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Enteron

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Inside This Issue

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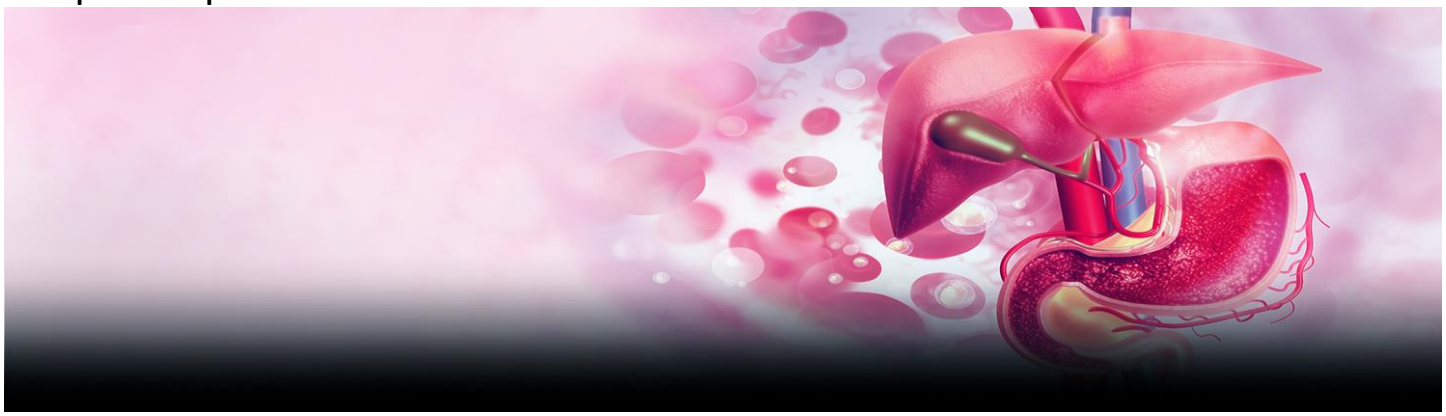
Medical Team, Micro Labs Ltd

Oral Microbiome Dysbiosis May Raise the Risk of Cancer

A broad retrospective longitudinal study indicated that dysbiosis of the oral microbiome correlated with periodontal disease may increase the risk of esophageal and gastric cancers. An international team headed by Mingyang Song, MD, ScD, from the Harvard T.H. Chan School of Public Health in Boston, performed the study of evidence from 98,459 people in the Nurses' Health Survey (1992-2014) and 49,685 men in the Health Professionals Follow-up Report (1988-2016) over 22 to 28 years.



The study, published in a letter online in Gut, found the following risks and multivariable-adjusted hazard ratios (aHRs):

- History of periodontal disease was associated with a 43% and 52% increased risk of esophageal adenocarcinoma and gastric adenocarcinoma
- Compared with individuals with no tooth loss, the risks of esophageal and gastric adenocarcinoma for those who lost at least two teeth were also modestly increased -- aHRs of 1.42 and 1.33 respectively
- In those with a history of periodontal disease, no tooth loss and losing at least one tooth were equally associated with a 59% increased risk of both esophageal adenocarcinomas compared with those with no history of periodontal disease and no tooth loss; similarly, these individuals had a 50% and 68% greater risk of gastric adenocarcinoma

For the study, dental measures, demographics, lifestyle, and diet were all assessed using validated follow-up questionnaires, and self-reported cancer diagnoses were confirmed by review of medical records.

Such findings, the researchers said, together support the value of oral microbiome in oesophageal and gastric cancer. To order to classify the particular oral bacteria responsible for this interaction, more prospective research that specifically examine oral microbiota are needed. The additional results will act as non-invasive biomarkers to further classify high-risk patients with this disease.

