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QUESTION 1

A 63-year-old Native American male, with a 6-year history of DM, hypertension, and hyperlipidemia, comes to your office as a new patient for a routine examination. He has been experiencing frequent lower back pain and headaches for which he is taking ibuprofen daily for the past 5 weeks. Moreover, he is complaining of mild fatigue. In addition, he is taking aspirin, atorvastatin, verapamil, and glipizide. His physical examination shows a blood pressure of 165/80 and heart rate of 90 bpm. In general, he was not in any distress. His funduscopic examination reveals no signs of diabetic retinopathy. Cardiac examination reveals a regular rate and rhythm with an S4 gallop. His lungs are clear and abdominal examination is unremarkable without any bruit auscultated. He also has 2+ lower extremity pitting edema. Rectal examination reveals brown stool, negative for occult blood. His laboratory results are as follows:

Which of the following antihypertensive medications would be best implemented in patients with diabetic nephropathy?

	Blood	Urine
Sodium	137	Specific gravity: 1.012
Potassium	5.0	Protein: trace
Chloride	115	RBCs: 1–3
CO_2	20	WBCs: 0–3
BUN	30	No cellular casts
Creatinine	1.6	
Glucose	131	24-h specimen: 5.2 g protein
Total protein	8.5	
Albumin	3.0	
AST	15	
Total bilirubin	0.3	
LDL cholesterol	160	
WBC	8,700	
Hgb	8.5	
HCT	24	
PLT	245,000	

A. lisinopril 10 mg orally once daily

B. clonidine 0.2 mg orally twice daily

C. metoprolol 25 mg orally twice daily

D. amlodipine 5 mg orally once daily

E. hydralazine 25 mg orally three times daily

Correct Answer: A Section: (none)

Explanation:

This patient\\'s presentation and laboratory data are consistent with nephrotic syndrome. Nephrotic syndrome is typically associated with proteinuria of greater than 3.5 g/day, hypoalbuminemia, edema, and hyperlipidemia. Abnormalities commonly seen in nephrotic syndrome include hypocalcemia (due to vitamin D deficiency), low thyroxine levels (due to loss of thyroxine-binding globulin [TBG]), and microcytic, hypochromic anemia (due to transferring loss). Hypocomplementemia may be found in some forms of nephrotic syndrome, but this is not a typical finding. Hematuria is one of the components found in nephritic syndrome.

This patient has history, physical, and laboratory findings that suggest possible multiple myeloma. For example, his

history is pertinent for lower back pain and headaches. Moreover, Bence-Jones protein is not usually detected by urine dipstick but will be detected during a 24-hour urine collection. This would explain why there is relatively little urine protein detected on dipstick but over 5 g on the 24-hour urine. Lastly, multiple myeloma should be considered in an older patient with unexplained anemia. Given these findings, a serum and urine protein electrophoresis would be the best test to order next. A kidney biopsy would usually be diagnostic, but is unnecessary if the electrophoresis is positive. Complement levels and anti-GBM titer would not be of any use at the present time. Checking glycosylated Hgb will inform you of the adequacy of glucose control, but will be of little use with regard to the workup of the nephrotic syndrome. This patient has a low anion gap due to the presence of unmeasured cations in the blood. In this case, they arise from circulating immunoglobulins. The fractional excretion of sodium and urea can be helpful in differentiating prerenal causes from other etiologies of acute renal failure. A split 24-hour urine for protein is helpful in determining the presence of orthostatic proteinuria. Initiation of ACE inhibitors or angiotensin receptor blockers is the best option in patients with diabetic nephropathy, as these medications have been shown to slow the progression of kidney disease. The other medications listed may be used adjunctively, with an ACE inhibitor or angiotensin receptor blocker, if adequate blood pressure control could not be achieved with monotherapy. HIV-associated nephropathy is typically associated with a collapsing glomerulopathy, a variant of focal segmental glomerulosclerosis. Membranous nephropathy is associated with a number of other infections, including syphilis, hepatitis B, and hepatitis C virus. Membranoproliferative glomerulonephritis has also been associated with hepatitis C virus.

