ANSWERS: CHAPTER 29

MATCHING

1. n  8. b  15. aa  22. h
2. a  9. p  16. f  23. q
3. e  10. i  17. w  24. l
4. v  11. z  18. d  25. u
5. m  12. c  19. t  26. o
6. g  13. r  20. j  27. s
7. x  14. k  21. y

IMAGE LABELING

1. hepatitis/jaundice
2. pneumonia
3. small eyes
4. brain calcifications
5. small head
6. cataract
7. conjunctivitis
8. heart defects
9. enlarged spleen
10. skin hemorrhages
11. chorioretinitis
12. kernicterus
13. jaundice
14. hemolytic anemia
15. edema
16. hepatosplenomegaly
17. congestive heart failure
18. ischemia
19. endothelial
20. hypertension
21. proteinuria
22. edema

MULTIPLE CHOICE

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

FILL-IN-THE-BLANK

1a. placenta
1b. fetus
2a. placental barrier
3a. decreases
4a. increases
4b. reduced
5a. organogenesis
6a. particles
6b. immune
6c. placental
7a. antibiotics
8a. insufficiency
9a. echocardiography
10a. hydrocephalus
10b. microcephaly
10c. intracranial calcifications
10d. seizures
11a. toxoplasmosis
12a. anatomy
12b. peak systolic flow
13a. herpes simplex
14a. organogenesis
15a. abdominal circumference
16a. thyroxine
16b. low
17a. low
17b. congenital heart
17c. abortion
17d. behavioral
18a. antibodies
18b. red
19a. sickle cell disease
20a. oxygen

SHORT ANSWER

1. TORCH includes some of the common maternal infections associated with fetal congenital anomalies such as toxoplasmosis, other viruses (syphilis, varicella-zoster, parvovirus B19), rubella, cytomegalovirus, and herpes.

2. Maternal chickenpox infection at any time in the pregnancy exposes the fetus to a high risk of placental transmission. It is highest in the first and second trimesters. Third trimester exposure has a greater risk for varicella-zoster development during the neonatal period. Sonographic evidence of contamination of the varicella-zoster virus includes fetal demise, IUGR, abnormal positions of the hands and limbs, nonimmune hydrops, polyhydramnios, microcephaly, ventriculomegaly, and hyperechogenic hepatic foci.

3. Congenital anomalies in infants of diabetic mothers include skeletal, central nervous system, cardiac, renal, SUA, and gastrointestinal types, and early diabetes control has been found to reduce the incidence of congenital malformations and spontaneous miscarriages.

4. Gross physical retardation, central nervous system dysfunction, facial dysmorphology, including microcephaly and microphthalmia, cardiac anomalies (such as ventricular septal defect), increased risk of infections, placental abruption, stillbirth, sudden infant death, and spontaneous abortion.
5. A complaint of abdominal pain in a woman with chronic hypertension should raise the clinical suspicion of placental abruption. These patients should be carefully monitored by ultrasound. Depending on the severity of the ultrasound findings, clinical observation, bed rest, or delivery should be considered.

**IMAGE EVALUATION/PATHOLOGY**

1. Image A demonstrates an anterior placenta with umbilical cord placental insertion. (UV, umbilical vein; PL, placenta.) Image B demonstrates Doppler flow within the umbilical vein (arrow). A needle (arrows) traverses the placenta, and its tip is situated in the umbilical vein in image C. These images document a percutaneous umbilical blood sampling through an anterior placenta.

2. Spectral Doppler of the umbilical artery in image A of a 35-week fetus demonstrates diminished diastolic flow (arrows) with an elevated systolic/diastolic (S/D) ratio of 3.5. Umbilical artery Doppler in image B of another 35-week fetus demonstrates elevated S/D ratio of 3.76 due to diminished diastolic flow.

3. Varicella-zoster (chicken pox infection), a viral infection, is known to cause hyperechoic liver foci. Maternal infection occurred at 16 weeks.

4. The transverse view of the fetal head shows ventricular dilation and periventricular echogenic nodules (arrow) in image A. Image B reveals a computed tomography image (after birth) and confirms hydrocephalus and marked periventricular calcifications (arrows) common with cytomegalovirus.

5. Image A displays a transverse image of the fetal chest with pleural fluid (✩) surrounding the lungs (L) and image B displays ascites (A) at the liver (L). An intracranial mass, associated with congestive heart failure and microcephaly, is frequently seen in the fetal cranium. The neck usually shows cystic masses related to lymphatic dysplasias.

**CASE STUDY**

1. An Rh-negative female who may produce Rh antibodies affecting an Rh-positive fetus could deliver the antibodies across the placenta where they can attack the fetal red blood cells. This process potentially causes hepatosplenomegaly, immune fetal hydrops, increased S/D ratios, polyhydramnios, cardiomegaly, and umbilical vein dilatation. Serial blood tests are performed to determine maternal levels and frequency of Rh-immune globulin vaccinations.

2. Prior to performing the ultrasound examination, maternal history should be obtained. Knowledge of maternal diabetes may explain the discovery of a two-vessel cord seen in the image. Diabetics produce two-vessel cords (2VC, aka SUA) in about 6.4% of pregnancies. Various malformations occur with a SUA (single umbilical artery) including cardiac and great vessel anomalies, pulmonary hypoplasia, genitourinary tract anomalies, vertebral anomalies, talipes equinovarus (clubfoot), inguinal hernias, and polydactyly. Care must be taken to search for and document related anomalies.