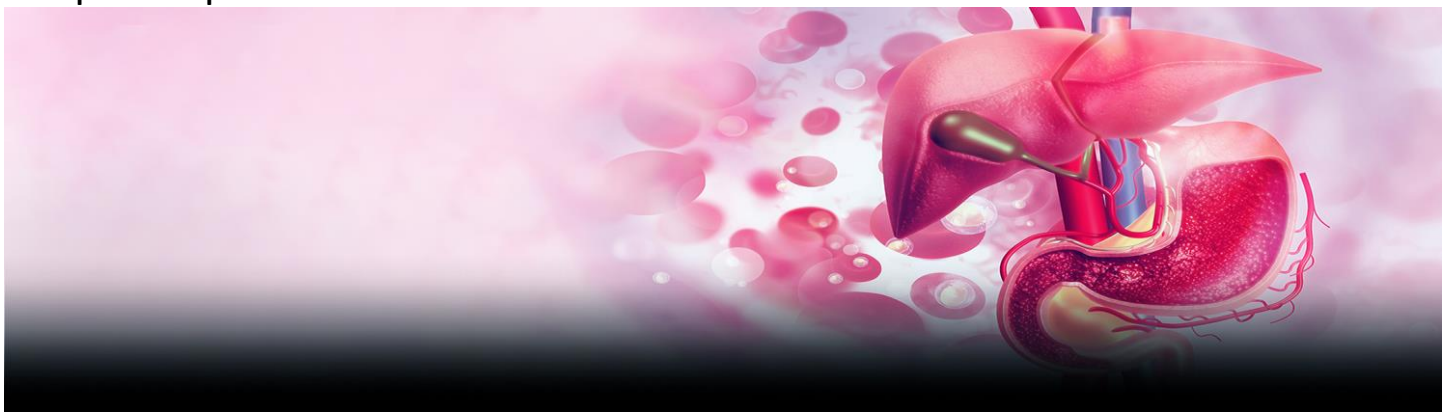
The team acknowledged that previous interaction findings were contradictory, partially due to differences in research nature, dose selection, and confounding modification, but a growing body of evidence indicates that oral microbiome dysbiosis is correlated with these two cancers.

Main parodontal-related pathogens such as Tannerella forsythia and Porphyromonas gingivalis were linked with the occurrence or incidence of esophageal cancer, while T. Forsythia, Peptostreptococcus stomatis and Streptococcus anginosus also have been linked with stomach cancer.

In terms of mechanisms of action, the authors said that P. gingivalis would modulate the risk of esophageal cancer through activated T cell anergy, apoptosis inhibition, and dehydrogenation of ethanol to acetaldehyde, resulting in DNA injury, mutation, and excessive epithelial cell proliferation. Furthermore, bad oral hygiene and parodontal disease may also promote the development of endogenous nitrosamines, believed to cause gastric cancer by nitrate-reducing bacteria.

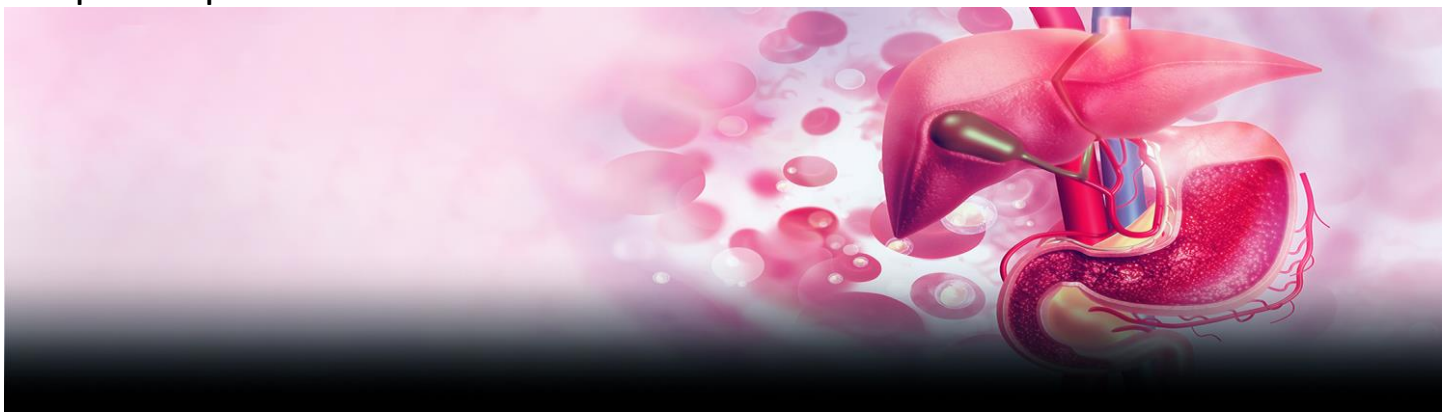
Nikola Angelov, DDS, MS, PhD, director of parodontics and dental hygiene at Houston's UTHealth School of Dentistry, who was not interested in the research, said it specifically sheds additional light on the likelihood of heightened risk for these two cancers in patients with a history of parodontal disease or who have lost their teets.

He added that the plausibility of this association is further strengthened by the long-term follow-up and accounting for confounding factors, as well as validation of the periodontal disease status by the authors. As proposed, it is entirely possible that the production of endogenous nitrosamines by nitrate-reducing bacteria may play a role.



