

**Genitourinary Radiology
In-Training Test Questions
for Diagnostic Radiology Residents**



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1. Concerning congenital ureteropelvic junction (UPJ) obstruction, which one of the following is TRUE?
 - A. It is an uncommon cause of hydronephrosis in children.
 - B. Urinary tract infection is the most common presentation.
 - C. Females and males are affected equally.
 - D. **The presence of crossing vessels decreases the success rate of pyeloplasty.**

Rationale:

- A. Incorrect. It is the MOST common cause of hydronephrosis in children.
- B. Incorrect. UPJ obstruction is being discovered increasingly in the prenatal period due to frequent use of obstetric ultrasound. When detected due to symptoms or signs, congenital ureteropelvic junction obstruction most often presents in infancy or childhood with an abdominal mass, flank or abdominal pain, failure to thrive, or nonspecific gastrointestinal complaints. Infection, hypertension, hematuria, and stone formation less commonly are the cause for the child to come to medical attention. In a significant number of cases, the disorder is clinically silent into adulthood, when hematuria, flank pain, fever, or rarely, hypertension, are the presenting clinical symptoms. Pain in adults is often episodic and in some cases may only present by high urine flow rates such as those produced by beer drinking.
- C. Incorrect. Males are affected more than females by 2:1.
- D. Correct. Crossing vessels are seen in only 15%-20% of cases but significantly reduce the success of pyeloplasty. Thus, many advocate the use of CT for preoperative planning.

Reference:

None

2. Concerning blunt trauma to the bladder, which one of the following is TRUE?
- A. Intraperitoneal rupture accounts for the majority of cases
 - B. Less than 20% of extraperitoneal ruptures have pelvic fractures.
 - C. **Intraperitoneal rupture is typically treated with surgical repair.**
 - D. CT with intravenous contrast can exclude major bladder injury.

Rationale:

- A. Incorrect. Extraperitoneal bladder ruptures account for 80%-90% of major bladder injuries. Intraperitoneal ruptures account for 10%-20% of major bladder injuries.
- B. Incorrect. Extraperitoneal bladder ruptures are almost always associated with pelvic fractures and are due to bladder laceration by the fracture fragments.
- C. Correct. Intraperitoneal bladder rupture is typically treated with surgical repair of the tear and diverting vesicostomy.
- D. Incorrect. Even delayed images of the bladder with CT and intravenous contrast are not adequate to exclude major bladder injury. This is because there is inadequate distension of the bladder. At least 300 ml of fluid is required to adequately distend the bladder and evaluate for extravasation.

Reference:

None

3. Concerning gonadal vein thrombosis, which one is TRUE?
- A. **Most common on the right side in post partum women**
 - B. Best study for diagnosis is excretory urography
 - C. Usually treated surgically
 - D. Commonly seen in diabetic males

Rationale:

- A. Correct. Gonadal vein thrombosis is in the differential for cause of fever in post partum woman.
- B. Incorrect. CT or MR are most sensitive in detection of gonadal vein thrombosis. The diagnosis may also be made with US. IVU would not be expected to be helpful in this diagnosis.
- C. Incorrect. Patients are usually treated with anticoagulation and antibiotics.
- D. Incorrect. There is no association with diabetes; gonadal vein thrombosis is most commonly seen in post partum women (answer A).

Reference:

Dunnick, Sandler, Newhouse, & Amis, Textbook of Uroradiology 3rd Ed., Lipponcott, Williams and Wilkins, Philadelphia, 2001.

4. Concerning pseudodiverticula of the ureter, which one is TRUE?
- A. They represent ulcerations within a transitional cell carcinoma lesion.
 - B. They represent the site of premalignant lesions, similar to carcinoma in situ.
 - C. 40% of patients have co-existing transitional cell carcinoma.
 - D. **They warrant semi-annual investigation.**

Rationale:

- A. Incorrect. They represent intramural outpouchings from the ureter. They indicate an increased risk of transitional cell carcinoma, either in the ipsilateral ureter or in the bladder.
- B. Incorrect. They are benign, but indicate mural inflammation, thought to predispose the patient to developing malignancy.
- C. Incorrect. Up to 25% of patients with pseudodiverticula have TCC in the ipsilateral ureter or bladder.
- D. Correct. Patients require immediate work-up. If, however, they do not have transitional cell carcinoma, they need semi-annual follow-up to exclude the interval development of tumor.

