Renal, Pancreas and Liver Transplants

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Self-Assessment Questions:

Lecture 1: Renal and Pancreas Transplants

Question 1: A renal transplant recipient has no urine output on postoperative day 1. The ultrasound shows reversal of diastolic flow in the intra renal arteries and main renal artery. What is the most likely etiology?
   a. Renal artery stenosis
   b. Iliac artery dissection
   c. Renal vein thrombosis
   d. Arteriovenous fistula
   e. Pseudoaneurysm

Question 2: Which of the following is the most specific for transplant ureteral stenosis?
   a. Elevated resistive indices
   b. Perinephric fluid collection
   c. Post void bladder residual volume
   d. Dilated ureter
   e. Antegrade nephrostogram

Question 3: Which is the following is associated with a low intra renal resistive index in a renal transplant?
   a. Renal vein stenosis
   b. Renal vein occlusion
   c. Acute rejection
   d. Chronic rejection
   e. Renal artery stenosis

Lecture 2: Liver Transplants

Question 4: Which of the following should be considered when you find an abscess in a transplanted liver?
   a. Recurrence of malignancy
   b. Portal vein thrombosis
   c. Biliary leak
   d. Hepatic artery complications
   e. Vena cava occlusion

Question 5: The most common location for post liver transplant lymphoproliferative disease (PTLD) is:
   a. Liver
   b. Pancreas
   c. Small bowel
   d. Kidneys
   e. Lungs

Question 6: The diagnosis of liver transplant rejection is made by:
   a. Hepatic artery resistive indices
   b. Portal vein peak velocity
   c. Hepatic vein pulsatility
   d. Increased hepatic echogenicity
   e. Liver biopsy
Answer Key & References for Additional Study:

**Lecture 1: Renal and Pancreas Transplants**

**Question 1:** Correct answer = c – Renal vein thrombosis

Renal vein thrombosis is an early complication, secondary to technical difficulties, hypotension, compartment syndrome and hypercoagulability. In addition to reversal of arterial diastolic flow, the renal vein will be occluded and not able to be detected. The other answer options are later complications and not associated with reversal of diastolic flow (although dissection may result in absence of diastolic flow).

**References:**


**Question 2:** Correct answer = e – Antegrade nephrostogram

Ultrasound is sensitive for the detection of hydronephrosis and hydroureter. However, dilatation of the collecting system does not necessarily indicate obstruction. Dilatation may persist after relief of obstruction or may be secondary to reflux or a distended bladder. Furthermore, ultrasound can be falsely negative if the intra renal calyces are unable to distend in the setting of coexisting parenchymal disease. Antegrade nephrostogram not only proves ureteral obstruction, but also demonstrates the site and allows drainage. Many pathologic processes may alter resistive indices. Perinephric fluid collections and post void bladder volume may be associated with hydroureter and hydronephrosis but are not specific for the diagnosis.

**References:**


**Question 3:** Correct answer = e – Renal artery stenosis

Renal artery stenosis is classically associated with a tardus parvus intrarenal arterial waveform with a low resistive index. The other options typically cause decreased diastolic flow with elevation of the resistive index.

**References:**

Lecture 2: Liver Transplants

**Question 4: Correct answer = d – Hepatic artery complications**

The intrahepatic bile ducts are solely supplied by the donor hepatic artery following transplantation. In the native liver, there are collaterals from surrounding arteries. Hepatic artery stenosis or thrombosis leads to ischemia of the intrahepatic bile ducts, with resultant necrosis, strictures and cholangitis, presenting as abscess. Options b, c and e are less common vascular complications, and are not typically associated with hepatic abscess. Recurrent malignancy may present as a focal hypoechoic lesion, which may overlap, with abscess. However the presence of gas and the clinical scenario will often distinguish these entities. If not, percutaneous sampling will be required, with drainage for the abscess.

**References:**

**Question 5: Correct answer = a - Liver**

PTLD is a spectrum of disease ranging from polymorphic lymphocyte proliferation to aggressive lymphoma. In solid organ transplants, including liver transplants, PTLD is most common in the transplanted organ. It may present as multiple solid hepatic masses, a poorly defined infiltrative lesion or a mass at the porta hepatis, which may be necrotic. PTLD should be considered in the differential diagnosis of any solid parenchymal liver lesion especially in the later post-operative period.


**Question 6: Correct answer = e – Liver biopsy**

There are no reliable Doppler findings or parenchymal signs of liver transplant rejection.