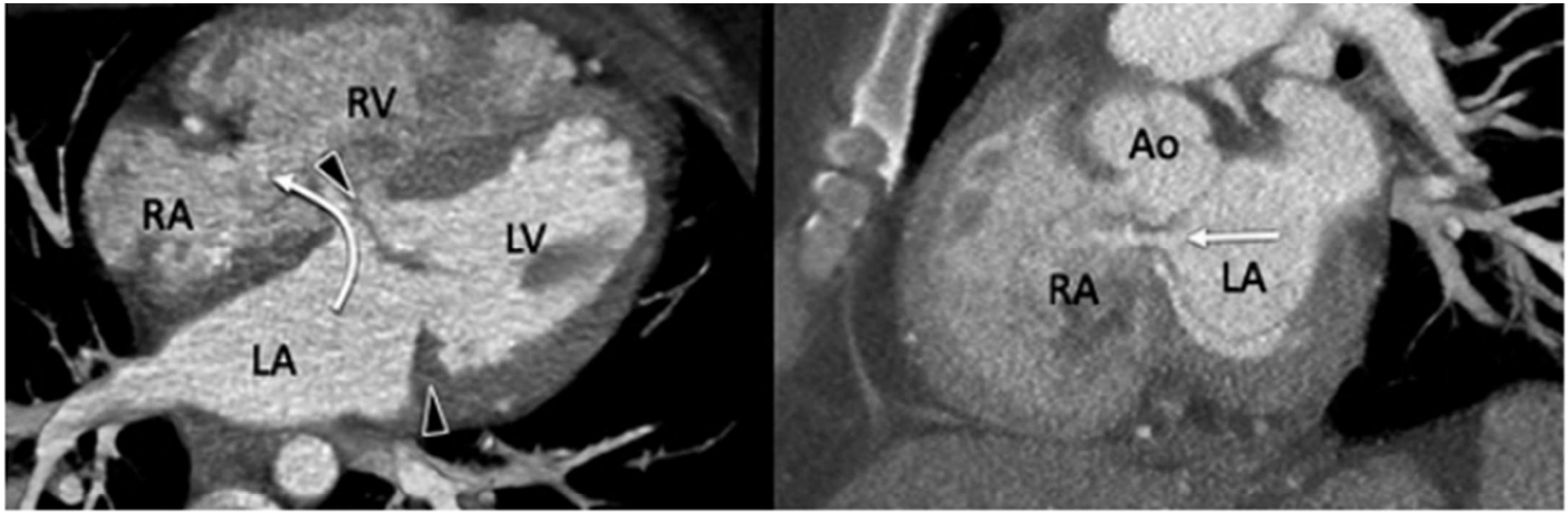
Background Advances in cardiac CT (CCT) scanner technology allow imaging without anesthesia, and with low radiation dose, making it an attractive technique in infants with congenital heart disease. However, the utility of CCT using a dual-source scanner with respect to diagnostic performance and impact on management has not been systematically studied in this population. Methods Retrospective review of infants who underwent CCT to determine the utility of CCT with respect to the following: answering the primary diagnostic question, providing new diagnostic information, prompting a change in management, and concordance with catheterization or surgical inspection. Results A total of 156 infants underwent 172 scans at a median age of 64 days, (IQR 4–188) from Jan 2016–Dec 2019. The most frequent diagnostic question was related to the pulmonary arteries (43%), followed by the aortic arch (30%), pulmonary veins (26%), coronary arteries (17%), patent ductus arteriosus (10%) and others (9%). A high-pitch spiral scan was frequently used (90%). The median effective radiation dose was low (0.66 mSv) and general anesthesia was used infrequently (23%). CCT answered the primary diagnostic question in 168/172 (98%) and added to the diagnostic information already available by echocardiography in 161/172 (96%) scans. CCT led to a change in management following 78/172 (53%) scans and had an impact on management following 167/172 (97%) scans. On follow-up, after 107/172 (62%) scans, subjects underwent cardiac surgery, and after 55/172 (32%) scans, they had cardiac catheterization. CCT findings were concordant with catheterization and/or surgical inspection in 156/159 (98%) scans. Conclusions In infants with complex congenital heart disease, CCT was accurate, answered the diagnostic questions in nearly all cases, and frequently added diagnostic information that impacted management. Radiation exposure was low, and anesthesia was needed infrequently.



