COMPLICATIONS OF PREGNANCY

VENOUS THROMBOSIS AND EMBOLISM IN PREGNANCY AND THE PUERPERIUM

WOMEN WITH CARDIAC CONDITIONS

AIM

- The appropriate anticoagulation of the pregnant woman with a cardiac condition.

KEY POINTS

1. Women with cardiac disease shall be managed by a multidisciplinary team consisting of:
   - An obstetric physician or a cardiologist with expertise in the management of pregnant women,
   - An obstetrician or fetal medicine specialist,
   - An obstetric anaesthetist,
   - A neonatal paediatric registrar / consultant, and
   - A midwife

2. Optimal management of the pregnant patient with congenital and acquired heart disease includes accurate diagnosis and an appreciation of the haemodynamic consequences of pregnancy on the cardiac disorder, of the cardiac disorder on the pregnant woman and of the cardiac disorder and its treatment on the baby's development and well being.

3. Because of the increased risk of thrombosis associated with pregnancy, adequate anticoagulation therapy is important for women at risk of thromboembolic events such as those with mechanical heart valves, atrial fibrillation, impaired ventricular function, or certain abnormal shunts.

4. The optimal form of anticoagulation therapy must be carefully considered for each patient and ideally, discussed before pregnancy in the context of pre conception counselling.

5. High risk women, such as those with first generation mechanical heart valves, have a significant risk of thromboembolic events and anticoagulation regimes are generally more aggressive.

6. Unfractionated (UFH) or low molecular weight heparins (LMWH) are the choice during pregnancy, and warfarin or a suitable oral alternative is safe in the post partum period. This choice varies dependent on the individual health, circumstances, and co-morbidities of the woman in collaboration with the physician and multidisciplinary team.

Warfarin, pregnancy category D, is associated with a higher rate of fetal complications, including miscarriage, stillbirth, small for gestational age and congenital malformations.

UHF, pregnancy category C, is associated with higher risk of thromboembolic events in pregnant women with mechanical heart valves. LMWH, pregnancy category C, provides more consistent anticoagulation over 24 hour period, without crossing the placenta and may...
be preferred in pregnancy\textsuperscript{11}, however is associated with maternal complications in pregnant women with mechanical heart valves, including valve thrombosis, postpartum haemorrhage, and maternal death.\textsuperscript{1,4}

7. When UFH is used, heparin induced thrombocytopenia needs consideration,\textsuperscript{12} and the platelet count should be checked\textsuperscript{8} every 6-8 weeks.

8. UFH may also cause osteopenia\textsuperscript{12}, and osteoporosis\textsuperscript{9,13}. Women receiving UFH for more than 2 weeks should also receive calcium and vitamin D\textsubscript{3}\textsuperscript{13} with serum calcium checked every 6-8 weeks.

9. Women who require therapeutic anticoagulation before pregnancy also require it during pregnancy e.g. those with mechanical heart valves, atrial fibrillation or complex intracardiac shunts.\textsuperscript{4} Women with impaired cardiac function are usually treated with prophylactic dose anticoagulation using low molecular weight heparin or UFH.

10. Low-dose aspirin (<100 mg daily) is a safe and possibly effective adjunct to LMWH in pregnant women with mechanical heart valves or an otherwise increased risk of intracardiac thrombosis.\textsuperscript{13}

11. Because of the increased risk of postpartum haemorrhage in women with heart disease who are anticoagulated, the introduction or reintroduction of warfarin should be delayed until at least 2 days postpartum, with INR checked on day 2.\textsuperscript{7} Meticulous monitoring of anticoagulation and prescription of anticoagulation medication is essential.

12. These women may require regional analgesia and or anaesthesia for labour and birth,\textsuperscript{1} therefore consultation with the anaesthetist is essential if complications related to the timing of anticoagulation are to be avoided.\textsuperscript{14}

**MANAGEMENT**

- Therapeutic anticoagulation with UFH or warfarin requires careful monitoring with APTT/INR\textsuperscript{8} and should be supervised by the Obstetric Physician, and not by junior staff.
- Prophylactic/therapeutic doses of LMWH anticoagulation do not need routine blood monitoring.\textsuperscript{7}
- The choice of which regimen to use is complex, requiring a detailed discussion with the woman to individualise her management. This is ideally performed before pregnancy, but in the event of an unplanned pregnancy should be resolved with urgency. Anticoagulation in pregnancy may take one of three forms as detailed below\textsuperscript{11}:
  - UFH or LMWH in *therapeutic* doses in the first trimester changing to warfarin in mid pregnancy, then transferring to heparin from approximately 34 weeks until postpartum.
  - UFH or LMWH in *therapeutic* doses throughout pregnancy. LMWH is safer, its pharmacodynamics more predictable, and more effective than UFH,\textsuperscript{15} so the latter is only used close to birth, in late pregnancy.
  - UFH or LMWH in *prophylactic* dosage throughout pregnancy.
REFERENCES


