ANSWERS: CHAPTER 20

MATCHING

1. e
2. b
3. c
4. a
5. f
6. d

IMAGE LABELING

1A. Liver
1B. Right kidney
1C. Right adrenal gland

MULTIPLE CHOICE

1. b 6. c 11. b 16. a
2. a 7. c 12. b 17. c
3. a 8. d 13. b 18. c
4. b 9. c 14. a 19. a
5. c 10. d 15. c 20. b

FILL-IN-THE-BLANK

1. Lobulations; infants; 6 years
2. Premature; greater
3. Systolic; diastolic
4. Obstructed; tubular interstitial; vascular
5. Oligohydramnios; Potter’s; pulmonary
6. Hydronephrosis; UPJ; distal ureteral; duplication of the collecting system
7. Parenchyma; distal; bladder; urethra
8. Flaccid; dilated; thick
9. Multicystic dyplastic kidney; bilateral
10. Small; infection; vascular
11. Cysts; angiomyolipomas
12. Palpable mass; pain; fever; malaise; weight loss or hematuria or hypertension
13. 3 to 4; bilateral; renal; IVC
14. Multilocular cystic nephroma
15. Enlargement; hyperchoic; hypoechoic
16. Rhabdomyosarcoma
17. Infancy; 8 years; poorly; calcifications
18. Pheochromocytoma; hypertension; headaches; palpitations; diaphoresis
19. Large size; vascularity; second and seventh days
20. Sepsis; unilateral; fever; chills; abdominal pain

SHORT ANSWER

1. In newborns, especially neonates, the kidneys are normally more echogenic. In infants and young children the pyramids are hypoechoic and more prominent than in the adult. Renal lobulations are seen up until about 6 years of age. The renal sinus is less fat filled in infants and young children and therefore less prominent. The renal pelvis lies within the renal sinus during infancy and half of the renal pelvis is within the renal sinus in children. The renal vein is also more prominent in children.

2. With hydronephrosis, there should be recognizable renal parenchyma surrounding the dilated collecting system. Multiple cystic lesions representing the dilated calyces are seen and should be uniform in size and will communicate with the collecting system. Multicystic dysplastic kidneys demonstrate cysts of various sizes that do not communicate with each other or the collecting system. Normal parenchyma is not visualized with multicystic dysplastic kidneys.

3. The sonographer must attempt to determine the origin of the mass if possible including the organ involved. The extent of the mass must be determined. Does the mass extend beyond the organ of origin into the surrounding vasculature or are the lymph nodes involved? The presence of metastases is important to staging of the tumor. Are there metastases in the liver or is the contralateral kidney involved?

4. A Wilm’s tumor will be located in the kidney whereas a neuroblastoma arises from the adrenal gland. A distinction between the kidney and tumor should be sought. Both are typically solid masses. Wilm’s tumor typically affects children 3–4 years of age and may have cystic spaces within the mass. Wilm’s tumor may be bilateral and tend to be well circumscribed whereas neuroblastoma is more ill-defined. Neuroblastoma is more common in infants and is more likely to have calcifications. Neuroblastoma will typically displace the kidney downward and outward.

5. Adrenal hemorrhages are typically diagnosed within the first week of life and have clinical symptoms of anemia, hypotension, jaundice, and scrotal discoloration in male infants. Initially a hemorrhage is echogenic and quickly becomes more anechoic. A neuroblastoma will increase over time and will not change echogenicity as a hemorrhage will. A short-term follow-up should show change within the hemorrhage and confirm the diagnosis. Elevated urinary catecholamines can also help confirm the diagnosis of a neuroblastoma.
IMAGE EVALUATION/PATHOLOGY

1. Hydronephrosis. UPJ obstruction, distal ureteral obstructions, and duplication of the collecting system are the most common causes of obstruction in the pediatric population. Posterior urethral valves are the most common cause of urethral obstruction in boys.


3. Multicystic dysplastic kidney

4. A urinoma. The collecting system on the right side has ruptured or developed a leak due to the pressure of the hydronephrosis.

5. A ureterocele.

CASE STUDY

1. The mass is a very large solid mass with cystic spaces. The most likely diagnosis is Wilm’s tumor. Wilm’s tumor is associated with aniridia, Beckwith-Wiedemann syndrome, and hemihypertrophy.

2. An adrenal hemorrhage is the most likely diagnosis. An adrenal hemorrhage will shrink rapidly and calcifications may become visible. The mass will change from echogenic to more cystic and eventually resolve.