QUESTION 2

Apatient you see routinely in the clinic has elevated liver function tests. ALT is 89, AST is 75, and the total bilirubin and alkaline phosphatase are normal. The patient has no past history of hepatitis, taking medications, or excessive drinking. You order hepatitis serologies. The results are as follows: Positive: HBsAg and anti-HBc. Negative: anti-HBs, anti-HBc IgM, anti-HAV, and anti-HCV Which statement best describes this clinical situation?

A. If the patient was found to be HBe antigen positive, he would be considered highly infectious to spread hepatitis B.

B. This patient is in the "window period" because the antibody to hepatitis BsAg is negative.

C. This patient is not at risk for delta hepatitis because the patient has antibody to hepatitis B core.

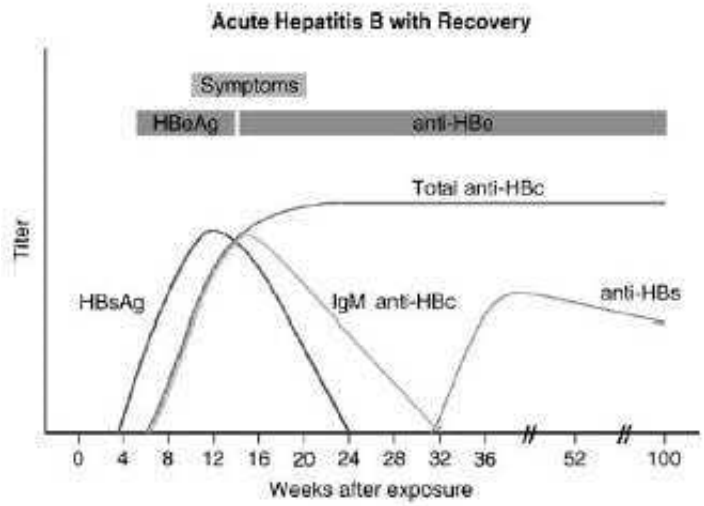
D. The low level of transaminase elevations indicates that this patient is not a candidate for hepatitis B antiviral treatment.

E. If this patient has antibody to hepatitis Be, he is a candidate for antiviral therapy.

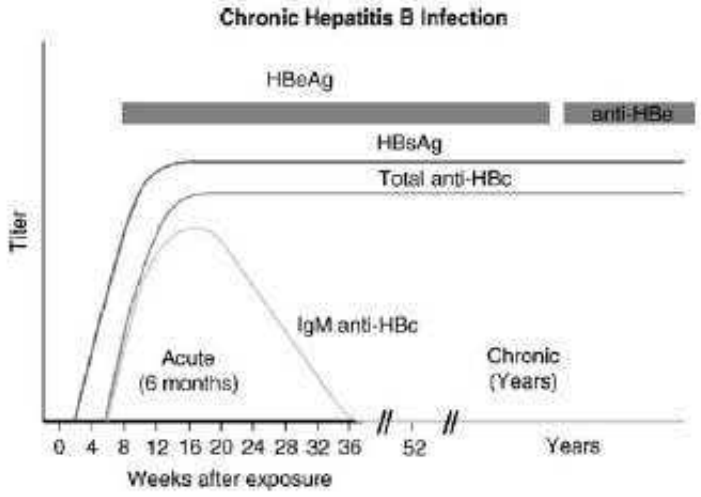
Correct Answer: A Section: (none)

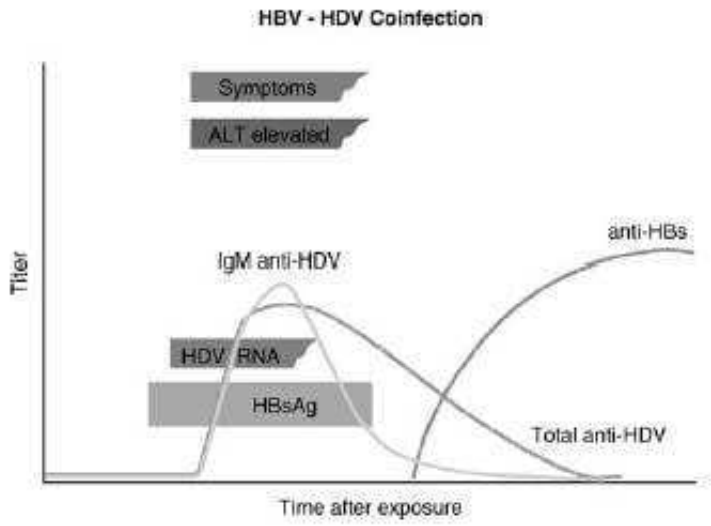
Explanation:

