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Renal disease and pregnancy – Multiple choice questions Vol. 57

1. Which of the following is/are true regarding women with kidney disease who are of childbearing age?

- a) They should receive counselling about parenthood options once the EGFR is < 30 ml/min/m²
- b) They should receive appropriate contraception while planning for pregnancy
- c) They are at risk of fear generated by discussions of potential adverse risks of pregnancy
- d) They may require several clinic visits to navigate decision-making regarding pregnancy
- e) They generally require a standard approach to counselling which is amenable to formulation of a clinic template

2. Shared-decision-making regarding pregnancy planning and care for women with kidney disease is which of the following?

- a) Poorly studied and therefore not useful for this high-risk cohort
- b) Is enhanced by deliberate and explicit consideration of patient perspectives and opinions
- c) Is less relevant for women with kidney disease, as the decisions regarding pregnancy will largely be determined by clinicians based on algorithms for assessing pregnancy risk, including blood pressure and pre-conception eGFR
- d) Involves a multidisciplinary approach and should include a face-to-face meeting of clinicians to discuss the case
- e) Can be limited by fragmented clinical care across sites and services

3. Mechanisms by which end-stage renal disease causes reduced fertility include which of the following?

- a) Decreased serum luteinising hormone (LH) concentration
- b) Decreased serum oestrogen concentration
- c) Increased serum prolactin concentration
- d) Syndrome of inappropriate anti-diuretic hormone secretion (SIADH)
- e) Treatment of renal disease with cyclophosphamide

4. Safe and effective contraceptive options in women on dialysis include which of the following?

- a) Condoms
- b) Combined oral contraceptive pill
- c) Progesterone implant (Nexplanon®)
- d) Intrauterine system (Mirena®)
- e) Intensive dialysis

5. In women on dialysis, a diagnosis of pre-eclampsia can be made if:

- a) Blood pressure measures >140/90 mmHg prior to dialysis after 20 weeks gestation
- b) Urine protein:creatinine ratio (PCR) is > 30mg/mmol after 20 weeks gestation
- c) There is a rise in serum creatinine in blood tests taken 12 hours apart
- d) Estimated fetal weight is < 10th centile
- e) The sFlt-1/PlGF ratio is > 85

6. Pregnancy outcomes in women on dialysis can be improved by:

- a) Increasing the number of hours on dialysis
- b) Decreasing maternal concentrations of urea
- c) Providing intensive dialysis treatment to women who start haemodialysis during pregnancy
- d) Offering planned elective Cesarean delivery to allow dialysis provision and anticoagulation of the dialysis circuit to be coordinated with delivery
- e) Deferring pregnancy until one year after successful renal transplantation

7. Which of the following is/are physiological change(s) in renal function observed in pregnancy?

- a) Rise in glomerular filtration rate
- b) Reduction in serum creatinine
- c) Reduction in proteinuria
- d) Reduction in serum urea
- e) Rise in renal plasma flow

8. Which of the following causes of AKI is/are most likely to represent renal rather than pre-renal or post-renal aetiology of renal injury?

- a) Pyelonephritis
- b) Placental abruption
- c) Hyperemesis gravidarum
- d) Renal stones
- e) Thrombotic thrombocytopenic purpura

9. Regarding fluid balance management in pregnancy-related AKI, which of the following is/are true?

- a) Fluid management aims to restore and maintain renal perfusion and limit further damage
- b) Determining the causative factors is important
- c) Liberal fluid transfusion is the first step
- d) Diet must be evaluated
- e) Dopamine is not useful for prevention and treatment of AKI

10. The statements below describe further renal physiologic changes in pregnancy (True or False):

- a) The decrease in serum creatinine pregnancy is associated with a decrease in GFR (glomerular filtration rate) and an increase in renal plasma flow.
- b) Glycosuria in pregnancy is almost always linked to the presence of gestational diabetes.
- c) A drop in serum uric acid occurs in pregnancy as a result of an increase in renal excretion.
- d) Proteinuria as high as 300 mg per day is tolerated in pregnancy and caused by loss of protein size selectivity by the glomerulus.
- e) Serum bicarbonate is decreased in pregnancy because of increased urinary loss.

