MULTIPLE CHOICE

VT ABDOMINAL VISCERAL AND ACCESS - PRACTICE SET - ANSWER KEY

1. A renal-aortic ratio (RAR) above what value is consistent with renal artery stenosis of 60 percent or greater?

A. 1.5
B. 2.0
C. 7.0
D. 3.5

2. Reversed diastolic flow in the intraparenchymal arteries of a renal transplant is most concerning for which condition?

A. Mild acute tubular necrosis
B. Renal vein thrombosis
C. Normal early postoperative finding
D. Transplant renal artery stenosis

3. Following endovascular aneurysm repair (EVAR), color and spectral Doppler interrogation of the aneurysm sac demonstrates flow between the proximal attachment site of the stent graft and the native aortic wall. Which type of endoleak is this?

A. Type II endoleak
B. Type I endoleak
C. Type III endoleak
D. Type IV endoleak

4. A patient presents with postprandial epigastric pain. Doppler imaging shows celiac artery PSV markedly elevated on expiration and returning to nearly normal on deep inspiration. Which diagnosis does this respiratory variation most strongly support?

A. Median arcuate ligament syndrome
B. Acute mesenteric artery embolism
C. Splanchnic artery aneurysm
D. Fixed atherosclerotic celiac artery stenosis

5. Which peak systolic velocity (PSV) threshold in the main renal artery is most commonly cited as suggestive of hemodynamically significant renal artery stenosis of 60 percent or greater?

A. Greater than 100 cm/s
B. Greater than 180 to 200 cm/s
C. Greater than 400 cm/s
D. Greater than 50 cm/s

6. Within a normally functioning mature radiocephalic fistula, the arterial inflow typically demonstrates which Doppler pattern?

A. Low-resistance with elevated end-diastolic flow and a continuous forward signal
B. Absent diastolic flow with a sharp systolic spike
C. Continuous retrograde flow
D. High-resistance triphasic with reversed early diastolic flow

7. For a hemodialysis arteriovenous fistula or graft, which volume flow rate is the most commonly cited lower limit for adequate access function?

A. Approximately 1500 mL/min
B. Approximately 5000 mL/min
C. Approximately 50 mL/min
D. Approximately 500 to 600 mL/min

8. A focal velocity ratio (peak systolic velocity at the stenosis divided by the PSV in the upstream segment) of what value is most commonly used to identify a hemodynamically significant stenosis in a hemodialysis fistula or graft?

A. Greater than 2.0 to 3.0
B. Greater than 10.0
C. Greater than 5.0
D. Greater than 1.2

9. Which Doppler change in the main portal vein, when seen on serial post-TIPS surveillance, raises concern for shunt dysfunction?

A. An unchanged spectral broadening pattern
B. A new increase in main portal vein velocity compared with prior studies
C. Persistent hepatopetal flow at the same velocity as the baseline study
D. A new decrease in main portal vein velocity compared with prior studies

10. A normal hepatic vein spectral Doppler waveform in an adult demonstrates which pattern?

A. Monophasic continuous flow toward the IVC
B. Triphasic or multiphasic with brief retrograde flow reflecting right atrial pressure changes
C. Pulsatile retrograde flow throughout the cardiac cycle
D. Low-resistance forward flow with no phasicity

11. Which finding on post-EVAR surveillance ultrasound is the strongest indicator that an endoleak is clinically significant and requires intervention?

A. Progressive enlargement of the aneurysm sac diameter over serial studies
B. Presence of mural thrombus within the excluded sac
C. A 1 mm change in sac diameter on a single study
D. Visualization of the stent graft folds

12. A patient has an AAA measuring 4.2 cm. According to typical surveillance recommendations, what is the appropriate follow-up interval?

A. Surveillance every 3 months
B. Annual ultrasound surveillance
C. Immediate surgical repair
D. No further follow-up required

13. Which peak systolic velocity threshold in the celiac artery is most commonly used to suggest greater than 70 percent stenosis?