Secundum atrial septal defect (ASD) noted approximately 1.0 cm x 0.5 cm. Deficient aortic rim.



Four chamber (image on the left) and short axis (image on the right) views from a cardiac CT in a 23-year-old man with dyspnoea on exertion demonstrate the presence of a small ostium primum atrial septal defect (curved and straight arrows). Note the location of the atrial septal defect immediately behind the insertion of the mitral valve (arrowheads). Ao, aorta; LA, left atrium; LV, left ventricle; RA, right atrium; RV, right ventricle.

CARE DELIVERY

Practical Implementation of Universal Hepatitis B Virus Screening for Patients With Cancer

Jessica P. Hwang, MD, MPH[1]; Andy S. Artz, MD, MS[2]; Parth Shah, PharmD, PhD[3]; Banu Symington, MD[4]; Jordan J. Feld, MD, MPH[5]; Sarah P. Hammond, MD[6]; Emmy Ludwig, MD[7]; Amy Pai, PharmD[1]; Scott D. Ramsey, MD, PhD[3]; Ilana Schlam, MD[8]; Jennifer M. Suga, MD, MPH[9]; Su H. Wang, MD, MPH[10]; and Mark R. Somerfield, PhD[11]

INTRODUCTION

In July 2020, the American Society of Clinical Oncology (ASCO) published a Provisional Clinical Opinion (PCO) update on hepatitis B virus (HBV) screening and management among patients planning anticancer therapy.[1] In 2021, approximately 1.9 million people will be diagnosed with cancer,[3] and on the basis of a recent multicenter study that established the HBV prevalence among patients with cancer,[4] 133,000 of these people are expected to have chronic or past HBV infection. In cancer patients with chronic or past HBV infection who do not receive antiviral therapy, the risk of HBV reactivation ranges from 4% to 68% overall[5] and from 40% to 90% among patients with a hematologic malignancy,[6,7] with the specific risk depending on the type of cancer, anticancer treatment, and host and viral characteristics.[1] HBV reactivation can have serious consequences, such as liver failure,[8] and because patients with active cancer are not candidates for liver transplant, severe reactivation events are often fatal.

This update, by an expert panel convened in response to

	Clinical Challenges	Desired Outcomes	Strategy
Policy Provide clear expectations	Lack of standardized approach	Systematic screening and established HBV policy	Adopt clinical practice algorithm into routine processes
	Lack of performance assessment	Attain HBV-related institutional screening rates	Assess baseline HBV screening rates and follow over time
Community Engage providers	Lack of awareness	Increased visibility and provider understanding	Designate a champion; conduct educational sessions
	Lack of HBV coordination among health care providers	Integrated HBV care	Streamline testing and linkage to care through EHR coordination
Equity Ensure access and reduce health disparities	Cost of care (screening, antivirals, and management)	Costs are covered	Work with payers to incorporate recommendations into performance and quality measures
	Lack of access to HBV providers	All patients with HBV have access to care and treatment	Telemedicine, telehealth across state lines; ECHO telementoring
	Deliver HBV care in a culturally sensitive way	Satisfy patients language needs	Provide trained navigators and medical staff
Technology Harness e-tools	Ordering tests and interpretation of results can be confusing	Three HBV tests bundled and interpretation built into results	Implement EHR-based strategies (alerts, automations, guidance, links to resources/algorithms, and test results mapping)
	HBV test results may be missed	EHR prompts follow-up of positive test results	
	Gaps in management	Referral pathways with relay of HBV test results across EHRs	

Abstract

Occult hepatitis B infection (OBI) is defined as long-lasting persistence of hepatitis B virus (HBV) DNA in the liver of patients with hepatitis B surface antigen (HBsAg)-negative status, with or without serological markers of previous exposure (antibodies to HBsAg and/or to hepatitis B core antigen). Over the past two decades, significant progress has been made in understanding OBI and its clinical implications. OBI as a cause of chronic liver disease in patients with HBsAg-negative status is becoming an important disease entity. In conditions of immunocompetence, OBI is inoffensive in itself and detection of HBV DNA in the liver does not always indicate active hepatitis. However, when other factors that cause liver damage, such as hepatitis C virus infection, obesity and alcohol abuse are present, the minimal lesions produced by the immunological response to OBI might worsen the clinical course of the underlying liver disease. Several lines of evidence suggest that OBI is associated with progression of liver fibrosis and the development of hepatocellular carcinoma in patients with chronic liver disease. The major interest in OBI is primarily associated with the growing, widely discussed evidence of its clinical impact. The aim of this review is to highlight recent data for OBI, with a major focus on disease progression or carcinogenesis in patients with chronic liver disease.