11. A 25 y.o. woman is 24 hours postpartum day. She delivered at 32 weeks gestation after a failed tocolysis for pre-term labour. The patient is known for mild type 1 Von Willebrand disease and was given a first dose of DDAVP during the second stage of labour and a second dose in the immediate postpartum period to prevent postpartum hemorrhage. The patient is now 24 hours postpartum and feels generally well albeit tired. She has received an oxytocin infusion of 40 units in 1000 mL of NS. Her estimated blood loss at the time of delivery is 300 mL. On physical examination, she is cooperative and oriented but appears tired. Her vital signs taken 1 h ago are: BP 112/60, HR 84/min and afebrile. Today's blood work up shows a sodium of 127 mmol/L with a potassium of 3.5 mmol/L and a creatinine of 44 μ mol/L. The complementary work up shows: ALT: 11 U/L, total bilirubin 8 μ mol/L, plasma osmolality 265 mmol/kg, urine osmolality 600 mmol/kg. The nurse asks if the patient should receive a third dose of DDAVP as planned.

Management of this patient at this time should include which of the following?

- a) Administer $MgSO_4$ 4g IV bolus
- b) Administer 3% saline 500 mL IV bolus
- c) Restart an infusion of oxytocin 20 IU in 1000 mL of 0.9% saline.
- d) Cancel the third dose of DDAVP
- e) Put on a 1L/day fluid restriction

12. A 32 y.o. healthy primiparous women is transferred from a local birthing home for nausea and mild confusion. She was admitted at term more than 48 hours ago in labour. During her prolonged labor, the patient is experiencing substantial pain and nausea. She has no fever and her blood pressure has remained normal over the few past days. On physical examination, she is cooperative and oriented but somewhat 'slow' in answering the questions. Her vital signs on admission are: BP 120/70, HR 88/min, she is eupneic with no fever. There are no focal neurological signs and no peripheral oedema. The stat work up shows a sodium level of 122 mmol/L. Her husband confirms that she has developed the habit to drink substantially for 'health reasons' prior to this pregnancy and she has been asking for several 1L jugs of water over the past 48 hours.

The likely cause of hyponatremia in this case is which of the following?

- a) Congestive heart failure
- b) SIADH
- c) Potomania
- d) Adrenal insufficiency
- e) Nephrotic syndrome

13. A 34 year old renal transplant recipient is contemplating a pregnancy. Blood pressure is 125/76 mmHg, creatinine 99 μ mol/l and urine protein:creatinine ratio 103mg/mmol. Which of her medications should be changed before discontinuing contraception?

- a) Prednisolone 5mg daily
- b) Cefalexin 250mg nocte
- c) Mycophenolate mofetil 500mg twice daily
- d) Ramipril 5mg daily
- e) Tacrolimus 4mg twice daily

14. A 28 year old women with CKD stage 3b (estimated GFR 38ml/min/1.73m²) due to IgA nephropathy is referred for pre-pregnancy counselling. She has well treated hypertension on nifedipine and a urine protein:creatinine ratio of 45mg/mmol. Which of the following statement(s) is/are correct?

- a) It is unlikely that a pregnancy would progress beyond 34 weeks
- b) A baby is likely to born earlier than term
- c) Plans for dialysis should be made before pregnancy is considered
- d) She will require a Caesarean section if she proceeds with a pregnancy
- e) Her risk of pre-eclampsia is about 40%

15. Interpretation of kidney function in the postpartum period is challenging due to residual physiological adaptations to pregnancy. The following statement(s) is/are true about postpartum assessment of kidney function in women with chronic kidney disease:

- a) Normal values of serum creatinine are expected in the postpartum period after a return to pre-pregnancy values towards the end of the third trimester
- b) Women with moderate to severe renal impairment are more likely to have an adverse renal prognosis in the post-partum period
- c) Residual hydronephrosis is likely to be visible on ultrasound scan.
- d) Quantification of proteinuria is useful to diagnose renal impairment in the early postpartum period (<6 weeks)
- e) Although inaccurate in pregnancy, eGFR can be used to assess kidney function from six weeks postpartum

16. Women with CKD were previously told to avoid pregnancy because of the risk of a poor pregnancy outcome and long-term loss of kidney function. The following statement(s) is/are true:

