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### Fetal therapy - Multiple choice questions vol. 58

1. Concerning prenatal diagnosis and prognosis of congenital lower urinary tract obstruction:

- a) Prenatal ultrasonography can differentiate between congenital obstructive uropathy and non-obstructive causes
- b) The majority of first trimester megacystis resolve spontaneously if the longitudinal bladder length is between 7 and 15 mm together with a normal karyotype
- c) Oligohydramnios can be used to predict postnatal renal impairment
- d) Renal cortical appearance can be used to predict postnatal renal impairment
- e) A first urine sample from vesicocentesis reflects in-utero renal function

2. Further concerning prenatal diagnosis and prognosis of congenital lower urinary tract obstruction:

- a) The sensitivity of prenatal ultrasonography in identifying congenital obstructive uropathy is around 50%
- b) Around one quarter of prenatal cases suspicious of LUTO on ultrasound are normal at birth
- c) The commonest reclassification abnormality at birth from ultrasound diagnosis is renal reflux
- d) A second urinary sample from vesicocentesis usually means chronic urinary collection from the upper urinary tract
- e) A third urine sample from vesicocentesis should be fresh urine excreted by the fetal kidney

3. Concerning the use of fetal therapy in congenital lower urinary tract obstruction:

- a) Vesico-amniotic shunts can offer additional diagnostic information compared with fetal cystoscopy
- b) Vesico-amniotic shunts allow physiological drainage of fetal urine and preserve bladder function
- c) Fetal cystoscopy can treat underlying causes of congenital obstructive uropathy
- d) Fetal therapy can improve perinatal survival and prevent postnatal renal failure
- e) Complications from fetal cystoscopy can be reduced by using a curved sheath

4. The following is/are true regarding open MMC closure:

- a) Fetal criteria consistent with being a candidate for consideration would be a S2 lesion level, hindbrain herniation, bilateral talipes
- b) Fetal criteria consistent with being a candidate for consideration would be a L3 lesion level, no hindbrain herniation, bilateral ventriculomegaly

- c) Fetal criteria consistent with being a candidate for consideration would be a L2 lesion level, hindbrain herniation, bilateral ventriculomegaly
- d) Subsequent pregnancy management after open fMMC closure includes repeat Caesarean delivery at 37 weeks
- e) Subsequent pregnancy management after open fMMC closure includes sonographic monitoring of the hysterotomy site

5. Open fetal MMC closure is associated with which of the following?

- a) Decreased subsequent need for shunting
- b) Reversal of hindbrain herniation
- c) Improved neurologic function
- d) Reduced rates of premature delivery
- e) Increased rates of chorioamnionitis

6. What could be physiological advantages which support prenatal stem cell therapy?

- a) Small body size of the fetus allowing reduced cell dose per kilo
- b) Fetal circulation with open foramen ovale and ductus arteriosus
- c) Anatomical compartments for homing of stem cells
- d) Relatively naïve immune system
- e) Sterile environment

7. What could be potential risks at intrauterine transplantations?

- a) Puncture of maternal organs
- b) Bleedings from puncture site in the fetus
- c) Immunization of the mother
- d) Immunization of the fetus
- e) Immunization of a sibling

8. Which of the following is/are rationale(s) for combining gene and in-utero stem cell therapy?

- a) To avoid an immune response associated with allogenic stem cells
- b) So that stem cells can be retrieved from easily available fetal sources such as amniotic fluid
- c) Ex-vivo manipulation of stem cells for gene therapy reduces the risk of germ cell transduction
- d) Ex-vivo manipulation of stem cells for gene therapy reduces the risk to the mother
- e) Fetal stem cells are more prone for gene therapy than adult stem cells.

9. The following statement(s) is/are true about prenatal assessment in CDH:

- a) CDH prenatal assessment should include advanced imaging and advanced genetic testing.
- b) A normal karyotype result is indicative of a non-genetic cause of the disorder
- c) Severity stratification is based on the isolated nature of the defect, side of the lesion, lung size and liver herniation
- d) The most accurate and reproducible method to measure the LHR is by tracing the lung area
- e) Liver herniation is a good predictor of outcome in right sided CDH

10. Further regarding CDH which of the following is/are true?

- a) In about 20% of cases an associated anomaly that was missed at first scan was detected at an expert centre
- b) Genetic testing is by micro-array

- c) Karyotyping will identify approximately 50% of CDH cases
- d) 9–10% of cases with normal karyotype have copy number of variants (CNVs)
- e) Almost all cases of RCDH have liver herniation

