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OPSC
Asst. Prof.
Previous Year Paper
(Hepatology)
11 Sept, 2022



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Test Booklet Series

T. B. C. : AP(SS) – 3-21/22

A

TEST BOOKLET

ASSISTANT PROFESSOR (SUPER SPECIALITY)
(HEPATOLOGY)

1069

Sl. No.

Time Allowed : 3 Hours

Maximum Marks : 200

: INSTRUCTIONS TO CANDIDATES :

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET OF THE SAME SERIES ISSUED TO YOU.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES A, B, C OR D, AS THE CASE MAY BE, IN THE APPROPRIATE PLACE IN THE ANSWER SHEET USING BALL POINT PEN (BLUE OR BLACK).
3. You have to enter your **Roll No.** on the Test Booklet in the Box provided alongside. **DO NOT** write *anything else* on the Test Booklet.
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5. This Test Booklet contains **200** items (questions). Each item (question) comprises four responses (answers). You have to select the correct response (answer) which you want to mark (darken) on the Answer Sheet. In case, you feel that there is more than one correct response (answer), you should mark (darken) the response (answer) which you consider the best. In any case, choose **ONLY ONE** response (answer) for each item (question).
6. You have to mark (darken) all your responses (answers) **ONLY** on the **separate Answer Sheet** provided, by using **BALL POINT PEN (BLUE OR BLACK)**. See instructions in the Answer Sheet.
7. All items (questions) carry equal marks. All items (questions) are compulsory. Your total marks will depend only on the number of correct responses (answers) marked by you in the Answer Sheet. For each wrong answer, 0.25 marks shall be deducted from the marks awarded for correct answers.
8. Before you proceed to mark (darken) in the Answer Sheet the responses (answers) to various items (questions) in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per the instructions sent to you with your **Admission Certificate**.
9. After you have completed filling in all your responses (answers) on the Answer Sheet and after conclusion of the examination, you should hand over to the Invigilator the *Answer Sheet* issued to you. You are allowed to take with you the candidate's copy / second page of the Answer Sheet along with the **Test Booklet**, after completion of the examination, for your reference.
10. Sheets for rough work are appended in the Test Booklet at the end.

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CY – 3A/52

(Turn over)

SEAL

1. Treatment of Hypertension in liver transplantation patients :
- (A) Calcium channel blockers
 (B) ACE inhibitors
 (C) Beta blockers
 (D) Thiazides
2. All are factors associated with severe HCV recurrence following liver transplantation except :
- (A) CMV coinfection
 (B) HCV genotype 1b
 (C) High HCV RNA pre-transplantation
 (D) Pre-transplantation HBV coinfection
3. All are true about fibrosing cholestatic hepatitis due to recurrent HCV infection after liver transplantation except :
- (A) Frequency varies from 5%-10%
 (B) Occurs more frequently in HCV genotype 1 patients
 (C) Recipient interleukin 28B genotypes CT or TT
 (D) Decreased Immunosuppression
4. All of the following drugs can be used to prevent post liver transplantation recurrence of HBV infection after discontinuation HBIG except :
- (A) Entecavir
 (B) Tenofovir
 (C) Lamivudine
 (D) Emtricitabine
5. Which of the following statement is true regarding Primary Biliary Cirrhosis (PBC) and liver transplantation ?
- (A) Compared with other etiology, PBC patients have lower 1 and 5 year survival rates after transplantation.
 (B) Preemptive administration of UDCA to individuals who have undergone LT may diminish the risk of PBC post transplantation.
 (C) PBC recurs after transplantation in a majority of patients.
 (D) The presence of AMA after liver transplantation is indicative of disease recurrence.
6. A 64 year old woman is being evaluated for placement of a TIPS for refractory ascites. Portal pressure measurements are obtained. Free hepatic pressure is 6 mm Hg. Wedge hepatic venous pressure is 18 mm Hg. Which of the following etiologies of portal hypertension would best explain these measurements :
- (A) Portal vein thrombosis
 (B) Sarcoidosis
 (C) Cirrhosis of Liver
 (D) Schistosomiasis

7. A 35 year old man with a past history of halothane hepatotoxicity is undergoing laparoscopic cholecystectomy for cholelithiasis. Which of the following drugs is associated with least incidence of hepatotoxicity in this patient ?
- (A) Methoxyflorane
 - (B) Enflurane
 - (C) Isoflurane
 - (D) Desflurane
8. A 58 year male with a past history of HIV on antiretroviral therapy was presented to hospital for acute variceal bleeding. Which of the antiretroviral drugs is most likely to cause development of noncirrhotic portal hypertension ?
- (A) Ritonavir
 - (B) Didanosine
 - (C) Atazanavir
 - (D) Zidovudine
9. Which of the following is associated with elevated ceruloplasmin levels ?
- (A) Wilson's disease
 - (B) Intestinal malabsorption
 - (C) Pregnancy
 - (D) Nephrotic syndrome
10. Which one of the following neurologic presentation tend to occur earlier in patients with Wilson's disease ?
- (A) Mental retardation
 - (B) Loss of fine motor control
 - (C) Rigidity
 - (D) Dysathria
11. Which is not a component of Bonacini cirrhosis discriminant score to predict cirrhosis ?
- (A) Platelet count
 - (B) Albumin
 - (C) INR
 - (D) AST
12. All are true about management of cirrhosis of liver except :
- (A) Immunization against HAV, HBV, influenza and pneumococcal vaccine recommended.
 - (B) Live attenuated vaccines are contraindicated in patients with cirrhosis.
 - (C) Use of Statins in patients chronic viral hepatitis have a reduced risk of hepatic decompensation and mortality.
 - (D) The use of LMWH may delay decompensation even in patients without portal vein thrombosis.

13. All are true about management of Hemochromatosis except :
- (A) Most patients are treated by routine therapeutic phlebotomy.
 - (B) Each unit of whole blood (500 ml) contains approximately 200 to 250 mg of Iron.
 - (C) Proton pump Inhibitor should be avoided as it may increase phlebotomy requirement.
 - (D) Younger patients can tolerate removal of 2 or 3 units of blood per week.
14. Which of the following symptoms of hemochromatosis do not reverse with phlebotomy ?
- (A) Diabetes mellitus
 - (B) Cardiac conduction abnormality
 - (C) Skin pigmentation
 - (D) Arthritis
15. The normal serum concentration of ceruloplasmin in adults as measured by immunochemical or enzymatic techniques is :
- (A) 200 to 400 mg/L
 - (B) 300 to 500 mg/L
 - (C) 400 to 600 mg/L
 - (D) 500 to 700 mg/L
16. ATP7B, the gene that is abnormal in Wilson's disease is expressed in all tissues except :
- (A) Liver
 - (B) Intestine
 - (C) Brain
 - (D) Lungs
17. All are true about Zinc therapy in patients with Wilson's disease except :
- (A) Zinc interferes with absorption of copper from the GI tract.
 - (B) Zinc enhances the availability of glutathione.
 - (C) There is induction of metallothionein in hepatocytes by zinc.
 - (D) Use of zinc salt other than zinc sulfate may minimize gastritis associated with zinc.
18. A 50 year old female with history of HCV related cirrhosis is found to have anemia (Hb of 7.3gm/dl). Upper GI endoscopy revealed several flat erythematous stripes radiating from pylorus with scanty active oozing. Which of the following would be least effective in the management of anemia ?
- (A) Endoscopy coagulation with a heater probe
 - (B) Argon plasma coagulation
 - (C) Endoscopic radiofrequency ablation
 - (D) TIPS

19. A 60 year old man with NASH related cirrhosis of liver presents to endoscopy for screen for esophageal varices. Endoscopic examination revealed two columns of large (> 5mm) esophageal varices. Which of the statements regarding primary prevention of variceal hemorrhage is true ?
- (A) EVL of large varices is associated with reduced bleeding risk and mortality as compared with beta blockers.
- (B) Only 30 to 40% of patients treated with beta blockers achieve a therapeutic decrease in HVPG.
- (C) Addition of beta blocker following endoscopic band ligation is superior to band ligation alone.
- (D) Use of nonspecific beta blockers is associated with a reduced risk of bleeding but not mortality.
20. A 56 year old man with HBV related cirrhosis presented with worsening abdominal distension and pain abdomen. Abdominal USG revealed ascites with portal vein thrombosis. Which of the following abnormalities could contribute to an acute portal vein thrombosis in this patient ?
- (A) Factor VII deficiency
- (B) Thrombomodulin deficiency
- (C) Factor II deficiency
- (D) Factor X deficiency
21. Which of the following is most common benign tumor of liver ?
- (A) Hemangioma
- (B) Hepatic adenoma
- (C) Focal nodular hyperplasia
- (D) Mesenchymal hamartoma
22. All are true about Anti LKM1 in autoimmune hepatitis except :
- (A) Hallmark of Type 2 AIH
- (B) Mainly present in children
- (C) Concurrent with anti LC1 in around one third of patients
- (D) Associated with HLA DR B1 *0301
23. All are true about Type 1 autoimmune hepatitis except :
- (A) Atypical p ANCA present in 90% of patients in type 1 AIH
- (B) Associated with abrupt onset of symptoms in 25 to 75% of cases
- (C) Fulminant presentation is seen in 3% to 6%
- (D) Young patients with AIH have more thyroid and rheumatic diseases than older patients
24. All are therapeutic biomarkers of Autoimmune hepatitis except :
- (A) miR-21
- (B) miR 123
- (C) PD-1
- (D) PD-L1

25. All are true about histology in autoimmune hepatitis except :
- (A) Bridging necrosis and multiacinar necrosis is indicative of severe inflammatory activity
 - (B) Panacinar hepatitis develops in those who have chronic course
 - (C) Interface hepatitis is not specific of AIH
 - (D) Centrilobular necrosis occurs with similar frequency in patients with and without cirrhosis
26. Which of the following statement about liver transplantation in autoimmune hepatitis is true ?
- (A) Detection of liver cancer in AIH patients should not be sent for evaluation for LT.
 - (B) AIH has lowest frequency of listing for LT as compared with PBC and PSC.
 - (C) 5 year survival rate after LT for AIH is 53%-76% in adults.
 - (D) Patients transplanted for AIH has a lower frequency of death from infections than patients with PBC.
27. What is the level of 6-TGN associated with treatment response of azathioprine in autoimmune hepatitis ?
- (A) $> 110 \text{ pmol/8} \times 10^8 \text{ RBCs}$
 - (B) $> 220 \text{ pmol/8} \times 10^8 \text{ RBCs}$
 - (C) $> 330 \text{ pmol/8} \times 10^8 \text{ RBCs}$
 - (D) $440 \text{ pmol/8} \times 10^8 \text{ RBCs}$
28. Which of the following is the most abundant solute in the bile in healthy individuals ?
- (A) Bilirubin
 - (B) Cholesterol
 - (C) Phospholipids
 - (D) Bile acids
29. In which of the following conditions is a prophylactic cholecystectomy recommended ?
- (A) Choledochal cyst
 - (B) Cystic fibrosis with asymptomatic gallstones
 - (C) PSC with asymptomatic gallstones
 - (D) Large asymptomatic gallstones
30. Which of the following is true regarding gallbladder adenomas ?
- (A) They are most common type of gallbladder polyps.
 - (B) Open cholecystectomy is the preferred treatment for polyps $> 18 \text{ mm}$.
 - (C) They have no malignant potential.
 - (D) They coexist with stones in more than 80% of cases.