Review

Update of the statements on biology and clinical impact of occult hepatitis B virus infection

Giovanni Raimondo[1,2,*], Stephen Locarnini[3], Teresa Pollicino[1,4], Massimo Levrero[5], Fabien Zoulim[5], Anna S. Lok[6], and the Taormina Workshop on Occult HBV Infection Faculty Members[#]

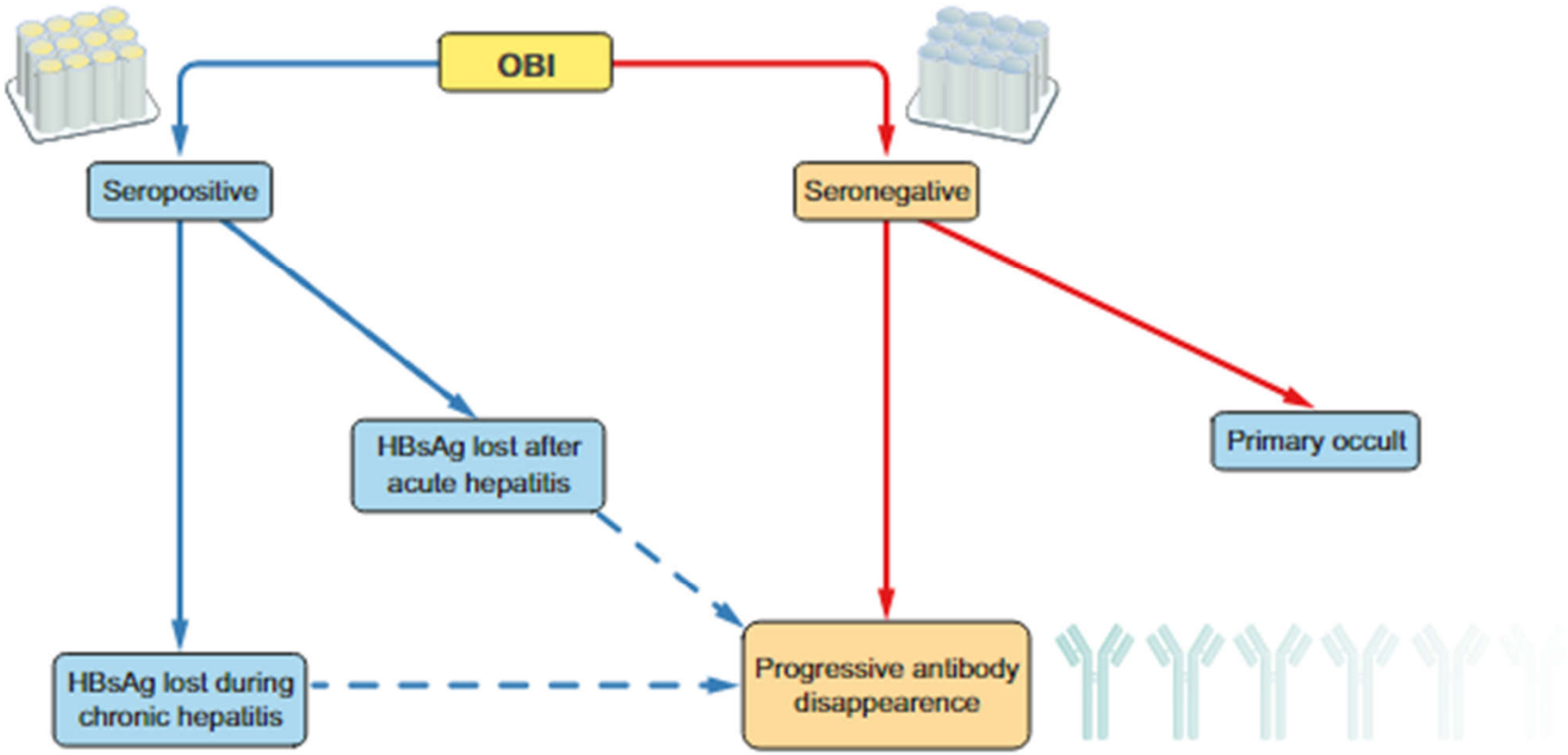


