MULTIPLE CHOICE

OBSTETRICS - MIXED EXAM - ANSWER KEY

1. In a monochorionic diamniotic twin pregnancy, what is the typical thickness of the inter-twin membrane?

A. Composed of placental tissue
B. Thick, composed of two amnion and two chorion layers
C. Absent
D. Thin, composed of two layers of amnion

2. The pulsatility index is defined as which of the following?

A. Peak systolic velocity divided by end-diastolic velocity
B. Peak systolic velocity minus end-diastolic velocity divided by the mean velocity
C. Peak systolic velocity minus end-diastolic velocity divided by peak systolic velocity
D. End-diastolic velocity divided by mean velocity

3. Which appearance describes the normal third ventricle on the transthalamic view?

A. Thin, slit-like anechoic space between the thalami
B. Triangular cystic space in the posterior fossa
C. Large rounded anechoic cavity replacing the thalami
D. Echogenic mass between the thalami

4. In which transducer plane of the fetal face is a cleft lip best evaluated?

A. Midline sagittal plane through the profile
B. Coronal plane through the nose and upper lip
C. Axial plane through the orbits
D. Axial plane through the cerebellum

5. In a fetus affected by trisomy 18, the first-trimester biochemistry pattern typically demonstrates which finding?

A. Elevated free beta-hCG and elevated PAPP-A
B. Elevated free beta-hCG and decreased PAPP-A
C. Decreased free beta-hCG and decreased PAPP-A
D. Normal free beta-hCG and normal PAPP-A

6. During a first-trimester transvaginal exam, you identify an intrauterine sac with no yolk sac at MSD 6 mm. What is the most appropriate next step?

A. Diagnose anembryonic pregnancy
B. Recommend follow-up sonography in approximately one to two weeks
C. Diagnose ectopic pregnancy
D. Discharge with no further imaging

7. An embryo measuring 10 mm in crown-rump length without cardiac activity is best characterized as which of the following?

A. Embryonic demise
B. Normal early pregnancy
C. Threatened abortion
D. Anembryonic pregnancy

8. Two yolk sacs within a single gestational sac in the first trimester indicates which type of twinning?

A. Monochorionic monoamniotic
B. Conjoined twins
C. Dichorionic diamniotic
D. Monochorionic diamniotic

9. Which of the following is a recognized cause of polyhydramnios?

A. Fetal duodenal atresia
B. Severe placental insufficiency
C. Premature rupture of membranes
D. Bilateral renal agenesis

10. Which estimated fetal weight percentile is the most widely used sonographic threshold for diagnosing a small-for-gestational-age or growth-restricted fetus?

A. Below the 3rd percentile for gestational age
B. Below the 10th percentile for gestational age
C. Below the 50th percentile for gestational age
D. Below the 25th percentile for gestational age

11. Isolated choroid plexus cysts in an otherwise normal-appearing fetus most often:

A. Indicate alobar holoprosencephaly
B. Progress to hydrocephalus by the third trimester
C. Resolve spontaneously by approximately 26 to 28 weeks gestation
D. Cause obstructive ventriculomegaly

12. Which of the following soft markers is most strongly associated with trisomy 21 when identified in isolation during the second trimester?

A. Echogenic intracardiac focus
B. Thickened nuchal fold
C. Mild pyelectasis
D. Single umbilical artery

13. A nonviable pregnancy that is retained in the uterus without bleeding or cervical dilation is best termed which of the following?

A. Complete abortion
B. Missed abortion
C. Inevitable abortion
D. Threatened abortion

14. How many vessels are present in a normal umbilical cord?

A. One artery and two veins
B. Three arteries
C. One artery and one vein
D. Two arteries and one vein

15. Absent or reversed end-diastolic flow in the umbilical artery is most concerning for:

A. Severe placental insufficiency with high risk of fetal compromise
B. Normal late-third-trimester physiology
C. Fetal macrosomia
D. Twin-to-twin transfusion in the recipient twin

16. In the first trimester, which measurement is the most accurate for estimating gestational age?

A. Crown-rump length
B. Femur length
C. Mean sac diameter
D. Biparietal diameter

17. A grade III placenta identified well before term is most concerning for:

A. Placenta accreta
B. Vasa previa
C. Normal finding at all gestational ages
D. Premature placental maturation, which may be associated with intrauterine growth restriction

18. On the transventricular axial view of the fetal brain, the lateral ventricle is measured at the level of the atrium. Which structure normally fills the atrium and provides the echogenic reference for that measurement?