31. Which of the following statement about Abernethy malformation is true ?
- (A) It is a congenital intrahepatic portocaval shunt.
 - (B) Type 1 Abernethy malformation occurs in both girls and boys.
 - (C) Type 1 Abernethy malformation is associated with biliary atresia, cardiac defects.
 - (D) In Type 2 Abernethy malformation, portal vein is absent with diversion of portal blood completely into inferior vena cava.
32. All are true about liver except :
- (A) The median liver weight is 1800 g in men and 1400 g in women.
 - (B) It measures 12-15 cm coronally and 15-20 cm transversely.
 - (C) Liver weights in fetuses and children are relatively greater, being 5.6% at 5 months' gestational age, 4-5% at birth, and 3% at 1 year of age.
 - (D) The liver arises from the hepatic diverticulum of the midgut during the fourth week of gestation.
33. Which of the following statement about PFIC type 1 is true ?
- (A) PFIC1 progresses to end-stage liver disease once patient reached 3rd decade
 - (B) The disorder is a consequence of a mutation in the ABCB11 gene.
 - (C) PFIC 1 exhibits features of neonatal hepatitis in histologic examination.
 - (D) In PFIC type 1 disease, diarrhoea may appear or worsen after transplantation.
34. All are true about Intrahepatic Cholestasis of Pregnancy (ICP) except :
- (A) Characterized by development of pruritus in pregnant women, usually without accompanying clinical jaundice.
 - (B) Most typically presents in the third trimester.
 - (C) Serum GGT is typically elevated in ICP types 1 and 2, normal in type 3.
 - (D) Mutation of BSEP is responsible for type 2 ICP.
35. Which MRI contrast agent is specially useful for hepatobiliary malignancy ?
- (A) Gadoxetic acid
 - (B) Gadobenate dimeglumine
 - (C) Gadofosveset trisodium
 - (D) Gadoterate

36. Which of the tests not included in Enhanced Liver Fibrosis (ELF) panel ?
- Hyaluronic acid
 - Amino-terminal propertied of type III collagen
 - α_2 -macroglobulin
 - Tissue inhibitor of metalloproteinase-1
37. All are mechanism of neonatal physiological jaundice except :
- Over production of bilirubin
 - Impaired hepatic uptake of bilirubin
 - Impaired conjugation of bilirubin
 - Increased intestinal absorption
38. All are true about aminotransferases of liver except :
- AST is higher than ALT in children until approximately age 15 years in males and age 20 years in females.
 - ALT is higher than AST in adults and both are higher in males than in females.
 - At approximately 60 years of age, AST is higher than ALT with no gender difference.
 - Both AST and ALT require pyridoxal-5'-phosphate (P-5'-P) for maximal activity.
39. Zone 3 necrosis of liver can be caused by of the following except :
- Phosphorous
 - Acetaminophen
 - Amanita phalloides
 - Carbon tetrachloride
40. Emperopolesis is key histological finding which of the following liver disease ?
- Hemochromatosis
 - Primary biliary cirrhosis
 - Autoimmune hepatitis
 - Chronic hepatitis B
41. What is the ratio of bile ducts to portal areas in a normal liver ?
- ≥ 0.3
 - ≥ 0.5
 - ≥ 0.7
 - ≥ 0.9
42. Snover's triad, diagnostic of allograft rejection in liver transplant patients consists of all of the following except :
- Mixed portal inflammation involving lymphocytes, plasma cells, neutrophils and eosinophils
 - Bile duct damage
 - Foam cell arteriopathy in the large arteries of the graft
 - Endothelialitis affecting portal vein branches and sometimes the central veins

43. All of the following statements regarding hepatic tuberculosis are true except:
- (A) The estimated incidence of hepatic tuberculosis is approximately 1% of all active TB cases.
 - (B) Local hepatic TB is the most frequent form (79%) as compared to miliary hepatic TB.
 - (C) An unusual manifestation of TB involves the development of portal hypertension with resultant variceal hemorrhage.
 - (D) Acute liver failure secondary to TB occurring in the setting of miliary TB is universally fatal.
44. "Wheel within a wheel" sign in ultrasonography of abdomen and "bull's eye" or target-like Lesion in CT Abdomen is feature of which of following disease?
- (A) Hepatic histoplasmosis
 - (B) Syphilitic Hepatitis
 - (C) Hepatic candidiasis
 - (D) Cat scratch disease
45. All are true about HELLP syndrome except:
- (A) HELLP complicates nearly 20% of cases of severe preeclampsia.
 - (B) Affected women are more likely to be primiparous.
 - (C) Jaundice is present in about 5% of patients.
 - (D) The maternal mortality rate is around 1%.
46. Clinically significant portal hypertension defined as HVPG more than:
- (A) 5 mm Hg
 - (B) 10 mm Hg
 - (C) 15 mm Hg
 - (D) > 20 mm Hg
47. Advantage of Caevdilol over NSBB in the management of portal hypertension in which of the following mechanism?
- (A) Reducing intra hepatic resistance
 - (B) Reducing portal blood inflow
 - (C) Decreasing cardiac output
 - (D) Decreasing peripheral resistance

48. All of the following statements are true about the N acetyl cysteine in the management of Acetaminophen (APAP) hepatotoxicity except :
- (A) The incidence of hepatotoxicity is < 10% in those receiving NAC within 8-10 hours of APAP overdose but increases to 40% if NAC is delayed 16 hours or more.
 - (B) Late administration of NAC (up to 72 hours) is also likely beneficial to patients who develop APAP-induced ALF with a reduction in the frequency of progression of encephalopathy.
 - (C) Intravenous NAC should not be administered to pregnant women because it results in higher serum concentrations which could be detrimental to the fetus.
 - (D) Duration of therapy of NAC in APAP hepatotoxicity is dictated by the clinical outcome than the arbitrary time limit.
49. What is the level of ammonia above with there is risk of cerebral herniation in patients with acute liver failure ?
- (A) > 100 $\mu\text{g/dL}$
 - (B) > 200 $\mu\text{g/dL}$
 - (C) > 300 $\mu\text{g/dL}$
 - (D) > 400 $\mu\text{g/dL}$
50. All of the following statements about portal venous thrombosis are true in patients with cirrhosis of liver except :
- (A) The development of the thrombus is associated with an increased risk of decompensation.
 - (B) Portal vein thrombus is partially occlusive in 70% of patients.
 - (C) Development of PVT is rarely associated with abdominal pain and features of marked systemic inflammation.
 - (D) Routine use of anticoagulation is not recommended in patients with cirrhosis developing PVT.
51. Budd-chiari syndrome is characterised by all of the following features except :
- (A) Ascites protein concentration is often > 2.5 g/dL, while the serum-ascites albumin concentration gradient is > 1.1 g/L.
 - (B) Associated with characteristic hypertrophy of the central parts of the liver and atrophy of the peripheral parts
 - (C) A combination of enlarged spleen and platelet count > 200 g/L is a specific but insensitive diagnostic marker of BCS in myeloproliferative neoplasm.
 - (D) A mosaic pattern of enhancement at the arterial and portal phase with homogenization in the late phase injection of vascular contrast medium is highly specific of HVOTO.

52. BCS-TIPS Index, predicting the patients who could be better treated with liver transplantation consists of all except :
- (A) Serum Bilirubin
 - (B) Platelet count
 - (C) INR
 - (D) Age of patient
53. All of the following statements about Autoimmune hepatitis are true except :
- (A) Bimodal age distribution between 10 and 30 years and 40 and 60 years.
 - (B) One of the auto antigen that may contribute to the auto reactive response is for mimi-notransferase cyclodeaminase.
 - (C) Pruritus and hyperpigmentation along with fatigue increases the likelihood of the diagnosis of AIH.
 - (D) Concurrent extra hepatic immune-mediated diseases are recognized in 14% to 44% of patients.
54. All are associated with pre-treatment assessment of thiopurine methyl transferase activity in patients with autoimmune hepatitis receiving azathioprine except :
- (A) TPMT is involved in the conversion of 6-mercaptopurine (6-MP) to 6-methylmercaptopurine (6-MMP).
 - (B) 6-methylmercaptopurine and 6-TGNs are the active metabolites of azathioprine responsible for its therapeutic actions.
 - (C) Genotypic and phenotypic screening for blood TPMT activity has not reduced the frequency of azathioprine-induced side effects in patients with AIH compared with unscreened patients.
 - (D) Blood TPMT activity is significantly lower in patients with AIH.
55. Which is the most common extrahepatic disease associated with primary biliary cirrhosis ?
- (A) Autoimmune thyroiditis
 - (B) Keratoconjunctivitis Sicca
 - (C) Renal tubular acidosis
 - (D) Arthritis/arthritis

56. A 55 year old lady presented to hepatology OPD with complaints of severe fatigue and pruritus. Her alkaline phosphatase was ≥ 1.5 times the upper limit and serum AMA was positive with titers $\geq 1 : 40$. So, a diagnosis of PBC was made. Which of the following statements about PBC is correct ?
- (A) The most important and only diagnostic clue in many cases is ductopenia, defined as the absence of interlobular bile ducts is greater than 30% of portal tracts.
- (B) Fatigue often persists early in the disease course, often resolves as the disease progresses.
- (C) Higher fatigue levels has no association with increased risk of death and need for LT.
- (D) PBC is identical clinically in men and in women.
57. All are true about liver transplantation in patients of primary biliary cirrhosis except :
- (A) The decline in the number of liver transplants for PBC is likely related to a reduction in disease progression from UDCA.
- (B) Recurrent PBC typically occurs 6 years after LT, and the risk increases with time.
- (C) AMA levels do not correlate with recurrent PBC.
- (D) Tacrolimus-based immunosuppression can prevent the disease recurrence after liver transplantation.
58. Which of the drug used to treat cholestasis associated pruritus may worsen the pruritus on the start of the drug occasionally ?
- (A) Cholestyramine
- (B) Naltrexone
- (C) Ursodeoxycholic acid
- (D) Rifampin
59. All of the following are vasoconstrictors of portal venous system except :
- (A) Angiotensin
- (B) Leukotrienes
- (C) Thromboxane
- (D) Prostacyclin
60. All following are portosystemic collaterals in patients with portal hypertension except :
- (A) Vestigial umbilical vein communicates with the left portal vein and gives rise to prominent collaterals around the umbilicus
- (B) Between the ovarian vessels and iliac veins in retro peritoneum
- (C) Posterior gastric veins with paraesophageal veins in GOV2
- (D) Superior rectal veins to veins to retzius in rectal varices