Fig. 1. Schematic representation of HBV serum marker profile in naturally occurring OBI. AH, acute hepatitis; CH, chronic hepatitis; HBV, hepatitis B virus; OBI, occult HBV infection.

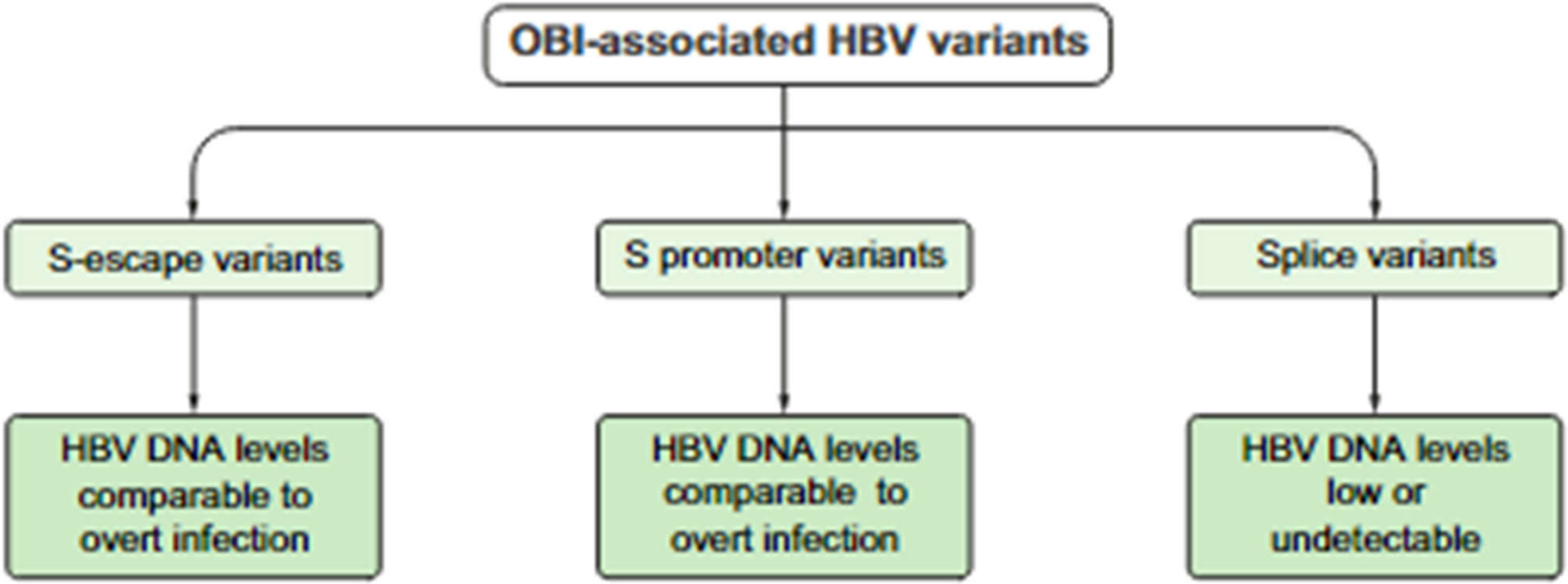


Fig. 2. HBV genetic variants leading to the synthesis of HBsAg unrecognised by available assays or affecting its production/secretion. HBV, hepatitis B virus; HBsAg, HBV surface antigen.

