**Answers: Chapter 19**

**Matching**

1. e  8. u  15. n  22. m  
2. b  9. z  16. a  23. g  
3. w  10. s  17. x  24. t  
4. r  11. i  18. d  25. o  
5. c  12. y  19. j  26. h  
6. l  13. k  20. bb  27. q  

**Image Labeling**

1. forebrain  
2. midbrain  
3. hindbrain  
4. periventricular lines  
5. lateral ventricle  
6. choroid plexus  
7. frontal horn  
8. occipital horn  
9. thalam  
10. cavum septum pellucidum  
11. third ventricle  
12. frontal horn  
13. cerebellar hemisphere  
14. vermis  
15. cisterna magna  
16. internal jugular vein  
17. lymphaticovenous connection  
18. thoracic duct  
19. cisterna chyli  
20. cystic hygroma  
21. normal spine  
22. spina bifida occulta  
23. spina bifida with meningocele  
24. spina bifida with myelomeningocele  
25. anencephaly  
26. sacrococcygeal teratoma type I  
27. sacrococcygeal teratoma type II  
28. sacrococcygeal teratoma type III  
29. sacrococcygeal teratoma type IV  

**Multiple Choice**

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

**Fill-in-the-Blank**

1. second  
2. third  
3. macrocephaly  
4. lateral ventricle  

---

**Short Answer**

1. When an endovaginal transducer aligns with the anterior fontanel, placement of the examiner’s free hand on the abdomen just above the symphysis pubis helps manipulate the vertex fetal head to bring the anterior fontanel into contact with the transducer. Rotating the transducer 90° produces coronal and sagittal sections.  

2. BPD; HC; distance between the bony orbits; lens and orbit diameters, circumferences, and surfaces; transverse cerebellar diameter; and ear length.  

3. The MCA carries 80% of cerebral blood flow and is therefore a critical cranial vessel. Because it is easy to access in the transverse plane at the base of the skull, it is frequently interrogated. The MCA measurements are useful in evaluating a growth-restricted fetus. To obtain the MCA peak velocity, image the fetal head in a transverse plane during a period of fetal apnea and absent fetal movement. Use an angle of insonation less than 15°; typically, moving the transducer on the maternal abdomen helps obtain an angle of incidence closer to zero degrees. To obtain the sample, place a 2 mm pulsed Doppler gate over the vessel just as it bifurcates from the carotid siphon. Take at least three measurements using the highest as the final value. Baseline and PRF should be adjusted for accuracy. Manual calipers are recommended to avoid underestimation of true peak velocity.
4. AFP (alpha-fetoprotein) is a substance secreted by the baby. MSAFP (maternal serum alpha-fetoprotein) are detected in the mother’s blood because of diffusion through the placenta. The baby has the potential to release higher levels of the substance if certain defects occur with the baby. These defects are anencephaly, spina bifida, and other open fetal defects, such as omphalocele and gastroschisis, as well as skin disorders that increase diffusion of AFP through fetal skin.

5. Cystic hygromas are seen most frequently seen on the posterolateral neck, but are also found at the chest, axilla, and other areas. Jugular lymph sacs that fail to communicate with the venous system can enlarge as they fill with lymph and form cystic hygromas.

**IMAGE EVALUATION/PATHOLOGY**

1. Distance 1 calipers are measuring the fetal cerebellum at 19 mm, which is normal for a 19-week fetus. Distance 2 is measuring the cistern magna at 4.5 mm. This is also normal.

2. The arrow is pointing to the hyaloid artery, which extends from the ophthalmic artery located within the optic nerve within the orbit. The view is axial.

3. The open arrow points to the nose and both nostrils. The upper lip is displayed at the solid arrow. This anatomy was collected with a coronal view of the lower face.

4. This 3-D fetal image can be used to tantalize the parents, which results in bonding with their unborn child. Anatomy portrayed includes a normal appearing face with two orbital regions, anatomically correct nose, and lips free of cleft. Bilateral cheeks are normal, as is the portion of the ear that is seen. The forearm and wrist with four fingers are normal.

5. The open arrow depicts the fetal nasal bone. The closed arrow shows the maxilla. This midline profile demonstrates a normal fetal profile. The fetus is in a supine position.

6. The sagittal and multiplanar reconstructed view in the third trimester shows macroGLOSSia with protruding tongue.

7. V: single common ventricle; C: compressed cerebral cortex; T: prominent thalamus. This fetus developed alobar holoprosencephaly.

**CASE STUDY**

1. Although this is an early review of the fetal spine, no evidence is provided in the image suggesting a spinal abnormality. A thorough fetal spiral examination would include multiple sagittal views and transverse views at the (C) cervical, (T) thoracic, (L) lumbar, and (S) sacral levels. Note: Examination of the fetal head aids in diagnosis of open spina bifida due to the associated cranial abnormalities.

2. The fetus showed adequate movement during the ultrasound, but an anechoic structure was noted in the posterior brain, which was determined to be an aneurysmal vein of Galen seen at the arrow. Color Doppler demonstrates turbulent flow in the region, which supports the diagnosis.