61. Regarding primary sclerosing cholangitis, which of the following is true ?
- (A) PSC involves the cystic duct or gallbladder in up to one fourth of patients.
 - (B) PSC is most often diagnosed in jaundiced patients with cholestatic biochemical liver test abnormalities.
 - (C) In majority of patients, PSC usually precedes onset of IBD.
 - (D) Ulcerative colitis in PSC patients is characterized by higher frequencies of pan colitis and rectal sparing as compared to patients with ulcerative colitis alone.
62. Which of the following statement regarding cholangiocarcinoma (CCA) in patients with primary sclerosing cholangitis is true ?
- (A) Up to 50% of all CCA cases are diagnosed within 5 years after diagnosis of PSC.
 - (B) CCA is inevitable with PSC progression.
 - (C) AASLD recommends Ca 19-9 done every 3-6 months to detect CCA in its earliest stage.
 - (D) Imaging surveillance is recommended by the ACG using ultrasound or MRI every 6-12 months
63. All are true about colorectal cancer in patients with IBD associated PSC except :
- (A) Compared with patients with ulcerative colitis alone, patients with PSC and ulcerative colitis have a significantly higher risk of dysplasia and CRC.
 - (B) Patients of PSC with ulcerative colitis developed colon cancer at an earlier age, after a shorter duration of disease.
 - (C) CRC occurs preferentially in the left colon in 76% of PSC patients with ulcerative colitis.
 - (D) ACG practice guidelines recommend annual surveillance colonoscopy in all patients with PSC and IBD, regardless of whether it is ulcerative colitis or Crohn's disease.
64. Mayo risk score predicting patient outcomes in patients with primary sclerosing cholangitis includes all of the following variables except :
- (A) Age
 - (B) Albumin
 - (C) INR
 - (D) AST

65. Which of the following statement about Primary biliary cirrhosis is true ?
- (A) The appearance of Antimitochondrial Autoantibodies (AMAs) occurs after elevation of liver enzymes.
 - (B) AMA negative PBC patients have less severe histological and clinical disease as compared to AMA positive PBC.
 - (C) 40% of patients with acute liver failure of other etiologies have AMA in their serum.
 - (D) AMA-M2 has a higher specificity than total AMA.
66. Which of the following variable is considered to be the strongest and most independent predictor of outcome in PBC ?
- (A) AST
 - (B) Bilirubin
 - (C) Albumin
 - (D) INR
67. All of the following statements regarding PBC are true except :
- (A) Mayo PBC score >4.1 is used as a threshold to advocate initiation of screening and surveillance protocols for gastroesophageal varices and hepatocellular carcinoma.
 - (B) Variations in liver stiffness measurement over time of > 1.7 kPa per year are independently associated with increased risk of adverse outcomes such as hepatic decompensation, hepatocellular carcinoma, death, or need for liver transplantation.
68. Which of the following statement about HBV infection is true ?
- (A) HBV genotype A1 has been associated with a lower rate of HCC and at a older age compared to other genotypes.
 - (B) HBV genotype D is least prone to develop the precore mutation.
 - (C) HBV genotype B is associated with higher rates of HBeAg seroconversion, slower rates of disease progression, lower rates of HCC.
 - (D) HBV genotype may affect response to nucleos(t)ide analog therapy.
69. Patients with PBC GLOBE score > 0.30 are considered non-responder to UDCA therapy and have markedly diminished survival compared with matched controls.
70. UK-PBC scoring system could assist in identifying patients who may obtain greatest benefit from risk reduction by using second-line pharmacologic agents such as OCA.

69. Which of the following statement is true about HBsAg ?

- (A) HBsAg levels are higher among individuals who are HBeAg-negative compared to those who are HBeAg-positive.
- (B) Highest levels of HBsAg being detected among individuals in the immune active phase and lowest levels among persons in the inactive carrier phase.
- (C) HBsAg levels are higher among persons infected with HBV genotype A as compared to persons infected with other genotypes.
- (D) HBsAg levels has no role in monitoring of treatment response with pegylated interferon.

70. All are true about HBV DNA in HVB infection except :

- (A) HBV DNA can be detected in serum 2-4 weeks before the appearance of HBsAg.
- (B) Recovery of acute hepatitis B is usually associated with loss of HBV DNA but it may remain intermittently positive at low levels that can be detected by PCR-based assays.
- (C) High HBV DNA levels are poorly correlated with an increased risk of liver disease progression to cirrhosis and

HCC in patients with vertically acquired chronic hepatitis B.

- (D) HBV DNA is helpful in diagnosis of fulminant HBV when HBsAg may be undetectable.

71. All are true about Hepatitis A virus except :

- (A) In stool, the virus is a non-enveloped particle, but within the host the virus carries a host-derived membrane envelope.
- (B) It is a hepatotropic virus.
- (C) It can spread from person-to-person contact with an infected person.
- (D) HAV is sensitive to heat and to acid conditions

72. Regarding the clinical manifestations of HAV, which of the following is true ?

- (A) Cholestatic jaundice develops in 25% of patients.
- (B) Women are more likely affected with HAV than men, the reasons for which are not clear.
- (C) Younger children (less than 5 years of age) are more frequently present with jaundice, while older children, adolescents, and adults often asymptomatic.
- (D) Approximately 10% of cases have a relapsing or recurrent course.

73. All are true about chronic hepatitis E except :
- (A) Chronicity occurs exclusively with genotype 3 infection in immunocompromised hosts.
 - (B) The source of infection is considered to be ingestion of pork or deer meat.
 - (C) High ALT levels at diagnosis is associated with chronicity.
 - (D) Jaundice is a rare manifestation of chronic HEV.
74. A Vaccine is produced from virus strain HM175 grown in tissue culture on MRC-5 human diploid cells. This vaccine is for which of the following hepatitis virus ?
- (A) HAV
 - (B) HBV
 - (C) HEV
 - (D) HCV
75. Hypogonadism is more prevalent in which type of Hemochromatosis ?
- (A) Type 1
 - (B) Type 2
 - (C) Type 3
 - (D) Type 4
76. All of the following drugs have more pronounced female preponderance in causing drug induced liver injury except :
- (A) Nitrofurantoin
 - (B) Halothane
 - (C) Minocycline
 - (D) Azathioprine
77. All of the following are true about acute intermittent porphyria except :
- (A) Acute Intermittent Porphyria (AIP), hereditary coproporphyrin, variegate porphyria, and δ -Aminolevulinic acid (ALA) dehydratase-deficiency porphyria present with acute attacks which peak in the third and fourth decade of life.
 - (B) Hyponatremia occurs in upto 40% of acute porphyrias and when severe can lead to hyperosmolar coma.
 - (C) Acute attacks lasts no more than 1-2 weeks and are followed by complete resolution of symptoms.
 - (D) Ninety percent of affected individuals will never manifest symptoms.
78. Which is the most frequent cause of neonatal cholestasis ?
- (A) Extrahepatic biliary atresia
 - (B) Neonatal Hepatitis
 - (C) α 1 antitrypsin deficiency
 - (D) Choledochal cyst

79. An infant of cholestatic disease found to have a triangular cord or band-like periportal echogenicity (≥ 3 mm in thickness), which represents a cone-shaped fibrotic mass cranial to the portal vein, in ultrasonography of abdomen. Which of the following is the most probable diagnosis ?

- (A) Alagille syndrome
- (B) Extrahepatic biliary atresia
- (C) Neonatal Hepatitis
- (D) Choledochal cyst

80. All of the following statements are true about Gallbladder ghost triad except :

- (A) Proposed as an additional diagnostic criterion for biliary atresia
- (B) Gallbladder length less than 1.9 cm
- (C) Smooth or complete echogenic mucosal lining with an indistinct wall
- (D) Lobular contour of gallbladder

81. Which of the following statements about choledochal cyst is true ?

- (A) Choledochal cysts are familial, and female children are affected more commonly than male children.
- (B) This disorder often appears after first decade of life.

(C) Adults were more likely to exhibit abdominal pain and children were more likely to experience jaundice.

(D) The classic triad of abdominal pain, jaundice and a palpable abdominal mass is observed in 30% of patients.

82. Which is the most common form of Alagille syndrome except ?

(A) An autosomal-dominant mode of transmission with incomplete penetrance and variable expressivity

(B) Significantly decreased ratio of the numbers of interlobular portal bile ducts to portal tracts (<0.4)

(C) The extrahepatic bile ducts are not involved

(D) Peripheral pulmonary stenosis is the most common cardiac anomalies

83. Which of following transporter is responsible for secretion of bile salt across canalicular membrane ?

- (A) ABCB4
- (B) ABCB11
- (C) ABCC2
- (D) ABCA1

84. All of the following statements are true about Mirizzi syndrome except :

- (A) Mirizzi syndrome is rare, occurring in about 1% of all patients who undergo cholecystectomy.
- (B) The typical findings in ERCP are a dilated intrahepatic biliary tract, with a normal-sized bile duct.
- (C) Types I Mirizzi syndrome can be treated with partial cholecystectomy, removal of the calculous and choledochoplasty as needed.
- (D) Roux-en-Y hepaticojejunostomy is required to repair a large defect as seen in type IV Mirizzi syndrome.

85. All of the following statements are true about Recurrent Pyogenic Cholangitis (RPC) except :

- (A) Diets high in saturated fat have been implicated in RPC due to the potential to promote stone formation.
- (B) The central bile ducts are dilated disproportionately, with abrupt tapering and attenuation of more peripheral bile ducts within the liver.

(C) Cholangio carcinoma associated with RPC tended to be located in atrophic segments associated with biliary calculi.

(D) Therapeutic ERCP was particularly effective in patients with disease involving the extrahepatic bile ducts and was comparable in efficacy to surgery.

86. All of the following statements about IgG4-related cholangiopathy are true except :

(A) Patients with IgG4-related sclerosing cholangitis are usually over 60 years of age and predominantly male.

(B) IgG4 levels greater than 3 times the upper limit normal being 100% specific for IgG-4 related sclerosing cholangitis.

(C) Serum IgG4 levels are not elevated in up to 30% of cases of IgG4-related sclerosing cholangitis.

(D) Development of cirrhosis or cholangio carcinoma is rare, and the long-term prognosis is excellent.