- a) Women with moderate to severe CKD have diminished renal adaptation to pregnancy
- b) Women with moderate to severe CKD have accelerated decline in renal function during and after pregnancy
- c) Women with serum creatinine greater than or equal to 100 µmol/l have an inability to adapt to increased circulatory volume and renal filtration increasing the risk of pregnancy complications including pre-eclampsia and pre-term delivery
- d) Women with known CKD who demonstrate no deterioration in kidney function in pregnancy are still at risk of pregnancy related deterioration more than 6 months postpartum
- e) Greater urinary protein excretion in pregnancy is associated with accelerated reduction in eGFR postnatally

17. Prescribing in the postnatal period warrants caution due to the high risk of acute kidney injury and the need to consider transfer of medications to the neonate through breastmilk in women who chose to breastfeed. The following statement(s) is/are true:

- a) Methylodopa should be discontinued within 48 hours postpartum
- b) ACE-I are contraindicated in breastfeeding mothers
- c) Angiotensin receptor II antagonists are contraindicated in breastfeeding mothers
- d) Tacrolimus and ciclosporin should be avoided in the postpartum period
- e) Mycophenolate mofetil should be recommenced in women with severe renal relapse in the postnatal period but is contraindicated in breastfeeding mothers and contraceptive counselling is essential

18. Pregnancy is a risk factor for thrombotic microangiopathies (TMA) which are most likely to occur in the later stages of pregnancy or the postpartum period. The following statement(s) is/are true:

- a) The most common occurrence of TMA in pregnancy is associated with HELLP syndrome
- b) Atypical haemolytic uremic syndrome (aHUS) is only triggered by pregnancy in women with an absence or deficiency in ADAMTS-13
- c) Eculizumab is a potential treatment of aHUS but it is only licensed for use in the postpartum period
- d) Eculizumab also renders patients susceptible to meningococcal infections
- e) Eculizumab is an alternative complement pathway inhibitor

19. What statement(s) summarising the available evidence would be appropriate to use for women with renal disease when counselling them antenatally?

- a) We do not have enough information to make any predictions about pregnancy and neonatal outcomes for your baby
- b) There is no convincing evidence that your renal function will affect your baby
- c) There is a higher chance of your baby being born below expected weight and prematurely, and this is likely to be related to how impaired your renal function is.
- d) We don't know if your kidney disease might have independent effects on your baby further on through their childhood.
- e) Your baby is likely to have a very poor outcome according to the available evidence

20. Considering what is known about pregnancy outcomes, which professionals should generally be involved throughout a pregnancy complicated by maternal renal disease?

- a) Obstetrician
- b) Nephrologist
- c) Neonatologist
- d) Paediatric nephrologist
- e) Psychologist

21. What statement(s) is/are true regarding interpreting results for women with renal disease during pregnancy?

- a) Tools to estimate GFR are likely to underestimate severity of renal disease
- b) Tools to estimate GFR are likely to overestimate severity of renal disease
- c) Tools to estimate GFR are inaccurate and should not be used
- d) There is good correlation between tools to estimate GFR and true GFR
- e) The utility of tools to estimate GFR is mainly influenced by the underlying renal disease

22. When considering an antibiotic for prescription in pregnancy which of the following is/are true?

- a) Antibiotics should be used in all infections to reduce harm to the fetus
- b) Clarithromycin shows an increased rate of cardiac malformations if used in the first trimester
- c) All penicillin based antibiotics can be used safely
- d) Tetracyclines are contraindicated in the second and third trimesters
- e) 4-amino quinolones have no evidence of harm to date

23. When prescribing to a mother who is breastfeeding.

- a) Timing of drug administration is important to minimise exposure to the newborn
- b) Drugs with long half-lives may still cause harm even if pregnancy begins after its cessation
- c) There are recognised low and high milk levels of drugs
- d) The amount of active drug/metabolite being delivered in milk is important to determine potential effects on the newborn
- e) A drug that is not absorbed or is present in small amounts in milk will not cause any adverse effects on the newborn

24. The kinetics of drug handling are altered in pregnant mothers with kidney disease. Which of the following is/are true?

- a) These can be managed by using the Cockcroft-Gault equation to estimate renal function and adjust doses accordingly
- b) Cockcroft-Gault equations use the patients weight
- c) Reduction in serum albumin will reduce the proportion of drug which is free and therefore reduce its effectiveness
- d) Drugs which have a low level of protein binding are not affected by reductions in serum albumin
- e) Relative fat increases in pregnancy can lead to reservoirs of fat soluble drugs