He also noted that recently published research from his group on the function of oral microbiome and controlling blood pressure has shown that increased involvement of ammonia-forming nitrite reductase enzymes in oral microbiota communities may influence the development of nitric oxide and consequently blood pressure in healthy people. He feels it is plausible that by altering the enterosalivary circulation of nitrate, the diverse oral microbiome composition in individuals with parodontal disease can play a significant role, elevating the risk for certain cancer. Nevertheless, more prospective longitudinal studies are needed to assert a claim about the link between oral and cancer diseases.

Source: Lo C-G, et al. Periodontal disease, tooth loss, and risk of oesophageal and gastric adenocarcinoma: a prospective study. Gut 2020; DOI: 10.1136/gutjnl-2020-321949.



Relationship of Albumin–bilirubin score and in-hospital mortality in critically ill patients with acute pancreatitis

INTRODUCTION

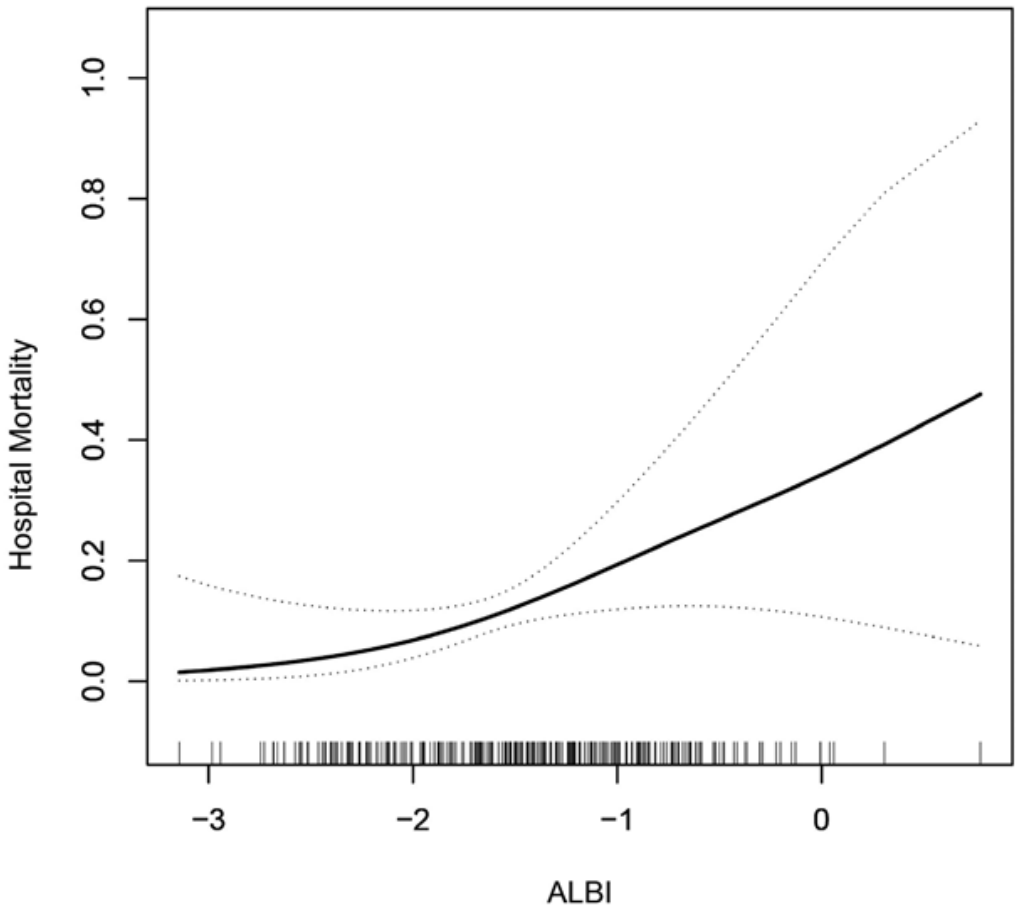
Acute pancreatitis is a severe worldwide gastrointestinal condition that is indicative of local infection, systemic inflammatory response syndrome, and organ failure. Severe acute pancreatitis (SAP) may account for severe morbidity, pain. Acute pancreatitis is a leading cause of hospitalization for gastrointestinal disorders in the US. Gallstones and smoking are the main sources of acute pancreatitis, responsible for 80 per cent of instances of acute pancreatitis. About 25 % of patients with acute pancreatitis can encounter serious conditions with a mortality risk of 20–30%. Thus, researchers will use accurate methods to classify risk factors of death in patients with acute pancreatitis to minimize mortality and incidence of complications. However, because of the diverse and heterogeneous aspects of the illness, forecasting the clinical result of acute pancreatitis is a major challenge. There there are several scoring models of acute pancreatitis included in modern clinical practice, we can not, nevertheless, neglect the weaknesses and limitations in individual systems. For example, Ranson criteria and modified Glasgow score require data not routinely gathered at the time of hospitalization, and both need more time to complete causing delayed interventions for acute pancreatitis. The Acute Physiology and Chronic Health Assessment II (APACHE-II) requires more than 10 criteria to test, so it often takes a lot of time to administer. Such testing instruments are valuable because they also include a number of blood checks or ranking things to fill and are not inexpensive economic and human expense. Researchers recently developed a new model called albumin – bilirubin (ALBI) ranking, which was originally built to predict survival status and liver function in hepatocellular carcinoma patients, and ALBI has been used in several clinical procedures such as prediction of liver failure and acute kidney injury following chemotherapy. Two objective and easily accessible laboratory markers: serum albumin and total bilirubin were used in this model. As serum albumin can reflect inflammation response and total bilirubin can reflect liver function and always increase in acute pancreatitis, as gallstones remain the main cause of acute pancreatitis, authors assumed that ALBI score would be associated with in-hospital mortality in patients with acute pancreatitis in ICU. The correlation of ALBI score and in-hospital mortality in patients with acute pancreatitis is typically concentrated in few results. Therefore, this research was performed to evaluate if ALBI may be a prognostic predictor for patients with acute ICU pancreatitis.