87. A 23 year old woman in her third trimester of her first pregnancy develops abdominal pain, nausea and vomiting, fever and confusion. On examination she has mild scleral icterus, somnolence, asterixis, and no rashes. Her laboratory values are : ALT of 4239 U/L, AST of 5203 U/L, total bilirubin of 4.3 mg/dl, total platelet count of 142,000/ μ L, Creatinine of 3.2, Lactate dehydrogenase of 223 U/L. She undergoes transjugular liver biopsy which revealed hepatocyte necrosis and intranuclear inclusion bodies. What is the most probable diagnosis ?
- (A) HELLP syndrome
 - (B) Acute fatty liver of pregnancy
 - (C) Cholestasis of pregnancy
 - (D) HSV hepatitis
88. All of the following are Vitamin K dependent factors except :
- (A) Factor II
 - (B) Factor V
 - (C) Factor VII
 - (D) Factor IX
89. APRI is a good tool for confirmation of severe fibrosis in patients with which of following disease ?
- (A) HCV related liver disease
 - (B) HBV related liver disease
 - (C) NASH related liver disease
 - (D) Alcohol related liver disease
90. Which of the following is true regarding the prognosis of AIH ?
- (A) Anti- α actinin is associated with severe disease.
 - (B) HLA-DRB1*0301 is associated with excellent treatment response.
 - (C) Anti SLA is associated with less severe disease.
 - (D) Patients who maintain normalization of liver enzymes for 1 year while on treatment have a low likelihood (<20%) of relapse with discontinuation of treatment.
91. Which of the following is true for primary biliary cirrhosis ?
- (A) There is no correlation between liver disease severity and bone loss.
 - (B) Treatment of osteoporosis with biphosponates is contra-indicated.
 - (C) Lipid abnormalities are common and are not associated with increase in cardiovascular disease risk.
 - (D) Fenofibrates reduces bilirubin levels when used in advanced cirrhosis, so increases transplant free survival.

92. All following statements about Hepatitis B are true except :
- (A) Occult HBV infection is thought to result from active suppression of viral replication by the host immune system ; as a result, when HBV DNA is detectable in serum, it is present in low levels (<200 IU/mL).
 - (B) The presence of core promoter mutations has been linked to an increased risk of HCC.
 - (C) A higher frequency of core promoter mutations has been found in patients infected with HBV genotype B.
 - (D) Core gene mutations have been shown to block recognition of HBV by cytotoxic T lymphocytes (CTLs), a key mode of viral clearance.
93. A patient of chronic Hepatitis B, was taking a antiviral drug developed mutations involving substitution of alanine by either threonine or valine at position 181 (rtA181T/V) and of asparagines by threonine at position 236 (rtN236T). Which of following antiviral drug the patient was taking ?
- (A) Lamivudine
 - (B) Adefovir
 - (C) Telbivudine
 - (D) Entecavir
94. For Management of lamivudine resistance, switching to which drug is most effective in treating HBV ?
- (A) Telbivudine
 - (B) Entecavir
 - (C) Tenofovir
 - (D) Interferon
95. A patient presented with pain abdomen, fatigue, weight loss and examination found to have hepatomegaly and mild ascites. On histology, the cells are immunoreactive for endothelial markers such as CD31, CD34, or factor VII associated antigen. On contrast imaging, "halo" or "target," pattern of enhancement. What is the diagnosis of this patient ?
- (A) Epithelioid angiomyolipoma
 - (B) Mesenchymal hamartoma
 - (C) Epithelioid hemangio-endothelioma
 - (D) Hemangioma
96. All of the following statements about simple hepatic cysts are true except :
- (A) Simple biliary cysts present in 5-10% of the population.
 - (B) Histologically, the walls are lined by a single layer of columnar or flattened epithelium resting on a layer of fibrous tissue.
 - (C) They thought to arise from congenital defects of intrahepatic bile ducts.
 - (D) Removing the fluid with a needle is uestful only in large symptomatic cyst, not useful in small asymptomatic cyst.

97. All of the following statements are true about hepatocellular carcinoma except :
- (A) Downregulation of p53 is observed in up to 40% of cases.
 - (B) Stromal invasion can be present in both early HCC and high grade dysplastic nodules, hence this feature cannot differentiate these two entities.
 - (C) Diarrhoea is one of the common paraneoplastic manifestation
 - (D) Advanced HCC is associated with increased bilirubin, alkaline phosphatase, and γ -glutamyl transpeptidase.
98. Which of the following statement is true about hepaticellular cancer ?
- (A) Contrast-Enhanced Ultra-Sound (CEUS) is increasing in use, able to distinguish HCC from other primary neoplasms such as intrahepatic cholangiocarcinoma.
 - (B) If the nodule displays an atypical vascular pattern on dynamic CT or MRI, a biopsy should be requested.
 - (C) Early HCC diagnosis is feasible only in about 30% of cases even in developed countries with surveillance.
 - (D) AFP and US should be utilized for the diagnosis of HCC.
99. All of the following statements about Transarterial Chemoembolization (TACE) in hepatocellular carcinoma is true except :
- (A) Liver function should be preserved and this limits its application to patients in Child-Pugh Class A.
 - (B) The improvement in overall survival has been seen for patients in BCLC stage B.
 - (C) Fever, abdominal pain, and a moderate degree of ileus after TACE is termed as post embolization syndrome, occurs in only 30% of cases.
 - (D) Radioembolization provided better local tumour control compared to conventional TACE.
100. Which is the only systemic treatment that has been shown to provide survival benefit in HCC patients progressing on sorafenib ?
- (A) Lenvatinib
 - (B) Regorafenib
 - (C) Nivolumab
 - (D) Pembrolizumab
101. Which of the following is not a Key Molecular Pathways involved in Hepatocarcinogenesis ?
- (A) Wnt/ β -catenin
 - (B) Ubiquitin-proteasome
 - (C) JAK/STAT signalling
 - (D) K RAS mutations

102. Which is following cutaneous paraneoplastic manifestation is common in hepatocellular carcinoma ?

- (A) Acquired hypertrichosis
- (B) Pityriasis rotunda
- (C) Paraneoplastic pemphigus
- (D) Palmoplantar keratoderma

103. All of the following statements are true about fibrolamellar carcinoma except :

- (A) It occurs in young patients, with equal gender distribution.
- (B) It does not secrete AFP, almost always arises in a noncirrhotic liver.
- (C) It respond to chemotherapy better than other forms of HCC.
- (D) Fibrolamellar HCC is much less likely to stain positively for GPC3.

104. In patients with hepatocellular carcinoma with preserved liver function and AFP > 400 ng/dL not eligible for locoregional therapy or resection or with metastatic disease who had progression of disease on sorafenib, should be treated with which of the following drug ?

- (A) Pembrolizumab

(B) Ramucirumab

(C) Carbozantinib

(D) Nivolumab

105. All of the following Groups of Persons in Whom Surveillance for HCC may be recommended except :

- (A) HCV-related cirrhosis
- (B) PBC and stage 4 fibrosis
- (C) Hemochromatosis and cirrhosis
- (D) Wilson's disease and cirrhosis

106. All of the following statements about intrahepatic cholangio carcinoma are true except :

- (A) Intrahepatic cholangio carcinoma represents approximately 10% to 20% of all primary liver cancers and up to 20% of cholangio carcinomas.
- (B) Intrahepatic cholangio carcinoma usually occurs after 40 years of age.
- (C) The strongest association is with opisthorchis viverrini, and the association with Clonorchis sinensis is weaker.
- (D) Polymorphism in the gene for the natural killer cell receptor G2D has been associated with an increased risk of cholangio carcinoma in patients with PSC.

107. All are true about hepatic metastases except :

- (A) Hepatic metastases occur in 40% to 50% of adult patients with extrahepatic primary malignancies.
- (B) Overall, tumors of the lungs and breast are the most common origins of hepatic metastases.
- (C) Dynamic contrast-enhanced Doppler US with IV infusion of CO₂ microbubbles is useful for the diagnosis of hepatic metastases.
- (D) Survival for 5 years can be achieved in up to 60% who undergo resection of a solitary colon cancer metastasis to the liver.

108. All are true about hepatocellular adenoma except :

- (A) Hepatocellular adenomas are rare benign epithelial tumours of the liver that occur predominantly in women in the second to fifth decades of life.
- (B) Hepatocellular adenomas are common in patients with glycogen storage disease type III.
- (C) HNF-1 α have been identified in 35% to 45% to patients with hepatocellular adenoma.
- (D) Fine needle biopsy is not much useful to diagnose hepatocellular adenoma.

109. All are true about focal nodular hyperplasia except :

- (A) FNH is more common than hepatocellular adenoma.
- (B) The mass lesion seen on US and CT is very specific for FNH.
- (C) FNH is associated with hepatic hemangiomas in as many as 20% of cases.
- (D) Large symptomatic or complicated lesions should be resected, usually by segmental resection or enucleation. However, recurrence after resection is very common.

110. All are true about hepatopulmonary syndrome except :

- (A) The diagnosis is suggested by an arterial oxygen tension (PaO₂) less than 80 mm Hg on arterial blood gas obtained with the patient sitting upright or an Alveolar-arterial (A-a) oxygen gradient of 15 mm Hg or greater when breathing ambient air.
- (B) The sensitivity and specificity of pulse oximetry for diagnosing HPS are 100% and 88%, respectively.
- (C) Detection of contrast in the left side of the heart within 5 to 10 beats after its appearance in the right atrium indicates intrapulmonary shunting.
- (D) Because of the potential for improvement with LT, extra MELD points may be allocated to a patient with HPS.

111. All of the following statements about structure of hepatitis C virus are true except :

- (A) The E1 glycoprotein plays a major role in viral entry as it binds the HCV co-receptors scavenger receptor B1 (SR-B1) and CD81, tetraspanin proteins expressed on the surface of hepatocytes.
- (B) p7 is a viroporin, plays a crucial role in assembly and release of infectious virions from infected cells by protecting nascent viral particles from an acidic environment.
- (C) NS2 plays a dual role in viral replication, contributing both to processing of the polyprotein and assembly of the viral particle.
- (D) NS2 acts as a scaffold, bridging the envelope proteins to NS5A, and also participates in a late stage of virus assembly that confers and/or enhances infectivity.

112. Which of the following statements about NS5A protein in Hepatitis C virus is true ?

- (A) The C-terminal domain (domain I) contains a Zn^{2+} – binding motif, and is essential for viral RNA replication.
- (B) N-terminal domain III of NS5A is poorly conserved, thought to

be relatively unstructured, and likely functions in virion assembly.

- (C) NS5A interacts with and activates the cellular kinase, phosphatidylinositol 4-kinase III α (PI4KIII α), an essential host factor that promotes membrane alterations required for formation of the membranous web.
- (D) The middle domain (Domain II) of NS5A has no role.

113. Which of the following statement about HIV-HCV co-infection is false ?

- (A) Patients with chronic hepatitis C who are co-infected with HIV progresses more rapidly to cirrhosis as compared to those with hepatitis C infection alone.
- (B) HIV patients with chronic hepatitis C may have a higher incidence of hepatotoxicity from Antiretroviral Therapy (ART), with can complicate management of HIV infection.
- (C) AASLD/IDSA guidelines suggest that HCV/HIV co-infected patients should be managed in a similar manner to patients without HIV infection.
- (D) Patients are at even higher risk of progression of hepatic fibrosis if they are males, and are older than 33 years of age.