11. The following statement(s) is/are true about Fetoscopic Endoluminal Tracheal Occlusion (FETO):

- a) FETO should be offered as a treatment in cases of CDH
- b) Prenatal balloon removal is recommended
- c) FETO does not increase the risk of premature rupture of membranes
- d) Tracheomegaly can occur in a patient following FETO
- e) FETO can be performed under local anesthesia

12. The following further statement(s) is/are true about Fetoscopic Endoluminal Tracheal Occlusion (FETO):

- a) Prenatal balloon removal is associated with greater survival
- b) Prenatal balloon removal is associated with less morbidity
- c) Prenatal balloon removal is associated with less unplanned, emergency balloon retrieval procedures
- d) Prenatal balloon removal is associated with higher return rates to the referring tertiary center for delivery
- e) Large series of balloon removals in FETO centers have demonstrated <1% mortality rates

13. Neck and face tumours: which of the following is/are true?

- a) Survival at birth with EXIT delivery in case of neck tumours with airways compromise is 75–100%.
- b) Maternal risks in EXIT delivery are minimal.
- c) Fetoscopic intubation can be attempted to avoid maternal risks during an EXIT procedure.
- d) Large teratomas generally require postnatal surgery.
- e) Epignathus generally requires postnatal surgery.

14. Lung lesions: Congenital cystic airways malformations (CCAM) and broncho-pulmonary sequestrations (BPS): which of the following is/are true?

- a) CCAM typically continuously grows until the end of the pregnancy.
- b) BPS typically continuously grows until the end of the pregnancy.
- c) CCAM and BPS can grow rapidly and cause pleural effusions or hydrops.
- d) Macrocystic CCAM can be treated with steroids alone.
- e) Open fetal surgery for CCAM and BPS is almost obsolete

15. Fetal sacrococcygeal teratoma (SCT): which of the following is/are true?

- a) SCT is the most common congenital tumor.
- b) SCT is more frequent in females
- c) Lung and liver metastases can often be detected prenatally in SCT.
- d) Tumor size is an indicator of complication risks.
- e) High cardiac output is a predictor of cardiac failure and hydrops

16. The proven benefits of successful mid-trimester treatment of fetal aortic stenosis include which of the following?

- a) Left ventricular growth
- b) Increased forward flow through the aortic valve
- c) Reduction in left ventricular loading pressure
- d) Increased mitral valve filling time
- e) Resolution of fetal hydrops

17. Fetal aortic stenosis:

- a) Is often detected at prenatal screening
- b) Is characterized by a bicuspid aortic valve
- c) Includes mitral valve and left ventricular disease
- d) Is successfully treated by fetal valvuloplasty
- e) May progress to hypoplastic left heart syndrome

18. Outcome of babies born following a diagnosis of fetal left heart obstruction includes:

- a) Babies with prenatal detection of left heart obstruction tend to have lower mortality than those presenting postnatally
- b) A biventricular circulation is seen in childhood in about a third of fetuses with aortic stenosis, whether or not fetal valvuloplasty has been performed.
- c) Perinatal mortality approaches 30% in babies with HLHS and restrictive atrial septum
- d) Neonatal pulmonary hypertension may occur secondary to a restrictive atrial septum and left ventricular endocardial fibroelastosis
- e) Babies born with aortic stenosis and a good left ventricle have mortality below 5% at neonatal valvuloplasty

19. Which features of primary pleural effusions should prompt consideration for in-utero intervention -with pleuro-amniotic shunt?

- a) Unilateral pleural effusion with significant mediastinal shift
- b) Unilateral pleural effusion without significant mediastinal shift
- c) Fetal hydrops with predominant accumulation of fluid in the thoracic compartments and upper body wall oedema
- d) Rapidly progressive bilateral pleural effusions with new polyhydramnios
- e) Slowly progressive bilateral pleural effusions with normal liquor volume

20. Regarding overall prognosis of prenatally diagnosed primary pleural effusions, which of the following statements is/are true?

- a) Pleural effusions in association with hydrops, structural malformations and genetic abnormalities carry an overall worse prognosis than isolated pleural effusions.
- b) The risk of pulmonary hypoplasia can be accurately predicted by ultrasound prenatally in fetuses with primary pleural effusions
- c) The risk of pulmonary hypoplasia can be accurately predicted by magnetic resonance imaging prenatally in fetuses with primary pleural effusions
- d) Perinatal survival is generally worse among hydropic fetuses compared to non-hydropic fetuses even with pleuroamniotic shunting
- e) Prognosis is worse among fetuses with persistent hydrops despite pleuroamniotic shunting and may suggest increased risk of pulmonary hypoplasia and the possibility of an additional underlying genetic disorder

21. With regards to peripartum management of fetal pleural effusions which of the following statement(s) is/are true?

- a) Peripartum thoracocentesis may be considered with large pleural effusions to facilitate neonatal resuscitation
- b) Caesarean section is indicated for primary pleural effusions to improve neonatal outcomes.
- c) Delivery may occur in any hospital setting
- d) Neonatal and paediatric support is not absolutely necessary at the time of delivery
- e) Pleuro-amniotic shunts should be clamped after the first 24 hours of life

22. The correct measurement technique for the peak velocity of systolic blood flow in the middle cerebral artery (MCA-PSV) requires which of the following?