METHODS

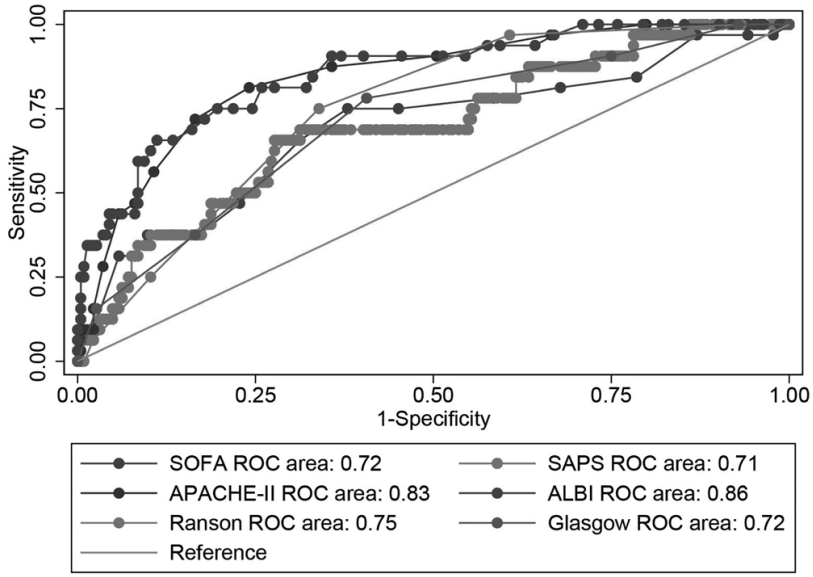
They enrolled all critically ill patients with acute pancreatitis retrospectively in Monitoring in Intensive Care Database III database. Clinical data and demographic information were collected for each patient in this study. Multivariate logistic regression models and smooth curve fitting were used to determine whether ALBI score could be an independent indicator for the prognosis of patients with acute pancreatitis. Predictive performance of ALBI was assessed by receiver operating characteristic analysis.

RESULTS

A total of 284 patients with acute pancreatitis met the inclusion criteria, and 35 patients died in hospital. The ALBI in nonsurvived group was much higher than survived group (−1.0 vs. −1.5; P < 0.001). The association of ALBI and in-hospital mortality was almost linear by smooth curve fitting (P < 0.001) and positive associations were observed between ALBI and RDW and WBC in patients with acute pancreatitis. Multivariate logistic regression indicated ALBI could be independent risk factors to predict the prognosis of patients with acute pancreatitis (odds ratios = 1.60; P = 0.02). The area under curve of in-hospital mortality prediction (0.86; P < 0.001) were superior to Sequential Organ Failure Assessment (SOFA) score (0.72; P < 0.001), Simplified Acute Physiology Score II (SAPS-II) (0.71; P < 0.001), Acute Physiology and Chronic Health Evaluation II (APACHE-II, 0.83; P < 0.001), Ranson score (0.75; P < 0.001) and Glasgow score (0.72; P < 0.001).