114. All of the following statements about cirrhosis of liver with ascites true except :

- (A) Patients with moderate sodium retention (urine sodium ≥ 10 mEq/day) are more likely to respond to lower doses of diuretic treatment than those with marked sodium retention.
- (B) Patients with a baseline urine sodium excretion lower than 10 mEq/day have a median survival time of only 1.5 years, compared with 4.5 years in patients with urine sodium greater than or equal to 10 mEq/day.
- (C) Sensitivity of adenosine deaminase has been shown to be low, particularly in patients with cirrhosis of liver with tuberculosis.
- (D) Lymphoma is the most common cause of chylous ascites.

115. All are true about the management of grade 3 ascites except :

- (A) Coagulopathy is not a contraindication to LVP, as the risk of bleeding is low even in patients with an INR greater than 1.5 and a platelet count less than $50,000/\text{mm}^3$.
- (B) With LVP of less than 5L, the risk of PPCD is low, and the

efficacy of albumin is similar to that of other plasma expanders.

- (C) Once refractory ascites develops, diuretic treatment should be stopped.
- (D) Alfa pump system significantly reduces the number and volume of LVP in patients with cirrhosis and its potential complication, acute kidney injury as compared with standard care.

116. A 42-year old female presents for evaluation of painful skin rash. She has a past medical history of diabetes mellitus and chronic hepatitis C. Her liver disease has remained compensated and she is asymptomatic from that standpoint. Skin exam reveals a small, raised, reddish-purple rash on the extensor surface of the lower extremities bilaterally. Laboratory studies reveal hemoglobin 12.6 g/dL, platelets 140,000, bilirubin 2.2 mg/dL, AST 83 IU/L, ALT 96 IU/L, alkaline phosphatase 185 IU/L, INR 1.4, creatinine 2.2 mg/dL. (baseline 1.0 mg/dL), low serum complement level, and positive rheumatoid factor. What is the best management option for her skin rash ?

- (A) Topical corticosteroids
- (B) Systemic corticosteroids
- (C) Hepatitis C treatment
- (D) Cyclophosphamide therapy

117. A 40-year-old woman with a past medical history of IBS and infertility is evaluated for persistently abnormal liver tests. Routine blood testing 3 months ago revealed AST 83 IU/L and ALT 64 IU/L, with normal bilirubin, alkaline phosphatase, albumin, and INR. Hepatitis A, B, and C serologies were negative. She was not on any medications or herbal supplements. Repeat blood testing now confirms the persistently abnormal liver tests and reveals iron-deficiency anemia. What is the most appropriate next step ?

- (A) Total serum IgA and serum IgA Ttg
- (B) Percutaneous liver biopsy
- (C) AMA
- (D) CT abdomen and pelvis

118. A 52-year-old female with a history of hepatitis C-related cirrhosis decompensated by ascites presents with progressive weight gain, leg swelling, and exertional dyspnea over the past 2 months. She is compliant with salt restriction and is on furosemide 80 mg daily and spironolactone 200 mg daily. Physical exam reveals an elevated jugular

venous pulse, holosystolic murmur along the left sternal border (which increases with inspiration), tense ascites, and leg edema. What might be a reason for the change in clinical symptoms ?

- (A) Hepatopulmonary syndrome
- (B) Portopulmonary hypertension
- (C) Subacute bacterial peritonitis
- (D) Acute renal failure

119. A 59-year-old man with cirrhosis secondary to chronic hepatitis C is seen in clinic for follow-up. He reports recent worsening of ascites and decreased urine output. Physical examination is significant for jaundice, moderate ascites and tenderness in the right upper quadrant. Ultrasound of the liver shows cirrhosis and a 3 cm lesion in the right hepatic lobe, raising concern for possible Hepatocellular Carcinoma (HCC). Serum AFP is normal, however. What is the most appropriate next step ?

- (A) Repeat ultrasound in 6 months
- (B) Check the patient's serum CA19-9 level
- (C) Perform a biopsy of the liver lesion
- (D) Perform a contrast-enhanced CT scan

120. A 46-year-old man with alcoholic cirrhosis presents with hematemesis. Labs show hemoglobin 8.2 g/dL, bilirubin 3.2 mg/dL, albumin 2.8 mg/dL, INR 1.2, platelets 56,000, and creatinine 1.0 mg/dL. Ultrasound shows recanalized umbilical vein with patent splenic and portal veins. Upper endoscopy demonstrates large gastric fundal varices with active bleeding, and cyanoacrylate is injected. Bleeding initially stops, but there is recurrence of hematemesis 24 hours later. EGD shows blood in the stomach and persistent fundal varices. What is the most appropriate next step?
- (A) Splenectomy
 - (B) Balloon tamponade
 - (C) Repeat cyanoacrylate injection of varices
 - (D) TIPS
121. A patient with HIV and HCV co-infection is evaluated for liver transplantation. Which of the following is an absolute contraindication to liver transplantation?
- (A) HIV+, CD4 count 500, negative viral load, recent bacterial peritonitis.
 - (B) HIV+, CD4 count 350, negative viral load, encephalopathy with normal LP and CT.
 - (C) HIV+, CD4 count 420, negative viral load, HCC 3.5 cm in the right lobe.
 - (D) HIV+, CD4 count 75, viral load unknown, recent pneumonia (2 weeks ago).
122. A 65-year old female with alcoholic cirrhosis decompensated by moderate ascites and hepatic encephalopathy has recently been diagnosed with HCC. She has a single large tumour 8.1 cm in maximal diameter in the right hepatic lobe, with associated portal vein thrombosis. Her functional capacity is limited and she is only capable of performing activities of daily living and self-care. Laboratory studies show sodium 129 mg/dL, potassium 3.3 mg/dL, BUN 42 mg/dL, creatinine 1.3 mg/dL, albumin 2.9 mg/dL, bilirubin 2.0 mg/dL, ALT 47 IU/L, AST 189 IU/L, alkaline phosphatase 234 IU/L, hemoglobin 9.2 g/dL, platelet count 42,000 and AFP 4600 IU/mL. What is the best therapeutic option?
- (A) Liver transplantation
 - (B) Surgical resection
 - (C) TACE
 - (D) Sorafenib

123. A 41-year-old woman who works as a tattoo artist, has had increasing malaise and nausea for 2 weeks. On physical examination, she has icterus and mild upper quadrant tenderness. Laboratory studies show serum AST of 79 U/L, ALT of 85 U/L, total bilirubin of 3.3 mg/dL, and direct bilirubin of 2.5 mg/dL. She continues to have malaise for the next year. A liver biopsy is undertaken, and the biopsy specimen shows minimal hepatocyte necrosis, mild steatosis, and minimal portal bridging fibrosis. An infection with which of the following viruses is most likely to produce these findings?

- (A) HAV
- (B) HBC
- (C) HCV
- (D) HEV

124. A 40-year-old woman wishes to donate blood to help alleviate the chronic shortage of blood. She is found to be positive for HBsAg and is excluded as a blood donor. She feels fine. There are no significant physical examination findings. Lab findings for total serum bilirubin, AST, ALT, alkaline phosphatase, and albumin are normal. Further serologic test results are negative for IgM anti-HAV, anti-HBc and anti-HCV. Report testing 6 months later yields the same results. Which of the following is the most appropriate statement the physician can make to this patient?

- (A) You must have been vaccinated in the past for HBV.

- (B) You will develop clinically overt infectious hepatitis within 1 year.
- (C) You probably have a chronic carrier state from vertical transmission.
- (D) These test results are probably erroneous and need to be repeated.

125. Seven years ago, a 30-year-old man saw his GP with malaise, fever, and jaundice. On examination, there were needle tracks in the left antecubital fossa and mitral regurgitation. Serologic test results were positive for HBsAg, HBV DNA, and IgG anti-HBc. He did not return for follow-up. Two years later, he was seen in emergency with hematemesis and ascites. Serologic test results were similar to those reported earlier. Sclerotherapy to treat esophageal varices was performed, and he was discharged. He again failed to return for follow-up. Five years after this episode, he now sees a physician because of a 5-kg weight loss, worsening abdominal pain, and rapid enlargement of the abdomen over the past month. Physical examination shows an increased liver span. Which of the following lab tests is most likely to be diagnostic of this last phase of his disease?

- (A) Prolonged prothrombin time
- (B) Evaluated serum α -fetoprotein level
- (C) Evaluated serum ALT level
- (D) Evaluated serum alkaline phosphatase level

126. A 51-year-old gentleman presented to clinic with abnormal LFTs. He was found to have chronic hepatitis B and was diagnosed with Child Pugh A cirrhosis. He has no episodes of decompensation or variceal bleeding before. A variceal screening gastroscopy was performed which demonstrated grade II varices with no red signs. What is the best management plan?
- (A) Variceal band ligation with repeat surveillance in six months time
 - (B) Referral for Transjugular Intrahepatic Portosystemic Shunt (TIPS)
 - (C) Trial of a selective beta blocker and repeat surveillance endoscopy in one year
 - (D) Endoscopic sclerotherapy and surveillance in 12 months time
127. A 38-year-old lady with primary biliary cirrhosis presents to clinic after having been commenced on ursodeoxycholic acid two months previously. Which of the following signs is the best indicator of response to treatment?
- (A) Normalisation of serum ALT
 - (B) Fall in ALP
 - (C) Reduced pruritus
 - (D) Normal liver parenchyma on US
128. A 49-year-old woman with a long history of ulcerative colitis presents with new-onset jaundice and right upper quadrant abdominal pain. The patient does not have any other comorbidities and has an ECOG performance status of 0. An ultrasound of the liver shows a 5 cm mass in the left lobe. CA19-9 is elevated at 4500 U/mL. Further cross-sectional imaging is pursued with MRI/MRCP and demonstrates a heterogenous mass that is hypointense on T1 weighted images. MRCP reveals multifocal biliary strictures with a chain-of-lakes appearance, raising the possibility of PSC. Porta hepatic lymphadenopathy suspicious for metastatic spread is also noted. Ultrasound-guided liver biopsy of the mass confirms the diagnosis of intrahepatic cholangiocarcinoma (CCA). What is the most appropriate next step?
- (A) Surgical resection
 - (B) Orthotopic liver transplantation
 - (C) Transarterial chemoembolization (TACE)
 - (D) Chemotherapy with gemcitabine and cisplatin

129. A 54-year-old male has recently been diagnosed with hemochromatosis with homozygous mutation of the HFE gene. His lab tests at diagnosis were hemoglobin 14.5 g/dL, platelets 345,000, creatinine 0.9 mg/dL, bilirubin 2.4 mg/dL, AST 290 IU/L, ALT 342 IU/L, INR 1.2, and ferritin 590 mg/dL. He has been undergoing phlebotomies every week for the past 2 months. At re-evaluation, his repeat labs show hemoglobin 12.2 g/dL, bilirubin 1.5 mg/dL, AST 82 IU/L, ALT 75 IU/L, INR 1.0, and ferritin 190 mg/dL. What is the most appropriate next step?