Reference:

Wasserman NF et al. Ureteral pseudodiverticula: frequent association with uroepithelial malignancy. AJR 157: 69-72, 1991. Zagoria RJ, Tung GA. The Requisites: Genitourinary Radiology. Mosby St. Louis. C. 19

5. Concerning renal lymphoma, which one is TRUE?

A. **Multiple or solitary focal nodular masses are the most common form.**

Rationale:

B. It demonstrates uniform, hyperintense enhancement after IV gadolinium.

Rationale:

C. Direct extension to and involvement of the psoas muscle is more characteristic of primary renal cell carcinoma than of renal lymphoma.

Rationale:

D. Tumor thrombus commonly occurs in renal lymphoma.

Rationale:

Rationale:

A. Correct. There are 3 basic patterns of renal involvement by lymphoma: 1) direct invasion by adjacent nodal disease, 2) focal masses that may be solitary or multiple (most common), and 3) diffuse infiltration.

B. Incorrect. Renal lymphoma typically enhances minimally to a mildly heterogenous pattern.

C. Incorrect. Renal lymphoma can commonly extend to and involve the adjacent psoas muscle. This feature is rare in primary renal carcinoma.

D. Incorrect. Renal lymphoma rarely causes tumor thrombus. This is a common feature of renal carcinoma.

Reference:

Smelka RC. Abdominal-Pelvic MRI. Wiley-Liss, New York, NY. 2002

6. Concerning adrenal cortical carcinoma, which one is TRUE?
- A. It is the most common cause of an adrenal mass.
 - B. It most often displays areas of macroscopic fat.
 - C. It usually presents with
 - D. **It usually presents as a large heterogeneous soft tissue mass.**

Rationale:

- A. Incorrect. Adrenal adenoma and metastatic disease are much more common than primary adrenal cortical carcinoma.
- B. Incorrect. While fat can rarely be seen in these tumors, macroscopic fat in an adrenal lesion is almost always in a myelolipoma.
- C. Incorrect. Adrenal adenomas are more likely to present with the above characteristics.
- D. Correct. Most adrenal cortical carcinomas are > 6 cm and often have central necrosis. Calcification is seen in approximately 30% of these lesions.

Reference:

Dunnick, Sandler, Newhouse, Amis, Textbook of Uroradiology. 3rd edition. Philadelphia, PA: Lippincott Williams & Wilkins, 2001
Zagoria RJ, Tung GA, Genitourinary Radiology, The Requisites. First edition. St. Louis, MO: Mosby, 1997

7. Concerning post-transplantation lymphoproliferative disorder, which one is TRUE?
- A. **Epstein Barr virus infection is associated with the disorder.**
 - B. T1- and T2-weighted MR images reveal hyperintense areas of soft tissue centrally within the kidney.
 - C. It affects 12% of patients with solid organ transplants.
 - D. Radiation may be necessary if chemotherapy fails to involute the tumor

Rationale:

- A. Correct. Despite advances in antiviral therapy, Epstein-Barr virus-induced posttransplant lymphoproliferative disease (EBV-PTLD) continues to be a major complication after solid organ transplantation.
- B. Incorrect. MR imaging reveals hypointense tissue on both T1- and T2-weighted images. The tissue shows little enhancement with gadolinium.
- C. Incorrect. It affects 2% of patients with solid organ transplants.
- D. Incorrect. First line of therapy is reduction in the level of immunosuppression. If that fails, chemotherapy is warranted.