A. Cavum septi pellucidi
B. Choroid plexus
C. Cerebellar vermis
D. Thalamus

19. Absence of the fetal nasal bone on first-trimester sonography is most associated with which condition?

A. Hydrocephalus
B. Trisomy 21
C. Anencephaly
D. Spina bifida

20. Atrioventricular canal defect is most strongly associated with which aneuploidy?

A. Trisomy 21
B. Trisomy 18
C. Trisomy 13
D. Turner syndrome

21. A fetus has a lateral ventricular atrial diameter of 12 mm. The most appropriate next step is to:

A. Recommend immediate delivery
B. Perform a detailed anatomic survey and consider follow-up sonography and genetic counseling
C. Reassure the patient that this is a normal finding
D. Recommend in-utero shunt placement

22. Which imaging approach is considered the most accurate method to evaluate the relationship of the placental edge to the internal cervical os?

A. Transabdominal ultrasound with an empty bladder
B. Transvaginal ultrasound
C. Transabdominal ultrasound with a full bladder
D. Translabial ultrasound

23. A clenched fetal hand with overlapping index finger over the third finger is most characteristic of which aneuploidy?

A. Triploidy
B. Trisomy 18
C. Trisomy 13
D. Trisomy 21

24. Which fluid collection set is required to establish a sonographic diagnosis of hydrops fetalis?

A. Polyhydramnios alone
B. Placental thickening alone
C. Abnormal fluid in two or more fetal compartments, such as ascites, pleural effusion, pericardial effusion, or skin edema
D. Isolated ascites alone

25. Which view is used to confirm the presence of two umbilical arteries when a single umbilical artery is suspected?

A. Sagittal view of the spine with color Doppler
B. Transcerebellar view with color Doppler
C. Four-chamber view of the heart with color Doppler
D. Transverse view of the fetal bladder with color Doppler showing arteries on each side

26. Which structure separates the fetal thorax from the abdomen and is documented as part of a normal anatomy survey?

A. Falciform ligament
B. Pleura
C. Peritoneum
D. Diaphragm

27. Which finding is required to confirm a normal cord insertion site at the fetal abdomen?

A. Cord entering to the right of midline with herniated liver
B. Cord entering at the level of the bladder
C. Cord entering a sac of bowel outside the abdominal wall
D. Cord entering the anterior abdominal wall with no surrounding mass

28. Which of the following is a recognized cause of oligohydramnios?

A. Duodenal atresia
B. Anencephaly
C. Bilateral renal agenesis
D. Maternal poorly controlled diabetes

29. Reversed end-diastolic flow in the umbilical artery is most appropriately considered which of the following?

A. A specific marker for chromosomal aneuploidy
B. An ominous Doppler finding strongly associated with adverse perinatal outcome
C. A normal finding after 34 weeks gestation
D. An indication for routine follow-up in two weeks

30. A sonographer documents a normal four-chamber view. Which of the following is an expected finding?

A. Right ventricle is markedly smaller than the left
B. Heart occupies more than half of the thoracic area
C. Apex of the heart points to the fetal left at approximately 45 degrees
D. Apex of the heart points to the fetal right

31. Which estimated fetal weight percentile is most commonly used as the sonographic threshold for large for gestational age (LGA)?

A. Above the 90th percentile for gestational age
B. Above the 97th percentile for gestational age
C. Above the 75th percentile for gestational age
D. Above the 50th percentile for gestational age

32. Hydranencephaly is best characterized by:

A. Near-total destruction of the cerebral hemispheres replaced by CSF, with an intact falx and preserved brainstem
B. Absent cranial vault above the orbits
C. Failure of cleavage of the prosencephalon with fused thalami
D. Cystic posterior fossa with vermian agenesis

33. By what mean sac diameter should a yolk sac normally be visible with transvaginal sonography?

A. 16 mm
B. 8 mm
C. 5 mm
D. 25 mm

34. In the biophysical profile, low amniotic fluid volume is thought to reflect which physiologic mechanism?

A. Increased fetal renal blood flow and diuresis
B. Maternal dehydration causing reduced placental perfusion only
C. Acute fetal hypercapnia stimulating swallowing
D. Chronic redistribution of fetal cardiac output away from the kidneys with decreased fetal urine output

35. A myelomeningocele differs from a meningocele in that a myelomeningocele:

A. Occurs only in the cervical spine
B. Contains neural elements within the herniated sac
C. Is always covered by skin
D. Contains only meninges and CSF

36. The discriminatory zone of beta-hCG is the level above which an intrauterine gestational sac should be visualized by transvaginal sonography. Which value most closely represents this threshold?