- (A) Stop phlebotomies
- (B) Decrease phlebotomy interval to 2-4 weeks
- (C) Start Vitamin C supplementation and continue phlebotomies
- (D) Continue weekly phlebotomies

130. A 35-year-old female presents with right upper quadrant pain and abdominal fullness of acute onset. She also reports nausea, but denies vomiting, fever, or chills. She was recently diagnosed with polycythemia vera. On physical exam, she is afebrile, tachycardic, and normotensive. She has tender hepatomegaly with 2+ bipedal edema. Labs show hemoglobin 17.5 g/dL, creatinine 1.0 mg/dL, total bilirubin 3.2 mg/dL, AST 350 IU/L, ALT 480 IU/L, and alkaline phosphatase

320 IU/L. What is the most appropriate next step?

- (A) Ultrasound of the gallbladder
- (B) Ultrasound of the liver with Doppler of hepatic veins
- (C) Viral hepatitis serologies
- (D) Liver biopsy

131. A 40 year old man presents for evaluation of a raised serum ferritin and an enlarged liver uncovered by his primary care doctor on testing 6 months ago. His ALT and AST are both twice normal with otherwise normal liver function tests. The ferritin is 2000 mg/mL. The CBC shows a leukocytosis with a mild normochromic normocytic anemia. The CRP is mildly increased. On reviewing the history, he is a non-drinker with no relevant family history. He complains of joint pain for several months in his knees and wrists plus fever. On examination, the liver is palpable with no other signs of chronic liver disease. His BMI is 23. There is a rash over the trunk that is maculopapular and salmon coloured. Testing for the haemochromatosis gene (C282Y) is negative. What is the most likely diagnosis?

- (A) Adult Still's disease
- (B) Haemochromatosis from another mutation
- (C) Chronic hepatitis C
- (D) Porphyria cutanea tarda

132. A 54-year-old male presents with decompensated alcoholic cirrhosis complicated by hepatorenal syndrome leading to acute renal failure requiring dialysis. He has developed esophageal variceal bleeding precipitating hepatic encephalopathy. He receives cadaver donor liver transplantation with a MELD score of 28. He is discharged without complication on day 5 after surgery. At routine postoperative day 14 follow-up, he reports mild fever and right upper quadrant abdominal pain of 1 day's duration. Cholestatic liver profile and a fluid collection near the porta hepatis are seen on CT scan. CT-guided aspiration confirms an aseptic biloma. Doppler ultrasound of the hepatic artery is normal. What is the most appropriate next step?

- (A) ERCP to assess for biliary anastomotic leak and subsequent stent placement
- (B) Relisting for transplantation
- (C) Percutaneous liver biopsy
- (D) Urgent surgical revision

133. A 48-year-old man is admitted to the hospital with right upper quadrant tenderness, weakness, and altered mental status. Physical examination is significant for multiple spider angiomas of the abdomen, palmar erythema, tense distended abdomen

that is tender to palpation, and asterix. Labs are significant for AST 368 IU/L, ALT 146 IU/L, total bilirubin 6.2 mg/dL, prothrombin time 34 seconds (control 12 seconds), and albumin 1.3 g/dL. The patient is febrile to 38.2 °C and is hypotensive at 92/66 mmHg. Cultures are drawn, and empiric antibiotics and lactulose are initiated. His friend who brought him to the hospital reports that over the last 12 months the alcohol consumption has been excessive. What is the most appropriate next step?

- (A) Start methylprednisolone
- (B) Withhold steroids, due to possible infection, and treat with N-acetylcysteine
- (C) Start parenteral nutrition containing medium-chain fatty acids
- (D) Order urgent endoscopy

134. A patient with PSC cirrhosis undergoes screening upper endoscopy and is noted to have large esophageal varices with no signs of recent bleeding. What is the most appropriate next step?

- (A) Repeat endoscopy in 6 months
- (B) Repeat endoscopy in 1 year
- (C) Esophageal variceal banding
- (D) Initiation of beta-blocker therapy for primary prophylaxis

135. A 23-year-old woman was found to be HBsAg positive, HBeAg positive. ALT was 15 IU/mL. HBV DNA was $> 1 \times 10^8$ IU/mL.

- (A) The patient is likely to be in immune reactive phase of HBV infection
- (B) If the patient becomes pregnant she should be advised that the risk to baby of acquiring HBV is low.
- (C) A liver biopsy is likely to show significant inflammation.
- (D) It is likely the patient was infected perinatally.

136. A 75-year-old male presents with a 6-month history of progressive abdominal pain and weight loss of 40 lb. He seeks medical attention because he has developed skin discoloration, pale stools, and dark urine. He has a 40-pack-year history of smoking and drinks two glasses of wine every night. Exam reveals a cachectic-appearing male with conjunctival icterus. Abdomen is soft, non-distended, and non-tender. Blood tests show normal hemoglobin and normal WBC count. His liver tests are notable for a predominantly direct hyperbilirubinemia (12.5 mg/dL) and elevated liver enzymes (AST 210 IU/L, ALT 140 IU/L, alkaline phosphatase 330 IU/L). Ultrasound abdomen reveals a dilated common bile duct (11 mm). Distal common bile duct is poorly visualized due to

overlying bowel gas. What is the most appropriate next step ?

- (A) ERCP with biopsy and stenting to relieve biliary obstruction
- (B) EUS with evaluation of the biliary tree and pancreas
- (C) CT abdomen with IV contrast
- (D) MRCP with MRI

137. A 70-year-old male is admitted to the hospital for evaluation of acute severe abdominal pain radiating to his back. His lab tests show a lipase of 4500 IU/mL, giving him a clinical diagnosis of acute pancreatitis. His liver tests are normal and an ultrasound of the liver shows normal-caliber common bile duct with no evidence of cholelithiasis. He denies alcohol use. He was recently diagnosed with diabetes mellitus. His serum calcium and triglycerides are normal. His medications include low-dose aspirin, metformin for diabetes, and simvastatin for hyperlipidemia. He recovers from his acute episode and is discharged home. He is seen in the outpatient setting 3 months after discharge and is asymptomatic. What is the most appropriate next step, and why ?

- (A) No further testing is needed : this is likely idiopathic pancreatitis
- (B) EUS, to evaluate for pancreatic cancer
- (C) CT abdomen, to ensure resolution of pancreatitis
- (D) ERCP, to place prophylactic pancreatic stents

138. Which of the following is an appropriate indication for intestinal transplantation ?

- (A) Advanced hepatic fibrosis
- (B) Mesenteric vein thrombosis
- (C) Presence of a jejunostomy
- (D) Folate deficiency

139. A 42-year-old woman who has acute pancreatitis is evaluated for chronic abdominal pain. She had first episode of pancreatitis at age 25, and has had multiple hospitalizations since then. She is quite debilitated by pain and is unable to work and perform her activities of daily living. She has read about the risk of cancer of the pancreas and is considering a Total Pancreatectomy with Islet Auto Transplantation (TPIAT). She undergoes genetic testing to assist in the decision-making process.

During the episodes of intense abdominal pain, laboratory studies show amylase levels more than three times the upper limit of normal. A recent CT of the abdomen reveals evidence of chronic pancreatitis, an irregular pancreatic duct, and extensive calcifications within the pancreas. She also has insulin-dependent T2DM. Her current medications are hydromorphone hydrochloride, pancreatic enzyme supplements (70,000-80,000 USP units of lipase) with meals. She does not smoke cigarettes or drink alcoholic beverages. Her family history is remarkable for an uncle who was found to have chronic

pancreatitis at age 35. Which of the following gene mutations is this patient most likely to have ?

- (A) CFTR
- (B) CTSC
- (C) PRSS1
- (D) SPINK1

140. A 72 year old male has been experiencing epigastric abdominal discomfort that worsens after eating, progressive weight loss and greasy stools over the past 3 months. Physical exam is unremarkable. Labs reveal normocytic anemia with haemoglobin of 10.5 g/dL, normal kidney function and normal liver tests. Amylase and lipase are normal. CT scan of the abdomen reveals mass like lesions in the head of the pancreas with indistinct boundaries and no vascular invasion, a diffusely abnormal ("sausage-shaped") pancreas with delayed enhancement, and a beaded irregular pancreatic duct, The common bile duct looks normal. EUS of the pancreatic mass is negative for malignancy. With is the most appropriate next step ?

- (A) Surgical consultation for consideration of Whipple's surgery
- (B) Reimaging in 6 months to assess progression
- (C) Steroid therapy
- (D) Pancreatic enzyme replacement therapy for malnutrition

141. A 50-year-old man was diagnosed 1 year ago with chronic hepatitis C genotype 1a. A liver biopsy revealed stage 4 fibrosis, but he remained compensated, with no evidence of ascites or hepatic encephalopathy. He was treated with combination sofosbuvir and ledipasvir for 12 weeks and has attained SVR. What test is needed for long-term follow up ?

- (A) EGD every year for variceal screening
- (B) Ultrasound every 6 months for HCC screening
- (C) HCV RNA every year to screen for recurrence
- (D) Liver tests every year

142. A 65-year-old male with a past medical history of alcoholic cirrhosis decompensated by variceal bleeding presents with worsening dyspnea over the past several weeks. He denies a history of smoking or previous lung disease. He reports that the dyspnea gets better if he lies down to rest. On exam, he has mild conjunctival icterus, multiple spider angiomas on the chest and abdomen, pan-digital clubbing, splenomegaly, and 2+ bipedal pitting edema. Chest X-ray appears normal. Arterial blood gas shows pH 7.42, pO_2 59, and pCO_2 38. What is the most appropriate next step ?

- (A) Dobutamine stress test

- (B) Pulmonary function tests with 6-minute walk

- (C) Bronchoscopy with bronchial lavage

- (D) Transthoracic echocardiogram with shunt study

143. A 25-year-old female comes to the emergency department with a 10-day history of progressive malaise and fatigue, anorexia, and abdominal discomfort. The patient uses IV heroin on a daily basis and drinks approximately two to three cans of beer daily. Physical examination demonstrates jaundice and a tender, enlarged liver. There are no other stigmata of chronic liver disease. Laboratory studies show CBC normal, INR 1.1, serum alkaline phosphatase 120 IU/L, serum AST 1250 IU/L, serum ALT 2120 IU/L, serum total bilirubin 3.5 mg/dL, serum albumin 3.6 g/dL, HBSAg negative, IgM anti-HAV negative, and IgM anti-HBc negative. Which test is most likely to establish the diagnosis ?