Reference:

Westphalen A, et al. Differential diagnosis of perinephric masses on CT and MRI: Pictorial Essay. AJR 2004 183: 1697-1702

8. You are shown a KUB (Fig 5A) and noncontrast CT scan of the abdomen (Fig 5B) in a 55 year old woman. Which one of the following is the MOST LIKELY diagnosis?
- A. Chronic glomerulonephritis
 - B. Acute cortical necrosis
 - C. **Hyperparathyroidism**
 - D. Milk-alkali syndrome



Figure 5.A

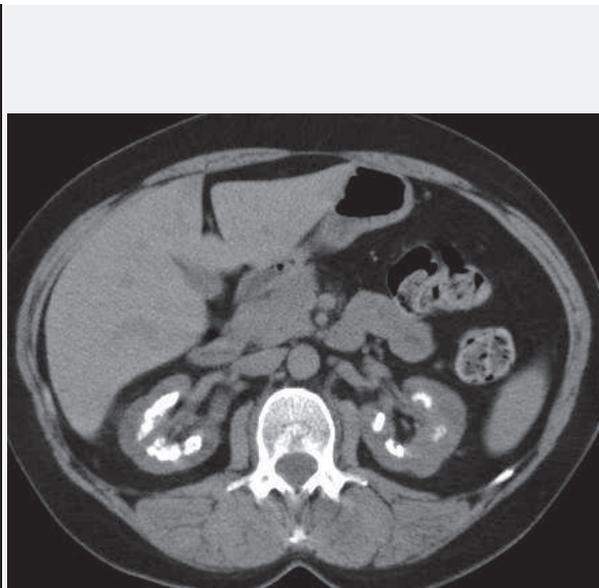


Figure 5.B

Rationale:

- A. Incorrect. Chronic glomerulonephritis is a cause of cortical nephrocalcinosis, not medullary nephrocalcinosis as is seen in this case.
- B. Incorrect. Acute cortical necrosis is a cause of cortical nephrocalcinosis, not medullary nephrocalcinosis as is seen in this case.
- C. Correct. Hyperparathyroidism is the most common cause of medullary nephrocalcinosis. Other common causes include renal tubular acidosis type I (distal type), and medullary sponge kidney.
- D. Incorrect. Although milk-alkali syndrome is known to cause medullary nephrocalcinosis, it is much less common than hyperparathyroidism, renal tubular acidosis type I (distal type), and medullary sponge kidney.

Reference:

Dunnick NR et al: Textbook of Uroradiology, 3rd Ed. Philadelphia. Lippincott, Williams & Wilkins. 178-182, 2001.
Federle et al: Diagnostic Imaging. Amirsys. Salt Lake City. III:3:52-54. 2004

9. Concerning hysterosalpingography, which of the following is TRUE?
- A. It is optimally performed in the latter half of the menstrual cycle.
 - B. **Acute pelvic inflammatory disease is a contraindication.**
 - C. A "T-shaped" hypoplastic uterus indicates prior pelvic inflammatory disease.
 - D. Hysterosalpingography is sensitive for detecting adhesions.

Rationale:

- A. Incorrect. HSGs are performed on days 7-10 of menstrual cycle, after menstrual bleeding complete.
- B. Correct. Contraindications for HSG include acute PID, active bleeding, pregnancy, and hypersensitivity to contrast.
- C. Incorrect. A T-shaped" hypoplastic uterus is seen with in utero DES exposure, and has an association with clear-cell adenocarcinoma of the vagina.
- D. Incorrect. Hysterosalpingography is insensitive for diagnosing pelvic adhesions, but if extensive adhesions are present, abnormalities may be seen, such as failure of contrast spillage from the fimbriated end of the tube may, or if contrast spills, loculations of contrast.

Reference:

Dunnick et. Al. Textbook of Uroradiology 3rd ed. Lippincott, Williams & Wilkins, Philadelphia, PA. 2001.

10. Regarding endometrioid ovarian cancer, which of the following is TRUE?
- A. It is the most common form of ovarian cancer.
 - B. **Twenty-five percent of the women have concomitant endometrial cancer.**
 - C. Fewer than 5% are bilateral.
 - D. It is much less likely to cause elevated CA-125 compared to serous tumors.

Rationale:

- A. Incorrect. It is actually the second most common form of ovarian cancer. Serous cystadenocarcinoma is the most common form. Mucinous cystadenocarcinoma is the third most common form of ovarian cancer.
- B. Correct. Thus, if you see endometrial thickening and an ovarian mass, consider endometrioid ovarian cancer. The endometrial cancer is thought to be a primary tumor rather than a metastatic focus.
- C. Incorrect. 15% are bilateral.
- D. Incorrect. It is just as likely to cause elevated CA-125.

Reference:

Kawamoto et al. Radiographics 1999. 19 (Supplement 1): S85-S102.