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Original Article

Molecular investigation of occult hepatitis B virus infection in a reference center in Northern Brazil

Suellen dos Reis Araújo, Andreza Pinheiro Malheiros, Vânia Pinto Sarmento, Heloisa Marceliano Nunes, Pedro Eduardo Bonfim Freitas *

Instituto Evandro Chagas, Departamento de Hepatologia, Belém, PA, Brazil

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ABSTRACT

The goal of this study was to investigate the prevalence of occult HBV infection in a reference center for the Northern Brazil from 2005 to 2015 and to identify mutations associated with occult hepatitis B. Molecular analysis was performed on 110 serum samples in which anti-HBc was the only positive serological marker. Regions of the HBV genome were amplified by polymerase chain reaction to detect HBV DNA. A prevalence of 4.1% (793/18,889) for anti-HBc alone was identified. Molecular analysis revealed a prevalence of occult HBV infection of 0.04%. HBV DNA detected were identified in individuals who underwent hemodialysis, infected with the hepatitis C virus and from area of high endemicity for HBV. Direct DNA nucleotide sequencing and phylogenetic analysis identified that genotypes A and D and mutations E164D, I195M, P217L and P120S were associated with occult HBV infection in the S gene. This study contributed with epidemiological and molecular information on Northern Brazil samples with a suggestive profile of occult HBV infection in addition to reinforcing

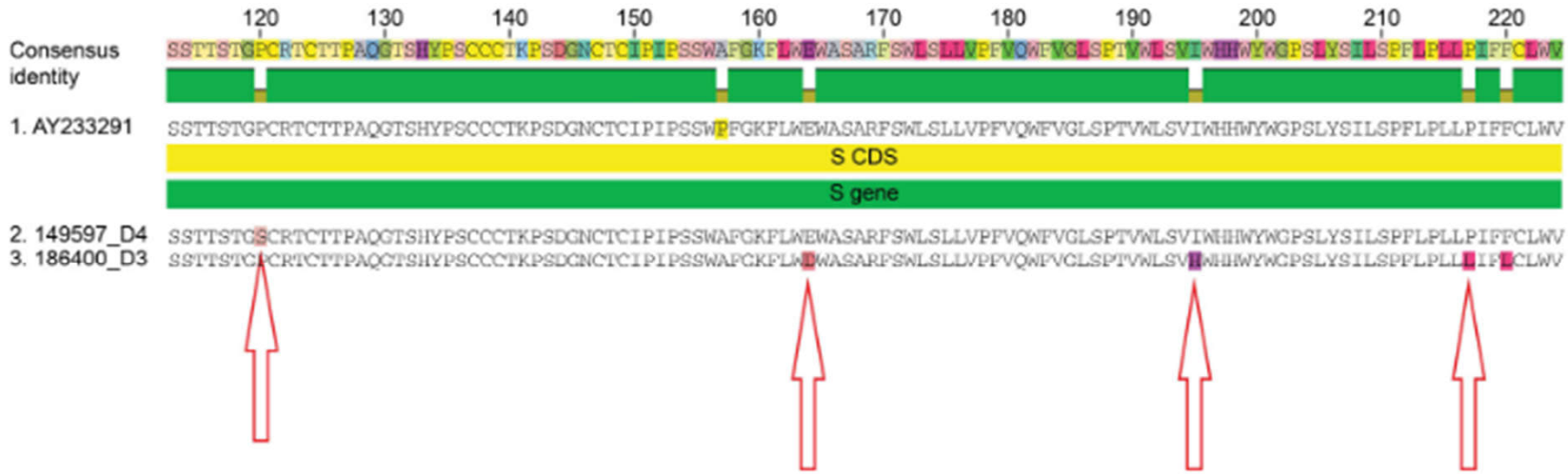

Fig. 1 – Alignment of the deduced amino acid sequence of the S (partial) gene of HBV, showing the amino acid changes (arrows) 120 (P120S), 164 (E164D), 195 (I195M) and 217 (P217L), associated with occult HBV infection (isolates 149597 and 186400).