- (A) IgG anti-Hepatitis A virus

- (B) IgG anti-Hepatitis B core antigen

- (C) HCV RNA

- (D) Anti-Hepatitis B surface antibody

144. A 36-year-old primigravida at 34 weeks' gestation presents with anorexia, nausea, and epigastric pain for 2 days. Physical examination shows jaundice, tachycardia, BP 140/95, and a distended pregnant abdomen, but no hepatosplenomegaly or ascites. She is drowsy, with slow mentation. Labs show total bilirubin 13.6 mg/dL, direct bilirubin 8.7 mg/dL, AST 580 IU/mL, ALT 753 IU/mL, hemoglobin 10.5 g/dL, WBC 27,000, platelets 105,000, INR 3.2, glucose 90 mg/dL, and creatinine 1.6 mg/dL. What is the most likely clinical diagnosis?
- (A) HELLP syndrome
 (B) Fulminant viral hepatitis
 (C) Acute Fatty liver of Pregnancy (AFLP)
 (D) Budd-Chiari syndrome
145. A 72-year-old female is referred for evaluation of abnormal liver tests. She has a history of stage III RCC post resection, with neoadjuvant chemoradiotherapy 6 months ago. Her past medical history includes hypertension treated with metoprolol, hyperlipidemia treated with simvastatin, and diabetes mellitus treated with metformin. She has been on stable doses of these three medications for 4-5 years. She was recently diagnosed with maxillary sinusitis and was treated with a 7-day course of amoxicillin/clavulanic acid. On routine testing, she was found to have bilirubin 1.5 mg/dL, AST 82 IU/L, ALT 74 IU/L, alkaline phosphatase 300 IU/L, and INR 1.0. Liver tests were completely normal 2 months ago. She is asymptomatic. Ultrasound of the abdomen is normal. What is the likely explanation for her acute change in liver tests?
- (A) Liver metastases from renal cancer
 (B) Amoxicillin/clavulanic acid-induced liver injury
 (C) Statin-induced liver injury
 (D) Cholelithiasis
146. A 33-year-old male with a history of IV drug use is hospitalized with acute hepatitis and jaundice. Laboratory studies demonstrate AST 1500 IU/L, ALT 2000 IU/L, bilirubin 12 mg/dL, INR 1.5, and normal ALP, albumin, and bilirubin. An acute hepatitis panel shows anti-HAV IGM negative, HBSAg positive, anti-core IgM positive, and anti-HCV negative. Over the next 2 days, serum ALT declines to 120 IU/L and INR normalizes. The patient is discharged, but he returns 2 days later with confusion. Serum AST and ALT are now up to 1500 and 2000 IU/mL, respectively, INR is 4.1, and bilirubin is 22 mg/dL. Which statement is true of this patient's condition?
- (A) He likely has a relapsing form of acute HAV.
 (B) He likely has Acute Liver Failure (ALF) secondary to acute HBV.
 (C) He likely has ALF secondary to acute HCV superimposed upon chronic HBV infection.
 (D) He likely has ALF secondary to super infection with HDV on top of chronic HBV.

147. Which of the following is not a risk factor for the development of severe cholangitis ?
- (A) Obesity
 - (B) Advanced age
 - (C) History of smoking
 - (D) Impacted common bile duct stone
148. A 50-year-old alcoholic with previous variceal bleed presents with tense ascites. Vitals reveal no fever. Exam shows tense ascites. Paracentesis shows a total protein of 1.2 mg/dL (serum albumin 2.4 mg/dL) and WBC 550 cells/mm³ (20% PMN). After 24 hours, one ascitic culture bottle grows *E. coli*. The patient remains well. What is the diagnosis ?
- (A) SBP
 - (B) Culture-negative neutrocytic ascites
 - (C) Culture contamination
 - (D) Non-neutrocytic bacteriascites
149. A 45-year-old man with decompensated cirrhosis presents with increasing confusion and difficulty sleeping through the night. His physician recently prescribed zolpidem 5 mg QHS for insomnia, but this did not help. What is the most appropriate next step ?
- (A) Increase zolpidem to 10 mg QHS
 - (B) Change to diazepam 5 mg QHS
 - (C) Start neomycin 1 g QID
 - (D) Stop zolpidem, start lactulose
150. What is the most common complication of symptomatic gallstone disease ?
- (A) Cholecystocholedochal fistula
 - (B) Gallstone ileus
 - (C) Acute cholecystitis
 - (D) Mirizzi's syndrome
151. A healthy 21-year-old female college student presents to the clinic with 5 days of fatigue, malaise, sore throat, and intermittent fever. On physical exam, there is tender lymphadenopathy of the cervical, axillary, and inguinal lymph nodes, as well as mildly tender hepatomegaly and splenomegaly ; otherwise, her exam is unremarkable. Laboratory tests reveal elevated ALT and AST, with preserved liver synthetic function and moderate lymphocytosis. Which is the most likely cause of the clinical presentation ?
- (A) HSV infection
 - (B) Chronic HCV infection
 - (C) Acute HBV infection
 - (D) EBV infection

152. A 48-year-old female presents with severe abdominal pain, fever, and gross hematuria. Laboratory studies demonstrate serum ALT 223 IU/L, serum albumin 3.5 mg/dL, and creatinine 3.0 mg/dL. Serum ALP and bilirubin are normal. A CT scan of the abdomen demonstrates numerous aneurysms of the renal and mesenteric arteries. Which statement is most likely to be correct ?

- (A) Hepatitis C RNA will be positive.
- (B) Anti-Hepatitis A will be positive.
- (C) The patient can be treated with peg interferon.
- (D) Anti-Hepatitis B e antigen will be positive.

153. A 25-year-old female is diagnosed with hepatitis B during her antenatal visit. She is referred to discuss treatment options. She has been asymptomatic from a hepatitis B standpoint. Her lab studies show hemoglobin 10.5 g/dL, platelets 185,000, bilirubin 1.2 mg/dL, AST 63 IU/L, ALT 46 IU/L, alkaline phosphatase 180 IU/L, INR 1.0, HBsAg positive, HBsAb negative, HBeAg positive, HBeAb negative, HBV DNA 3.5 million IU/mL. What is the best treatment strategy to prevent

vertical transmission to her unborn child ?

- (A) Give HBV vaccine to mother and child
- (B) Treat mother with oral antiviral therapy and give HBV vaccine to child
- (C) Treat mother with oral antiviral therapy and give HBIG and HBV vaccine to child
- (D) Give HBV vaccine to mother and HBIG to child

154. A 45-year-old male with a history of alcoholic cirrhosis is admitted to the hospital for hematemesis. His hemoglobin on arrival is 6.0 g/dL and his platelet count is 75,000. He is transfused 1 unit of PRBC and started on IV octreotide and IV PPI, along with prophylactic IV antibiotics. He undergoes an emergent upper endoscopy once he is clinically stable, and large gastric varices are found without any evidence for esophageal varices. What is the most appropriate next step ?

- (A) Perform interventional radiology to perform emergent TIPS
- (B) Undertake general surgery consultation
- (C) Perform cyanoacrylate glue injection
- (D) Monitor clinically and transfuse as appropriate

155. A 42-year-old female undergoes an abdominal and pelvic ultrasound, ordered by her primary care provider because of recurrent UTIs. She is well between episodes, and denies abdominal pain. The patient used oral contraceptives intermittently in the past for a total duration of less than 5 years. She had a hysterectomy 5 years ago for menorrhagia refractory to other therapies. CBC and liver blood tests are normal. Ultrasound shows no renal or pelvic pathology, but a 4 cm hypo dense lesion is found incidentally in the left hepatic lobe. Subsequent MRI shows the lesion to be a homogeneous 4.2 mass, mildly hyper intense on T2-weighted images, with a central pale region of 9 mm suggestive of a central scar. What is the most appropriate next step ?

- (A) The lesion is a hemangioma ; no further imaging or follow-up is necessary.
- (B) The lesion is an FNH ; 1- and 2-year follow-up MRI is reasonable to ensure stability.
- (C) The lesion is a hepatic adenoma ; refer to a surgeon for resection.
- (D) Biopsy the lesion now to confirm benign diagnosis.

156. A 45-year-old female complains of right upper quadrant abdominal pain for the past 6 months. The pain appears to worsen after eating and lasts for 2-3 hours. Her primary care physician orders an ultrasound of her abdomen, which reveals normal gallbladder wall thickness, no pericholecystic fluid, and no stones in the gallbladder. A 1.2 cm gallbladder polyp is noted in the fundus. What is the most appropriate next step for the gallbladder polyp ?

- (A) Laparoscopic cholecystectomy
- (B) Repeat ultrasound in 6 months
- (C) No surgery is needed : reassure the patient
- (D) CT scan abdomen

157. Which of the following diagnostic tests does not need to be obtained in a 22-year-old female with abdominal pain, ALP, ALT of 1000 IU/mL, and a urine drug screen positive for opiates ?

- (A) Acetaminophen level
- (B) Ceruloplasmin level
- (C) Liver biopsy
- (D) HbsAg, anti-HBc, anti-HAV

158. A 52-year-old female who underwent living donor liver transplantation for PBC 1 year ago presents for routine follow-up. She reports mild itching but otherwise feels well. She is on tacrolimus immunosuppression at 1 mg p.o. b.i.d. Physical exam is unremarkable. Lab tests show hemoglobin 13.5 g/dL, platelets 250,000, bilirubin 5.1 mg/dL, ALT 122 IU/L, AST 110 IU/L, alkaline phosphatase 425 IU/L, INR 1.0, and tacrolimus 8.7 mg/dL. Ultrasound of the liver demonstrates normal liver parenchyma, with no intrahepatic biliary dilation. Doppler shows normal flow through the hepatic artery, with normal resistive indices. The common bile duct appears normal. What is the most appropriate next step ?
- (A) ERCP
 - (B) Liver biopsy
 - (C) Increase of the dose of tacrolimus
 - (D) MRCP
159. Which of the following agents is associated with decreased blood levels of calcineurin inhibitors ?
- (A) Clarithromycin
 - (B) Diltiazem
 - (C) Ketoconazole
 - (D) St John's Wort
160. Which of the following monoclonal antibodies binds to the CD3 complex adjacent to the T-cell receptor ?
- (A) Rabbit anti-thymocyte globulin
 - (B) OKT3
 - (C) Daclizumab
 - (D) Alemtuzumab
161. Compared with cyclosporine, tacrolimus is less often associated with which of the following ?
- (A) New onset of diabetes mellitus
 - (B) Gingival hyperplasia
 - (C) Impaired wound healing
 - (D) Nephrotoxicity
162. All of the following drugs are metabolized by hepatic cytochrome CYP3A4, except :
- (A) Sirolimus
 - (B) Cyclosporine
 - (C) Tacrolimus
 - (D) Mycophenolate mofetil
163. The terminal half-life of basiliximab is approximately :
- (A) 6 hours
 - (B) 24 hours
 - (C) 7 days
 - (D) 14 days