A. Greater than 275 cm/s
B. Greater than 100 cm/s
C. Greater than 200 cm/s
D. Greater than 400 cm/s

14. What is the standard ultrasound definition of an abdominal aortic aneurysm (AAA)?

A. Focal dilation of the abdominal aorta to 2.0 cm or greater
B. Focal dilation of the abdominal aorta to 3.0 cm or greater in outer-wall to outer-wall diameter
C. Any abdominal aorta measuring more than 1.5 times the diameter of the common iliac artery
D. Focal dilation of the abdominal aorta to 5.5 cm or greater

15. In a fasting patient, what is the typical Doppler waveform appearance of the celiac artery?

A. Low-resistance with continuous forward diastolic flow
B. High-resistance with reversed early diastolic flow
C. Absent diastolic flow
D. Triphasic with brief flow reversal

16. In a fasting patient, the normal Doppler waveform of the superior mesenteric artery (SMA) is best described as:

A. Monophasic with absent systole
B. Pulsatile retrograde flow throughout the cardiac cycle
C. Low-resistance with continuous forward diastolic flow
D. High-resistance with low or reversed early diastolic flow

17. In a normal fasting patient, the main portal vein demonstrates which flow direction relative to the liver?

A. Hepatopetal (toward the liver)
B. Pulsatile retrograde flow during diastole
C. Bidirectional with no net flow

D. Hepatofugal (away from the liver)

18. Loss of normal phasicity and conversion of the hepatic veins to a flat, monophasic waveform is most characteristic of which condition?

A. Renal artery stenosis
B. Advanced cirrhosis or hepatic venous outflow compromise
C. Acute pulmonary embolism
D. Median arcuate ligament syndrome

19. Which peak systolic velocity threshold in the superior mesenteric artery is most commonly cited as suggestive of greater than 70 percent stenosis?

A. Greater than 150 cm/s
B. Greater than 100 cm/s
C. Greater than 275 cm/s
D. Greater than 500 cm/s

20. In a pancreas transplant, sudden loss of arterial and venous Doppler signal within the graft along with graft enlargement and parenchymal heterogeneity most strongly suggests:

A. Mild graft pancreatitis
B. Graft vascular thrombosis
C. Pseudoaneurysm at the arterial anastomosis
D. Normal early postoperative appearance

21. A renal transplant ultrasound demonstrates a focal peak systolic velocity in the transplant main renal artery greater than approximately 250 cm/s with downstream tardus parvus waveforms. The most likely diagnosis is:

A. Hyperacute rejection
B. Transplant renal artery stenosis
C. Acute tubular necrosis
D. Renal vein thrombosis

22. The portal vein is formed by the confluence of which two vessels?

A. Inferior mesenteric vein and splenic vein
B. Superior mesenteric vein and inferior mesenteric vein
C. Right and left hepatic veins
D. Superior mesenteric vein and splenic vein

23. Which finding on duplex ultrasound is most characteristic of a pseudoaneurysm arising from a dialysis access or arterial puncture site?

A. A pulsatile fluid collection with a to-and-fro Doppler signal in the connecting neck
B. A heterogeneous solid mass with no internal Doppler signal
C. A simple anechoic cyst with posterior enhancement and no flow
D. A tubular structure with continuous monophasic venous flow

24. A renal artery RAR cannot be calculated reliably in a patient with which of the following?

A. Severe abdominal aortic stenosis or aneurysmal dilation altering aortic flow
B. Patient body mass index of 22
C. A normal-caliber abdominal aorta
D. Mild renal artery tortuosity

25. A transjugular intrahepatic portosystemic shunt (TIPS) creates a connection between which two vessels?

A. The hepatic artery and a hepatic vein
B. The splenic vein and the left renal vein
C. The portal vein and the inferior vena cava directly
D. A branch of the portal vein and a hepatic vein