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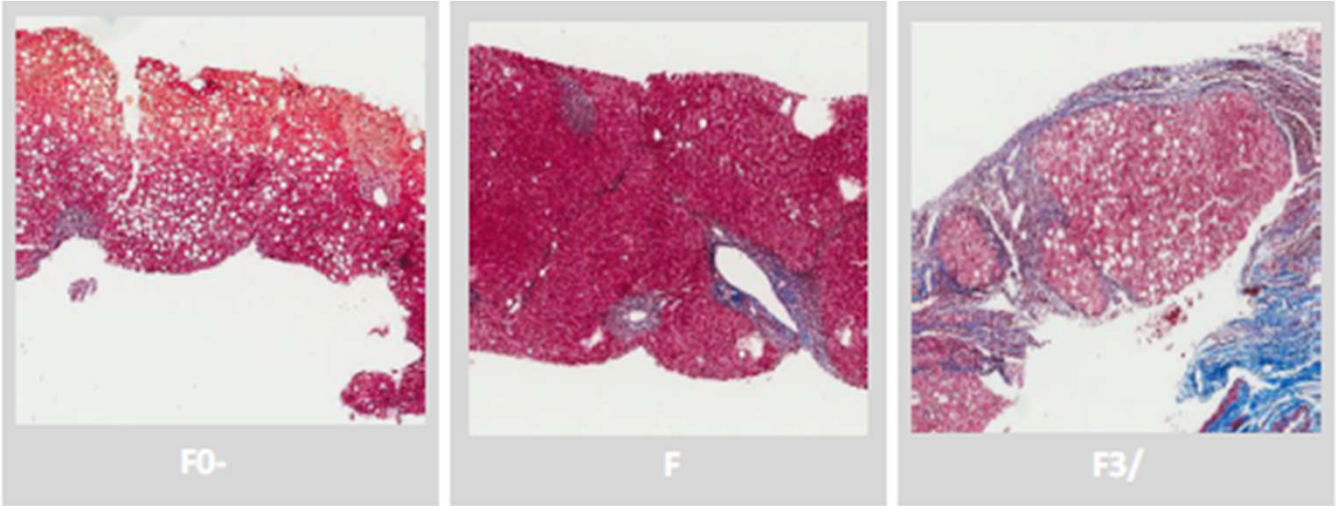
Application of Mac-2 binding protein glycosylation isomer as a non-invasive biomarker for probing liver disease

Kawin Tangvoraphonkchai[1]✉, Tanita Suttichaimongkol[1], Churairat Kularbkaew[2], Prakasit Sangaimwibool[2] & Wattana Sukeepaisarnjaroen[1]



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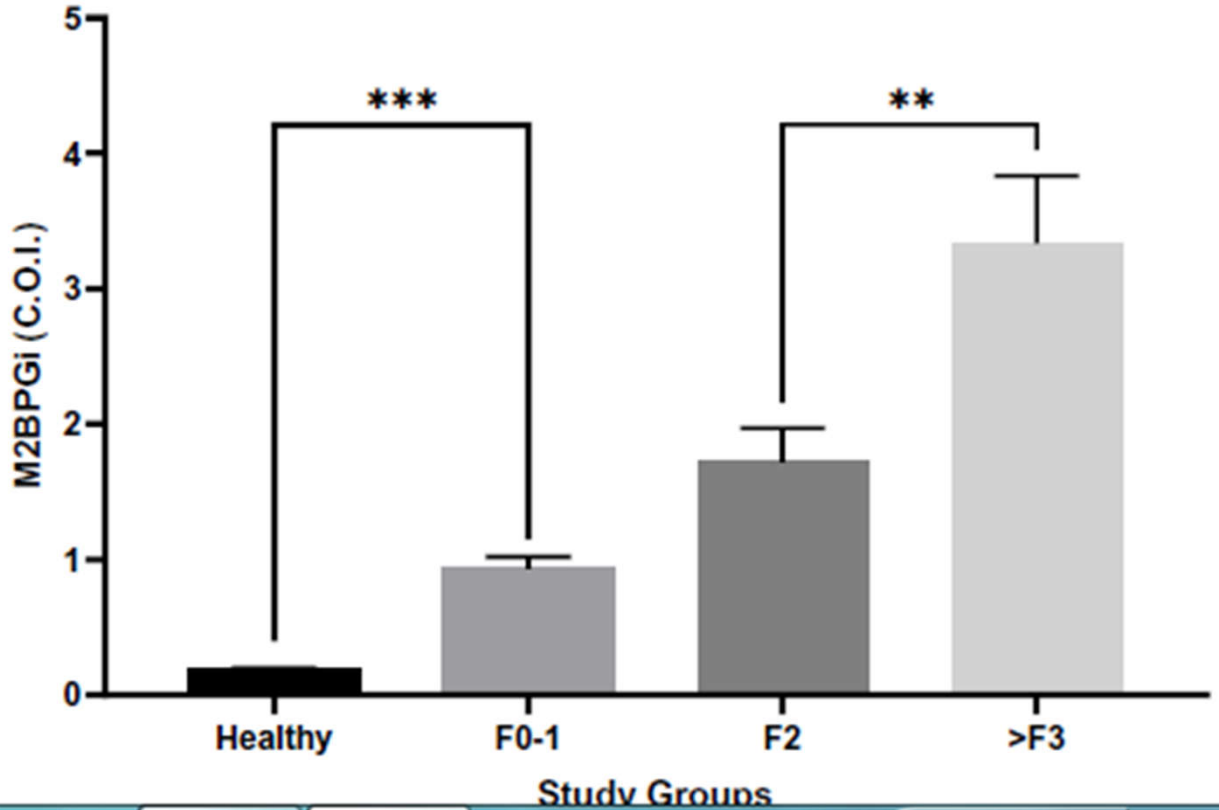