164. Which of the following drugs impairs metabolism of azathioprine ?
- (A) Tacrolimus
 - (B) St John's Wort
 - (C) Allopurinol
 - (D) Clarithromycin
165. Which of the following drugs is LEAST likely associated with anemia ?
- (A) Azathioprine
 - (B) Tacrolimus
 - (C) Mycophenolate mofetil
 - (D) Sirolimus
166. Which of the following drugs is most commonly associated with impaired wound healing ?
- (A) Azathioprine
 - (B) Cyclosporine
 - (C) Tacrolimus
 - (D) Sirolimus
167. Which of the following infections is LEAST likely in the first 4 weeks after an otherwise successful liver transplantation ?
- (A) Pulmonary aspergillosis
 - (B) E. coli urinary tract infection
 - (C) Staphylococcal bacteremia
 - (D) West Nile virus meningitis
168. Which of the following immunosuppressants most commonly affects spermatogenesis ?
- (A) Sirolimus
 - (B) Tacrolimus
 - (C) Cyclosporine
 - (D) Azathioprine
169. Which of the following immunosuppressants is most commonly associated with hyperlipidemia ?
- (A) Tacrolimus
 - (B) Azathioprine
 - (C) Sirolimus
 - (D) Mycophenolate mofetil
170. The most common cause of death after pediatric liver transplantation is :
- (A) Malignancy
 - (B) Infection
 - (C) Cardiovascular disease
 - (D) Renal failure
171. Everolimus belongs to which of the following classes of immunosuppressants ?
- (A) Calcineurin inhibitor
 - (B) TOR inhibitor
 - (C) Lymphocyte-depleting antibody
 - (D) Non-lymphocyte-depleting antibody

172. Which of the following changes occurred after the implementation of the MELD system of organ allocation for liver transplantation ?
- (A) Increase national median waiting time
 - (B) Reduction of wait-list mortality
 - (C) Increased allocation of organ to sicker patients
 - (D) Identification of a threshold for patients too ill to transplant
173. Which of the following is the most common technical complication after liver transplantation ?
- (A) Portal vein thrombosis
 - (B) Hepatic arterial stenosis
 - (C) Bile duct leak or stricture
 - (D) Inferior vena caval stenosis
174. Which of the following statements about split-liver adult liver transplantation is true ?
- (A) Biliary complications are lower compared with whole organ transplantation.
 - (B) Graft survivals are higher compared with whole organ transplantation.
 - (C) Outflow obstruction is higher compared with whole organ transplantation.
 - (D) Hepatic arterial thrombosis is lower compared with whole organ transplantation.
175. Which of the following is true with regard to liver transplantation in patients with hepatitis C ?
- (A) 3-year patient survival is equivalent to recipients without hepatitis C.
 - (B) 3-year graft survival is lower compared with recipients without hepatitis C.
 - (C) Graft survivals in patients with hepatitis C have improved overtime.
 - (D) 20% of patients undergoing liver transplantation for hepatitis C will have negative viral levels after liver transplantation
176. Which of the following patients would be considered to fall outside the Milan criteria for hepatocellular cancer ?
- (A) A 50-year-old man with four lesions, 2.7 cm, 1 cm, 1 cm and 1.5 cm
 - (B) A 70-year-old man with a solitary lesion 4.7 cm in the right lobe
 - (C) A 50-year-old woman with two lesions, 3 cm and 2 cm
 - (D) A 50-year-old woman with three lesions, 2.9 cm, 2.2 cm and 1.7 cm involving both left and right lobes

177. A 20-year-old patient undergoes liver transplantation for autoimmune hepatitis. The patient has not been previously immunized for any childhood illnesses. Which of the following immunizations would be contraindicated in this patient ?
- (A) Hepatitis B
 - (B) Hepatitis A
 - (C) MMR (measles, mumps, rubella)
 - (D) H1N1 immunization
178. Hepatitis G virus is from the family :
- (A) Coronaviridae
 - (B) Hepadnaviridae
 - (C) Flaviviridae
 - (D) Caliciviridae
179. This agent represents an isolate of Hepatitis G virus :
- (A) GBV-C
 - (B) GBV-B
 - (C) GBV-A
 - (D) None of these
180. Which of the following is not a primary cause of renal failure in cirrhosis ?
- (A) Infections
 - (B) Hypovolemia
 - (C) Encephalopathy
 - (D) Hepatorenal syndrome
181. According to established selection criteria, liver transplant candidates need a simultaneous kidney transplant if dialysis is required for more than how many days ?
- (A) 3 days
 - (B) 7 days
 - (C) 42 days
 - (D) 180 days
182. What is the best screening strategy for the diagnosis of hepatopulmonary syndrome in patients undergoing evaluation for liver transplantation ?
- (A) Pulse oximetry
 - (B) Arterial blood gas
 - (C) Contrast echocardiography
 - (D) Pulse oximetry and contrast echocardiography
183. Which of the following immunosuppressive agents commonly used as immunosuppressive therapy have anti-retroviral effects ?
- (A) Cyclosporine A
 - (B) Mycophenolate mofetil
 - (C) Sirolimus
 - (D) All of these

184. Which of the following are relative contraindications to liver transplantation in the HIV/HCV co-infected patient ?
- (A) CD4+ T-cell count of 110
 - (B) Detectable HIV RNA
 - (C) History of CMV retinitis
 - (D) Chronic cryptosporidiosis
185. Which disease does not recur after transplantation ?
- (A) Autoimmune hepatitis
 - (B) Wilson disease
 - (C) Non-alcoholic steatohepatitis
 - (D) Budd-Chiari syndrome
186. Which of the following is not true about Pediatric Acute Liver Failure (PALF) ?
- (A) PALF is diagnosed with evidence of liver injury (in absence of chronic liver disease) and presence of hepatic based coagulopathy (INR > 2.0) not corrected by Vitamin K.
 - (B) Around 50% patients are left with indeterminate etiology.
 - (C) The Hepatotoxic dose of Acetaminophen is > 60 mg/kg
 - (D) Centrilobular Hepatic necrosis is hallmark findings of Acetaminophen toxicity
187. Which of the following is not true about Progressive Familial Intrahepatic Cholestasis (PFIC) in children ?
- (A) Autosomal recessive inheritance pattern
 - (B) PFIC type 2 involves defective BSEP protein
 - (C) Sensorineural hearing loss is common in PFIC type 1
 - (D) Giant cell hepatitis and amorphous bile are found in PFIC type 1
188. Paucity of Interlobular Bile Duct (PILBD) in neonatal cholestatic disorders is found in all except ?
- (A) Alagille syndrome
 - (B) Citrin deficiency
 - (C) CMV Hepatitis
 - (D) Bile Acid Synthetic Defects (BASD)
189. Which of the following is not true about Alagille syndrome ?
- (A) Autosomal dominant inheritance
 - (B) Patients who do not have JAG1 mutations, NOTCH2 mutations have been identified
 - (C) Cholesterol levels may exceed 1500 mg/dl
 - (D) The paucity of bile ducts is more common in early infancy

190. Which of the following is true about Gestational Allomune Liver Disease (GALD) ?

- (A) Ductus venosus in GALD patients closes before 10 day of neonatal life.
- (B) Biopsy of oral mucosa is useful to demonstrate extra hepatic siderosis.
- (C) Double volume exchange transfusions with IVIG is promising therapy for GALD.
- (D) IVIG administered in gestation can prevent GALD in newborns.

191. True regarding Choledochal cyst are all except :

- (A) Females are more affected compared to males.
- (B) Type IV cyst belongs to Caroli's disease.
- (C) The incidence of biliary carcinoma 20 times higher than general population.
- (D) HIDA scan may be useful in spontaneous perforation.

192. False regarding Hereditary Fructose Intolerance (HFI) :

- (A) Enzymatic activity of Aldolase B reduced to 15% of normal value.

(B) The biochemical abnormalities include hypoglycemia, hyperphosphatemia, hypomagnesemia and hyperuricemia.

(C) Serum assay of enzyme Aldolase B is of little diagnostic value.

(D) Diet containing no fructose alleviates all the symptoms.

193. Glycogen storage disease – which is true :

(A) Type IV GSD presents with progressive cirrhosis.

(B) Von Gierke disease is due to deficiency of Lysosomal acid alpha glucosidase enzyme.

(C) GSD type II patients have repeated infections because of abnormal leukocyte migration and neutropenia.

(D) Cooked cornstarch to be given to prevent hypoglycemia at night time.

194. All are associated with hepatic tumors except :

(A) GSD type I-IV

(B) Hereditary Tyrosinemia type I

(C) Trisomy 18

(D) Niemann-Pick type C

195. False about hepatic Tumors :

- (A) Approximately 1/3rd of all liver masses occurring in children are malignant.
- (B) Vast majority of liver tumours in children presents as an asymptomatic palpable mass.
- (C) AFP levels <100 ng/ml in Hepatoblastoma is associated with poor outcome.
- (D) Infants with Hepatic heman-gioendothelioma may present with signs of congestive heart failure.

196. True about Post Cholecystectomy Syndrome is :

- (A) The frequency of such symptoms is up to 60-65%.
- (B) Bile duct stones are the most common cause of post cholecystectomy syndrome.
- (C) Sphincter of Oddi Dysfunctions (SOD) are found in up to 30-40% cases.
- (D) Clinical manifestations of SOD include biliary type of pain, jaundice and pancreatitis.

197. Regarding cholangio carcinoma which is not true :

- (A) Biliary enteric drainage is a probable risk factor.

(B) Intrahepatic cholangio carcinomas arise above the second order bile duct.

(C) Among the perihilar cholangio Ca, periductal infiltrating type is the most common.

(D) In dynamic imaging, initial enhancement in arterial phase with progressive centripetal washout in delayed phase is characteristic in intrahepatic cholangio CA.

198. True about Gall Bladder CA is :

(A) CA GB is the second most common primary biliary malignancy.

(B) IBD is not a risk factor for CA GB.

(C) Patients with PSC and GB mass of more than 20 mm should undergo chole-cystectomy.

(D) Prophylactic cholecystectomy in an asymptomatic GB stone patients can be recommended to prevent CA GB.

199. False about Hereditary Tyrosinemia type I:

- (A) Enzymatic defects in Fumarylacetoacetate hydrolyase in Tyrosine metabolism
- (B) Can present with infantile acute liver failure
- (C) Elevated serum and urinary Succinyleacetone is diagnostic
- (D) Regular monitoring of serum AFP is helpful for HCC screening in Tyrosinemia

200. Regarding Spontaneous Bacterial Peritonitis (SBP), which is false:

- (A) Can present without local abdominal symptoms.

(B) Low ascitic fluid protein (<1 g/dl) is associated with increased risk of SBP.

(C) In patients with advanced cirrhosis (CTP > 8) with low ascitic fluid protein (<1.5 g/dl), primary prophylaxis is recommended if serum Bilirubin > 5 mg/dl or serum Creatinine > 1.5 mg/dl.

(D) To prevent development of HRS-AKI in patients with SBP, IV albumin (1.5 gm/kg at diagnosis and 1 gm/kg on D3) is recommended.

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