

This section is designed to test your knowledge of selected topics in this issue of the journal. The correct answers are given at the foot of the page.

# Self-assessment

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## SINGLE BEST ANSWER

**1** A 42-year-old 18 weeks pregnant lady presents with chest pain. She is a heavy smoker and she is a known hypertensive. There are widespread ECG changes with ST elevation and T inversions. Troponin is significantly raised. Which of the following are true about her diagnosis and management?

- A.  Spontaneous coronary artery dissection is rare in pregnancy
- B.  Maternal mortality after an acute coronary syndrome is estimated at less than 1%
- C.  Thrombolysis is an absolute contraindication
- D.  Primary percutaneous coronary intervention (PCI) using drug eluting stents can be offered during pregnancy
- E.  Angiotensin receptor blockers may be considered for further management

**2** A 30-year-old lady is having an elective caesarean section for placenta accreta. She has lost about 2.5 litres of blood and bleeding is ongoing. A massive obstetric haemorrhage protocol has been triggered. Which of the following statements is true about the management and outcome of this lady?

- A.  There is some evidence that comprehensive obstetric haemorrhage treatment protocols may lead to reductions in the incidence of severe post partum haemorrhage and thus morbidity
- B.  Point-of-care testing of haemoglobin values are no better than laboratory based tests in the accurate assessment of the deficit phase of coagulation cascade
- C.  Tranexamic acid does not reduce the incidence of death due to bleeding
- D.  During ongoing PPH, a plasma fibrinogen level of greater than 3 g/l should be maintained
- E.  There is statistical significance in the overall reduction in donor blood transfusion associated with the routine use of cell salvage during caesarean section

## MULTIPLE CHOICE QUESTIONS

**3** Post-dural puncture headache in the parturient  
Which of the following are recommended in the management of post-dural puncture headache?

- A.  Oxycodone
- B.  Theophyllines
- C.  Gabapentinoids
- D.  Caffeine
- E.  Steroids

**4** Regional anaesthesia for caesarean section and what to do if it fails

Which of the following are absolute contraindications for regional anaesthesia?

- A.  Raised intracranial pressure
- B.  Previous spinal surgery with metalwork
- C.  Gross spinal deformity
- D.  Hypovolaemic shock
- E.  Recent low molecular weight heparin administration

**5** Obstetric emergencies

Which of the following statements regarding the pathophysiology of amniotic fluid embolism are true?

- A.  Amniotic fluid embolism occurs only during labour
- B.  Amniotic fluid entering the maternal circulation initiates a true embolic process
- C.  Increased maternal age is a risk factor
- D.  Overall mortality is about 60%
- E.  Rapid onset of disseminated intravascular coagulation should be anticipated

**6** Assessment of the fetus before and during labour

Which of the following are true about the uses and risks of fetal scalp blood sampling (FSBS)?

- A.  FSBS is used to identify which fetuses with a pathological fetal heart rate trace are genuinely compromised
- B.  If the pH is 7.21–7.24 then the FSBS procedure should be repeated within 60 minutes if the CTG remains pathological
- C.  The procedure of performing the FSBS may increase the rate of operative delivery
- D.  FSBS is contraindicated when there is a possibility of fetal bleeding disorder
- E.  FSBS increases the need for neonatal resuscitation

## ANSWERS

**1. Correct answer: D.** Pregnancy increases the risk of acute myocardial infarction by 3–4 fold, with women over 40 years old being at 30 times the risk of women under 20 years old. As the average maternal age continues to increase, the number of pregnant women at risk of an ischaemic event will also increase.

Acute coronary syndromes (ACS) are estimated to occur at 3–6 per 100,000 deliveries and are related to risk factors such as smoking, hypertension, hyperlipidaemia, diabetes and a positive family history.

Spontaneous coronary artery dissection is more common in pregnancy, usually occurring in the peripartum period. Maternal mortality after an ACS is estimated at 5–10%, which has improved with the increased availability of primary percutaneous coronary intervention (PCI).

The diagnostic criteria of an ACS are similar to those of non-pregnant patients. There must be a low threshold for further investigation of parturients and post-partum women that present with chest pain. A history of chest pain, ECG changes and troponin rise are the hallmarks, although inverted T waves may occur in pregnancy without underlying ischaemia.

PCI is the preferred reperfusion therapy and stenting (with both bare metal and drug eluting stents) has been performed successfully during pregnancy.

Thrombolysis should only be used in life-threatening ACS where PCI is not available as tissue plasminogen activator, although not able to cross the placenta, may cause catastrophic bleeding at the placental site.

Low-dose aspirin and  $\beta$ -blockers are safe to use in pregnancy. Angiotensin converting enzyme inhibitors, angiotensin receptor blockers and renin inhibitors are contraindicated in pregnancy. If clopidogrel is indicated it should be used for the shortest duration possible. Breastfeeding is not recommended in mothers taking antiplatelet therapy (other than low-dose aspirin).

**2. Correct answer: A.** Early involvement of appropriate senior staff (including the anaesthetic team and relevant clinicians) is fundamental to the management of PPH, especially those who are at risk of abnormal placentation. There is some evidence that intensive educational programmes, comprehensive obstetric haemorrhage treatment protocols and post-event team review may individually or in combination lead to reductions in the incidence of severe PPH and thus morbidity. More appropriate administration of red cells, blood components and coagulation factors may be guided by point-of-care testing of haemoglobin values, e.g. Haemocue, and thromboelastography (TEG) or thromboelastometry (ROTEM). Evidence has stated that the use of such tests have an increased sensitivity in identifying deficits in the coagulation cascade when compared to laboratory based tests and an increase in accurate assessment of the deficit phase of coagulation cascade. Tranexamic acid is a synthetic derivative of the amino acid lysine. It is an anti-fibrinolytic agent that competitively inhibits the activation of plasminogen to plasmin, which causes fibrin degradation. Tranexamic acid reduced death due to bleeding in women according to the WOMAN Trial Collaborators. The risk of serious adverse events is minimal. Fibrinogen is a glycoprotein that is converted to fibrin and subsequently a blood clot. During ongoing PPH, a plasma fibrinogen level of greater than 2 g/l should be maintained with the use of cryoprecipitate which contains fibrinogen, von Willebrand factor, factor VIII, factor XIII and fibronectin.

Intraoperative cell salvage (IOCS) has been endorsed by several authoritative bodies including CEMACE, Obstetric Anaesthetists' Association and NICE guidelines. It is considered as a clinically effective and cost-effective means of providing autologous red cells. The NICE guideline addressing intraoperative blood cell salvage in obstetrics also acknowledges that it may also be useful when there are difficulties with cross matching. However, there was no statistical significance in the overall reduction observed in donor blood transfusion associated with the routine use of cell salvage during caesarean section in the SALVO study, a randomized controlled trial of IOCS during caesarean section in 3028 women.

**3. Correct answers: A, D.**

**4. Correct answers: A, D.**

**5. Correct Answers: C, D, E.**

**6. Correct Answers: A, C, D.**