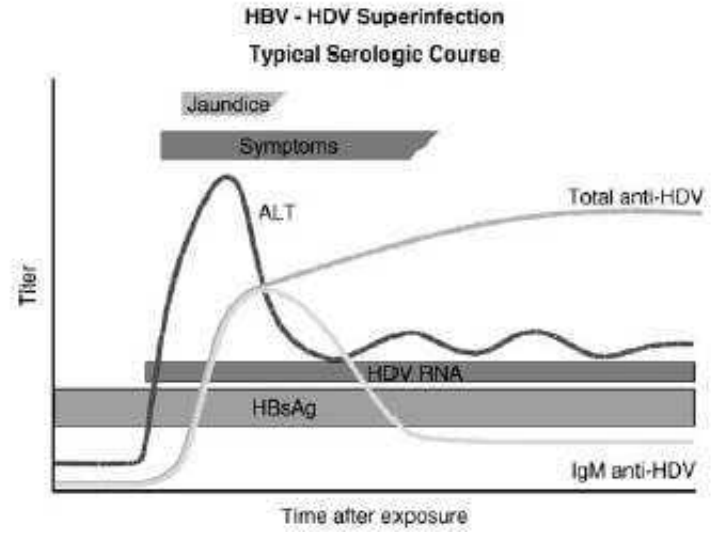
This patient has chronic hepatitis B. The different serologic studies for hepatitis B are shown in two figures below. The patient does not have acute hepatitis B because the IgM antibody to hepatitis B core is negative, and the total antibody to hepatitis B core is positive. Antibody to hepatitis B core occurs prior to the development of antibody to hepatitis B surface. IgM is found in acute infections; primarily IgG is seen in chronic infections.

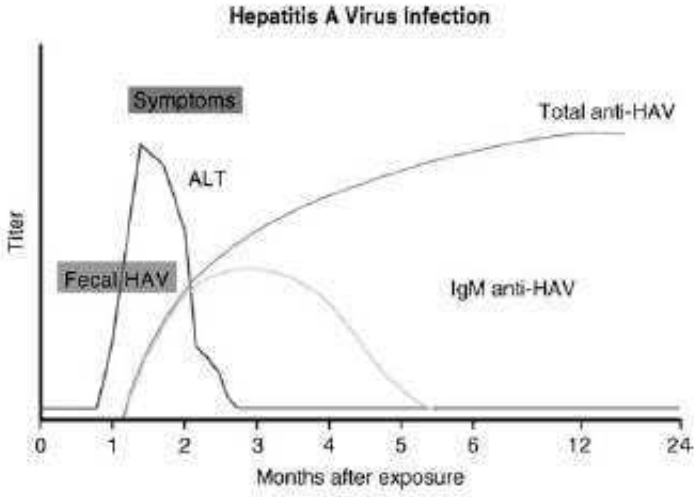


The presence of antibody to hepatitis B core with a positive hepatitis B surface antigen is indicative of chronic infection. Delta hepatitis infection requires the hepatitis B surface antigen. Delta hepatitis can occur concurrently with acute hepatitis B infection or later in the setting of chronic hepatitis B infection. There is no test for hepatitis C antigen. This is not a presentation of acute hepatitis A, which usually has very high transaminases. The antibody to hepatitis A virus occurs after 1 month and is associated with high transaminases Hepatitis Avaccine is indicated for patients with chronic liver disease. If this patient had hepatitis C, then hepatitis B vaccine would also be indicated. Hepatitis B vaccine is essentially hepatitis B surface antigen that causes the production of hepatitis B surface antibody. Since this patient has hepatitis B surface antigen already, choice C would be incorrect. Verifying the diagnosis with a qualitative hepatitis B viral load is not necessary. A quantitative hepatitis B viral load might be useful to evaluate for potential antiviral therapy. The only reason hepatitis Awould be recommended for the patient\\'s spouse would be if the patient had acute hepatitis A. Investigating for other causes of hepatitis is not necessary as the diagnosis of chronic hepatitis B is already established. If the patient was found to be HBeAg positive, he would be considered highly infectious for the spread of hepatitis B. Hepatitis Be antigen is the DNA polymerase that shows active replication of the hepatitis B virion. These patients are 100 times more infectious than those lacking the hepatitis Be antigen. The window period is a situation where a patient is just recovering from hepatitis B. Hepatitis Bs antigen is negative and the antibody to hepatitis Bs has not been developed. The diagnosis is made by antibody to hepatitis B core. This is seen in Figure 1-6. Any patient who is hepatitis B surface antigen positive is at risk for delta hepatitis. This patient would be at risk for delta hepatitis by virtue of having a positive hepatitis B surface antigen. There is no level of transaminases, even normal transaminases, which would preclude antiviral therapy. The level of viral production indicated by the hepatitis B quantitative viral load, along with an assessment of the underlying liver pathology, is the best indication of need for treatment. As mentioned earlier, the antibody to hepatitis B would show the patient is less infectious and likely have a lower viral load.




