

Contents

Preface	xi
Steven L. Flamm	
Evaluation of the Patient with Markedly Abnormal Liver Enzymes	1
Bethany Reutemann and Fredric D. Gordon	
<p>Liver enzyme tests are very commonly ordered by physicians, and when they return as abnormal, they can pose a clinical challenge to the provider. Markedly abnormal liver enzymes indicate severe hepatic injury and require immediate evaluation. There are various causes for abnormal liver tests, including infectious, autoimmune, genetic, metabolic, drug, and vascular causes. An understanding of the patterns of aminotransferase and alkaline phosphatase elevations is useful in narrowing the differential diagnosis. A thorough history and physical examination, appropriate blood testing, and imaging are typically key to evaluating the patient with abnormal liver enzymes.</p>	
Chronic Hepatitis B Virus and Hepatitis D Virus: New Developments	17
Ann Robinson, Robert Wong, and Robert G. Gish	
<p>Hepatitis B virus (HBV) and hepatitis D virus are leading causes of morbidity and mortality worldwide. Despite the availability of HBV vaccinations that are 98% to 100% effective, an estimated 820,000 annual deaths were attributed to HBV in 2019, mainly related to the sequelae of cirrhosis and hepatocellular carcinoma. Because disease prevalence is concentrated outside of the United States, it is overlooked, but with expanded vaccination recommendations provided by the Centers for Disease Control and Prevention and recommended screening, as well as heightened awareness by health care providers, we can work toward the eradication of this preventable disease.</p>	
Coronavirus Disease-2019 and Implications on the Liver	27
Patrick T. Campbell and Oren K. Fix	
<p>The coronavirus disease-2019 (COVID-19) pandemic has had a large impact on patients with chronic liver disease (CLD) and liver transplantation (LT) recipients. Patients with advanced CLD are at a significantly increased risk of poor outcomes in the setting of severe acute respiratory syndrome coronavirus 2 infection. The pandemic has also considerably altered the management and care that is provided to patients with CLD, pre-LT patients, and LT recipients. Vaccination against COVID-19 protects patients with CLD and LT recipients from adverse outcomes and is safe in these patients; however, vaccine efficacy may be reduced in LT recipients and other immunosuppressed patients.</p>	

Pruritus in Chronic Liver Disease

47

Ranya Selim and Joseph Ahn

Pruritus can be associated with chronic liver disease, particularly cholestatic liver disease. Although the pathophysiology is uncertain, there are a few proposed mechanisms and much is still being discovered. Workup involves an assessment to rule out a dermatologic, neurologic, psychogenic, or other underlying systemic disorder. First-line therapy is cholestyramine, which is generally well tolerated and effective. In those who fail cholestyramine, alternative drugs including rifampicin and μ -opioid receptor antagonists can be considered. If medical therapy is ineffective and pruritus is significant, alternative experimental therapies such as albumin dialysis, photopheresis, plasmapheresis, and biliary diversion can be considered.

Renal Insufficiency in Patients with Cirrhosis

57

Caroline L. Matchett, Douglas A. Simonetto, and Patrick S. Kamath

Renal failure is one of the most prevalent complications in patients with cirrhosis and is of the utmost prognostic relevance. Acute kidney injury (AKI) in cirrhosis results from a spectrum of etiologies, of which hepatorenal syndrome (HRS) carries the worst prognosis. Correct differentiation of the etiology of AKI in cirrhosis is imperative, as treatment defers substantially. This review summarizes the current diagnostic criteria, pathophysiology, diagnosis, and therapeutic concepts for AKI and HRS–AKI in cirrhosis.

Portopulmonary Hypertension

71

Yu Kuang Lai and Paul Y. Kwo

PoPH is a well-recognized complication of portal hypertension with or without cirrhosis and is classified as a subset of PAH. Identification of PoPH is crucial as it has a major impact on prognosis and liver transplant candidacy. Echocardiogram is the initial screening tool of choice and the patient should proceed to RHC for confirmation. PAH-directed therapy is the treatment of choice, allowing the patient to achieve a hemodynamic threshold to undergo a liver transplant safely.

Hepatocellular Carcinoma: New Developments

85

Previn Ganesan and Laura M. Kulik

This is a review of current practices and upcoming developments regarding hepatocellular carcinoma (HCC). This includes a contemporary review of the diagnosis, staging, and treatment of HCC. Furthermore, the authors provide a review of certain ongoing trials and future directions of various treatment modalities for HCC.

Evaluation of an Abnormal Liver Panel After Liver Transplantation

103

Jacqueline B. Henson and Andrew J. Muir

Abnormal liver tests are common after liver transplantation. The differential diagnosis depends on the clinical context, particularly the time course, pattern and degree of elevation, and donor and recipient factors. The peri-operative period has distinct causes compared with months and years after transplant, including ischemia-reperfusion injury, vascular thrombosis,

and primary graft nonfunction. Etiologies seen beyond the perioperative period include biliary complications, rejection, infection, recurrent disease, and non-transplant-specific causes. The evaluation begins with a liver ultrasound with Doppler as well as appropriate laboratory testing and culminates in a liver biopsy if the imaging and laboratory testing is unrevealing.

Noninvasive Fibrosis Testing in Chronic Liver Disease Including Caveats 117

Adam P. Buckholz and Robert S. Brown Jr.

Assessment of liver fibrosis is important as the range of liver disease management has expanded, rendering biopsy both imperfect and impractical in many situations. Noninvasive tests of fibrosis leverage laboratory, imaging and elastography techniques to estimate disease extent, often with the goal of identifying advanced fibrosis. This review attempts to summarize their utility across a broad range of possible clinical scenarios while considering the central tenets of health care quality: access, quality, and cost. For each test, it also discusses the caveats whereby each test may have reduced effectiveness and how to consider each in a typical clinical setting.

Evaluation of Liver Disease in Pregnancy 133

Gres Karim, Dewan Giri, Tatyana Kushner, and Nancy Reau

Liver disease in pregnancy often requires diagnostic and therapeutic considerations that are unique to pregnancy. Liver disease in pregnancy is commonly thought of as either liver disease unique to pregnancy, chronic liver disease, or liver disease coincidental to pregnancy. This review summarizes the approach to evaluation of liver disease in pregnancy.

Alcohol-Related Liver Disease Including New Developments 157

Parita Virendra Patel and Steven L. Flamm

The prevalence of alcohol consumption, alcohol use disorder (AUD), and alcohol-related liver disease (ALD) has exponentially increased over the last several years and rates continue to increase. Significant alcohol use can cause progression from steatosis in the liver to inflammation, fibrosis, and eventually cirrhosis. Additional risk factors for the progression of ALD disease include gender, race, and genetic predisposition. As such, it is essential for clinicians to understand and implement screening tools for early diagnosis of both AUD and ALD and be aware of emerging novel treatment options.