In fact, studies found that liver fibrosis regression occurs when DAAs are used for HCV treatment[14,19,21] and M2BPGi is a marker for patient survival after treatment with DAAs[17]. One paper even found that M2BPGi has a better performance than APRI in monitoring liver fibrosis[19] while another paper found that M2BPGi shows better performance than other markers in assessing liver fibrosis in HCV patients[22]. Most studies on M2BPGi levels and HCV were on patients treated with DAAs. However, a study from Japan showed that M2BPGi level was equally useful when HCV patients were treated with IFN-based therapies[23], which are mostly used in Thailand.

One limitation of this study is that it is a single-center study involving two cohorts (HCV and healthy subjects) and a larger, multicenter study is required for verification of the results as Thailand is a large country with different regions. In addition, the subjects in this study were Thai and the results may not be extrapolated to our ethnicities. In fact, most of the studies performed on M2BPGi were in Asian populations and more studies should be conducted in other races to determine the optimal cutoff indexes for different liver diseases in these populations. Another limitation is our assessment of healthy controls which are rudimentary consisting of liver function tests and ultrasound. More stringent criteria may be applied in other countries, but our current data shows M2BPGi levels are significantly lower than HCV patients. This cutoff as demonstrate in the ROC analysis show good sensitivity and specificity to rapidly identify possible liver fibrosis cases.

Conclusion

Our study results showed that M2BPGi levels can be used to differentiate between HCV patients and healthy subjects and determine fibrosis stage in HCV patients. The present study is the first to show a correlation between M2BPGi level and liver fibrosis stage as assessed by biopsy other than the limited dataset from Japan. This technique can be used to track regression of liver fibrosis during HCV treatment, which is useful in resource-poor settings where prevalence of HCV and advanced liver fibrosis are high.

Clinical Gastroenterology and Hepatology

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Dynamic Changes in Ultrasound Quality for Hepatocellular Carcinoma Screening in Patients With Cirrhosis

Haley Schoenberger [a] • Nicolas Chong [a] • David T. Fetzer • ... Adam C. Yopp • Jorge A. Marrero • Amit G. Singal •

Show all authors • Show footnotes

Published: June 10, 2021 • DOI: https://doi.org/10.1016/j.cgh.2021.06.012 •

Results

Of 2053 cirrhosis patients, 1685 (82.1%) had ultrasounds with score A, 262 (12.8%) had score B, and 106 (5.2%) had score C. Limited visualization was associated with alcohol-related or nonalcoholic fatty liver disease cirrhosis and presence of class II-III obesity. Among 1546 patients with >1 ultrasounds, 1129 (73.0%) had the same visualization score on follow-up (1046 score A, 60 score B, 23 score C). However, 255 (19.6%) of 1301 with score A at baseline had limited visualization when repeated (230 score B, 25 score C), and 130 (53.1%) of 245 patients with baseline limited visualization had good visualization when repeated.

Conclusions

Nearly 1 in 5 patients with cirrhosis had moderately-severely limited ultrasound visualization for HCC nodules, particularly those with obesity or alcohol-related or nonalcoholic fatty liver disease cirrhosis. Ultrasound quality can change between exams, including improvement in many patients with limited visualization.

THE END