HBV - HDV Coinfection
Symptoms
ALT elevated
anti-HBs
IgM anti-HDV
Titer
HDV RNA
HBsAg
Total anti-HDV
Time after exposure


HBV - HDV Superinfection
Typical Serologic Course
Jaundice
Symptoms
ALT
Total anti-HDV
Titer
HDV RNA
HBsAg
IgM anti-HDV
Time after exposure


Hepatitis A Virus Infection
Symptoms
Total anti-HAV
ALT
Titer
Fecal HAV
IgM anti-HAV
0
1
2
3
4
5
6
12
24
Months after exposure

QUESTION 3

A26-year-old female with recurrent pregnancy loss undergoes a laparoscopy and hysteroscopy. She is found to have a Müllerian anomaly with a heart-shaped uterus that has two uterine horns but one common cervix.

What is the name of the uterine anomaly?

A. didelphic

B. septate

C. unicornuate

D. bicornuate

E. Müllerian agenesis (Mayer-Rokitansky-Küster-Hauser syndrome)

Correct Answer: D Section: (none)

Explanation:

Müllerian anomalies result from either the lack of proper fusion or resorption of the paramesonephric (Müllerian) ducts during organogenesis. Vertical abnormalities occur when the invaginating urogenital sinus--extending in a cranial direction from the introitus--and the Müllerian structures--extending caudally-fail to canalize appropriately. Longitudinal defects occur when the two paramesonephric ducts either do not fuse appropriately or following fusion the intervening tissue is not reabsorbed completely. A didelphic uterus represents lack of fusion, and the patient has a duplicated cervix and each cervix is connected to a separate uterine horn. Aunicornuate uterus results from aplasia of one of the paramesonephric ducts so that only one cervix connecting to a single uterine horn is found. A bicornuate uterus results from failure of the paramesonephric ducts to fuse cranially resulting in a single cervix but two separate uterine horns. A septate uterus occurs when fusion is completed but reabsorption of the intervening tissue is incomplete.

QUESTION 4

Gastrin secretion is enhanced by which of the following?

A. antral distention

B. antral acidification

C. presence of fat in the antrum

D. sympathetic nerve stimulation

E. duodenal acidification

Correct Answer: A Section: (none)

Explanation:

Gastrin secretion is increased by vagal stimulation, antral distention, and by the presence of protein in the antrum.

Antral acidification (pH = 1.5) decreases gastrin secretion by a feedback mechanism. The same is true with duodenal acidification.

QUESTION 5

A 45-year-old woman undergoes an uncomplicated thyroidectomy for a goiter. Later that night, she becomes agitated and complains of difficulty breathing. The surgeon notices some neck swelling at the incision site, but the dressing is clean.

What should the next step be?

A. start oxygen by nasal cannula

B. check STAT serum calcium level

C. endotracheal intubation to protect her airway

D. open the incision

E. administer propranolol and morphine

Correct Answer: D Section: (none)

Explanation:

One of the most feared complications of neck surgery is postoperative hemorrhage causing airway compromise. Any patient with neck swelling and dyspnea must be assessed for this emergently. The treatment is to immediately open up the neck wound to release the hematoma and relieve the tracheal compression.