- a) A sagittal section of the brain demonstrating the corpus callosum
- b) Sampling the MCA in its outer third
- c) An angle of insonation  $>30^\circ$
- d) An angle of insonation as close as possible to  $0^\circ$
- e) A coronal section of the brain demonstrating the cerebellum

23. Which is/are risk factors for complicated intravascular intrauterine transfusion?

- a) Needle size
- b) Arterial puncture
- c) Use of fetal paralysis
- d) Needling of a free loop of cord
- e) Venous puncture

24. The live birth rate of fetal anaemia treated with intrauterine transfusions in recent series is which of the following?

- a) Less than 20%
- b) 30%
- c) 50%
- d) 60%
- e) More than 90%

25. The “Solomon” method represents a modified laser technique for TTTS treatment. Which of the following statement(s) is/are true?

- a) This technique has been developed only for posterior placentas
- b) A randomized controlled trial showed a significant reduction in perinatal mortality using the Solomon technique in comparison to the standard selective laser method
- c) After coagulation of all vascular anastomoses a thin laser-line from one edge to the other edge of the placenta is drawn connecting all individual coagulation sites
- d) An association between the Solomon technique and abruptio placenta has not been described
- e) Recurrent TTTS and post laser TAPS are absent following the Solomon technique

26. In evaluating MC twin pregnancies with TTTS and research in this field which of the following statements is/are true?

- a) TTTS occurs in approximately 10–15% of all MC twin pregnancies and represents a severe complication.
- b) Fetoscopic laser treatment is the first line treatment in severe TTTS.

- c) High volume fetal medicine centres are able to achieve 70% double twin survival and at least one surviving twin in >90% of the cases after fetoscopic laser treatment.
- d) There is progress in the vast majority of stage I cases and amnio-reduction is the optimal evidence based therapy.
- e) High focused ultrasound has been used in pregnant sheep to close placental vessels non-invasively.

27. Women carrying a MC pregnancy should be informed about which of the following?

- a) TTTS may be the reason if the mother-to-be feels a remarkable and rapid increase of her abdominal size.
- b) Every MC pregnancy should be evaluated at least once every 2 weeks by ultrasound starting from 16 weeks of gestation.
- c) TTTS is common in mono-amniotic twin pregnancies.
- d) Prematurity is still a serious complication following TTTS laser treatment and around 10% of surviving twins show severe neurodevelopment impairment in long-term follow-up studies.
- e) The mean gestational age at delivery after laser therapy is 32–34 weeks of gestation.

28. With regards to possible implementation of population-based screening for Fetal and neonatal alloimmune thrombocytopenia (FNAIT), which option would lead to the most successful reduction of bleeding complications in fetuses and neonates due to FNAIT?

- a) Screening all mothers for platelet antibodies 6 weeks after birth of their first child
- b) Screening all pregnant women for HPA-type at 27 weeks' gestation
- c) Screening all pregnant women for alloantibodies against platelets in the first trimester
- d) Screening all pregnant women for HPA-type in the first trimester
- e) Screening all couples considering pregnancy for HPA-incompatibility

29. The human platelet antigen that is most frequently involved in FNAIT is HPA-1a, which is carried by integrin B3. Besides its presence on platelets in glycoprotein complex  $\alpha 2\beta B3$ , the integrin B3 can form a complex with  $\alpha V$  as well. Which consequences(s) might this have for the clinical features in FNAIT?

- a) Spontaneous miscarriages
- b) Low birth weight
- c) Intrauterine infection
- d) Impaired angiogenesis
- e) Fetal bone fractures

30. Preventive treatment of platelet allo-immunization in pregnancy is universally done using maternal IVIG in weekly doses. Which of the following treatment protocol(s) is/are used in clinical practice?

- a) 1.0 mg per kg maternal weight
- b) 500 mg per kg maternal weight
- c) 2 g per kg maternal weight
- d) 1.0 g per kg estimated fetal weight
- e) 1.0 g per kg maternal weight