The relationship between ALBI score and in-hospital mortality. The dotted lines on both sides represent 95% confidence interval. ALBI score, albumin–bilirubin score.



Performance in predicting in-hospital mortality using SOFA, SAPS-II, APACHE-II, Ranson score, Glasgow score and ALBI. Prediction performance was based on receiver operator curves. The area under curve of SOFA, SAPS-II, APACHE-II, Ranson score, Glasgow score and ALBI were 0.72, 0.71, 0.83, 0.75, 0.72 and 0.86, respectively.

CONCLUSION

In conclusion, they found that in the nonsurviving patients with acute pancreatitis, ALBI is significantly greater than in the surviving patients. ALBI's ROC mortality prediction rating is higher than the SAPS-II, SOFA score, APACHE-II, Ranson score, and Glasgow score. ALBI may also be viewed as an objective predictor to estimate in-hospital mortality in patients with acute pancreatitis that are seriously ill, and may enable doctors pursue more aggressive treatments to prevent death.

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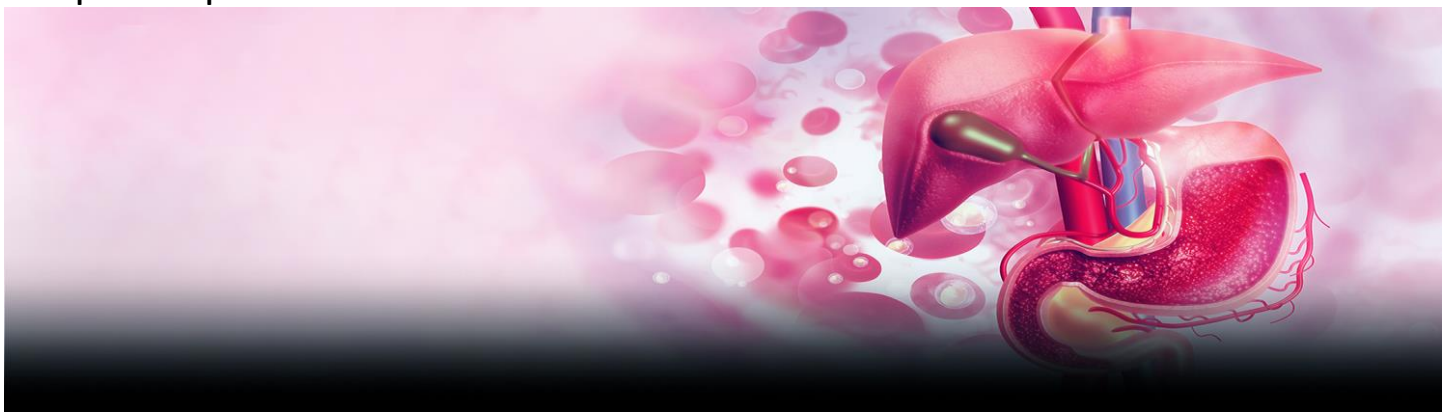


Noninvasive tools in prediction of clinically evident portal hypertension in children

INTRODUCTION

In children, portal hypertension (PHTN) is a consequence of a wide spectrum of pediatric liver cirrhotic and noncirrhotic diseases. PHTN's most feared condition is variceal leak. Approximately 50% of pediatric patients suffering from cirrhosis and 90% of patients with extra hepatic portal vein obstruction (EHPVO) will experience varice bleeding. For children the hepatic venous pressure gradient used to describe clinically relevant PHTN is scientifically difficult. Diagnosis of clinically apparent PTHN in children is based on splenomegaly (> 2 cm), thrombocytopenia (< 150 000), ascites, or endoscopic varicose veins. EGD is the gold norm for determining varicose veins as of today. Nevertheless, because esophagogastroduodenoscopy (EGD) is intrusive and needs professional skills, the creation of non-invasive instruments (NITs) for screening children with PHTN at high risk for varicose veins and for reducing unwanted endoscopies in those without varicose veins is unmet. Elastography procedures were mainly used in pediatrics to determine liver stiffness. The measurement of liver stiffness (LSM) calculates only the intrahepatic portion of PHTN, while the measurement of splenic stiffness (SSM) both assesses the prehepatic and splanchnic components of PHTN; thus, SSM is speculated as a greater indicator of PHTN and the presence of varicose veins. In this study, they aimed to evaluate the utility of splenic (SSM) and liver stiffness (LSM) by sonoelastography based on principles of point shear wave elastrography (pSWE), as well as blood-based NITs, for predicting varices in children with PHTN of different etiologies, considering endoscopy as the reference standard.