A. 6500 mIU/mL
B. 500 mIU/mL
C. 2000 mIU/mL
D. 1000 mIU/mL

37. The cerebroplacental ratio is calculated as which of the following?

A. Middle cerebral artery pulsatility index divided by umbilical artery pulsatility index
B. Ductus venosus a-wave velocity divided by umbilical artery S/D ratio
C. Middle cerebral artery peak systolic velocity divided by umbilical vein velocity
D. Umbilical artery pulsatility index divided by middle cerebral artery pulsatility index

38. A sonographic finding of fused thalami with a single midline ventricle is most consistent with:

A. Hydranencephaly
B. Dandy-Walker malformation
C. Agenesis of the corpus callosum
D. Alobar holoprosencephaly

39. The biparietal diameter is measured from which calvarial points?

A. Outer edge to outer edge of the parietal bones
B. Inner edge to inner edge of the parietal bones
C. Outer edge of the proximal parietal bone to the inner edge of the distal parietal bone
D. Mid-bone to mid-bone of the parietal bones

40. Which of the following is NOT part of the classic Dandy-Walker malformation?

A. Inward scalloping of the frontal bones
B. Cystic dilation of the fourth ventricle
C. Enlargement of the posterior fossa
D. Vermian agenesis or hypoplasia

41. Open spina bifida is most reliably detected on second-trimester sonography by which approach?

A. Identification of cranial signs (lemon and banana) plus direct visualization of the spinal defect
B. Doppler interrogation of the umbilical artery
C. Measurement of the biparietal diameter alone
D. Measurement of the cisterna magna alone

42. Which finding within the endometrial cavity in a patient with an ectopic pregnancy can be mistaken for a true gestational sac?

A. Decidual reaction without a sac
B. Pseudogestational sac
C. Subchorionic hemorrhage
D. Double decidual sac sign

43. A third-trimester fetus has two fluid-filled structures in the upper abdomen connected at the pylorus, in the absence of distal bowel dilation. Which diagnosis best fits this double-bubble sign?

A. Duodenal atresia
B. Jejunal atresia
C. Meconium ileus
D. Hirschsprung disease

44. Which of the following is the most appropriate use of late third-trimester biometry?

A. To diagnose chromosomal abnormalities
B. To reassign the estimated due date
C. To assess fetal growth and estimate fetal weight against an established due date
D. To estimate gestational age with the same accuracy as a first-trimester scan

45. The normal Doppler waveform of the ductus venosus contains which characteristic components?

A. A continuous nonpulsatile waveform similar to the umbilical vein
B. A reversed a-wave throughout the cardiac cycle
C. A systolic (S) peak, a diastolic (D) peak, and a forward a-wave during atrial contraction
D. A single sharp systolic spike with no diastolic flow

46. By the four-quadrant AFI method, polyhydramnios is most commonly defined as:

A. AFI greater than 10 cm
B. AFI greater than 18 cm
C. AFI greater than 24 cm
D. AFI greater than 15 cm

47. Which of the following is the most characteristic central nervous system finding of trisomy 18?

A. Agenesis of the corpus callosum
B. Choroid plexus cyst
C. Holoprosencephaly
D. Dandy-Walker malformation

48. The cisterna magna is best evaluated in which sonographic plane and what is its normal upper limit?

A. Transcerebellar (suboccipitobregmatic) plane, upper limit 10 mm
B. Transthalamic plane, upper limit 10 mm
C. Transventricular plane, upper limit 5 mm
D. Coronal plane through the orbits, upper limit 15 mm

49. Velamentous cord insertion is best described as:

A. Insertion of the cord into an accessory placental lobe

B. Insertion of the cord within 2 cm of the placental edge
C. Insertion of the umbilical cord into the fetal membranes away from the placental edge, with vessels running unprotected through the membranes to the placenta
D. Insertion of the cord directly into the center of the placental disc

50. A fetal kidney is replaced by multiple non-communicating cysts of varying size, with no identifiable renal parenchyma between them and a normal contralateral kidney. Which diagnosis is most consistent?

A. Multicystic dysplastic kidney
B. Renal agenesis
C. Autosomal recessive polycystic kidney disease
D. Severe hydronephrosis from ureteropelvic junction obstruction