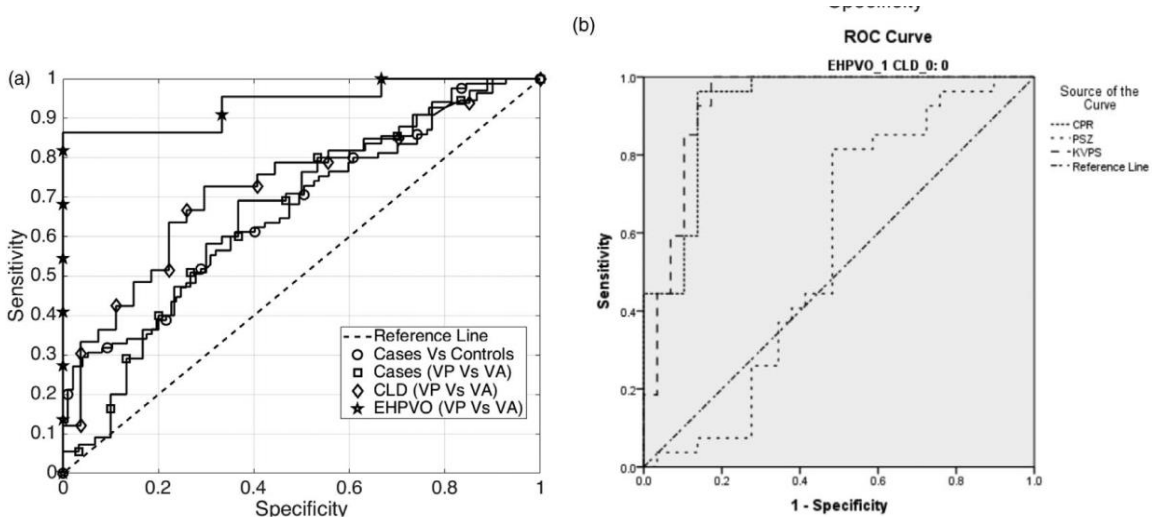
METHODS

Eighty-five consecutive, treatment-naïve children with PHTN and 97 controls were enrolled study from July 2017 to November 2018. Each case was evaluated by esophagogastroduodenoscopy (EGD) and various NITs: platelet spleen size Z (PSZ), clinical prediction rule (CPR), King's variceal prediction rule (KVaPS), Splenic stiffness (SSM) and liver stiffness measurement (LSM) by point shear wave elastrography (pSWE).

RESULTS

Had PHTN due to extra hepatic portal vein obstruction (EHPVO) and 70% due to cirrhosis [chronic liver disease (CLD)]. Sixty-five percent of PHTN cases had varices. Children with varices had lower platelet counts, lower albumin and larger spleens. SSM and LSM were significantly higher in cases as compared with controls. SSM was significantly higher in cases with varices than those without. SSM and LSM, at cutoffs of 3.8 and 3.2 kPa, respectively, discriminated PHTN cases from controls with an area under the curve (AUROC) of 0.67 (0.59–0.74). Both SSM and LSM predicted varices in CLD, but in EHPVO, only SSM predicted varices. SSM of 5.2 and 12.8 kPa, in CLD and EHPVO subgroups, respectively, had AUROC of

0.73 and 0.94 for variceal prediction. Blood-based NITs performed better in the CLD subgroup: aspartate aminotransferase platelet ratio index, CPR and KVPS predicted severity of PHTN with AUROC of 0.81, 0.92 and 0.93, respectively.



(a) Area under curve (AUROC) of SSM in cases and in those with varices (as a whole, CLD, EHPVO). (b) AUROC of blood-based NITs in the CLD subgroup of PHTN. CLD, chronic liver disease; EHPVO, extra hepatic portal vein obstruction; PHTN, portal hypertension; SSM, splenic stiffness measurement.

CONCLUSION

The pSWE SSM is a feasible and better option for predicting varicose veins in children than the LSM. In the CLD subgroup, varices can be predicted by both LSM and SSM; however, only SSM is predictive of varicose veins in EHPVO. The two subgroups need separate cutoffs to predict varicose veins. In the CLD subgroup, blood-based NITs outperformed the elastography technique to predict varicose veins in infants.

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