Management and Investigation pathway for Suspected ACS in Pregnancy

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Introduction:

Cardiac disease remains the leading cause of maternal deaths in the UK & Ireland. The risk of Acute coronary syndrome (ACS) during pregnancy is approximately 3 to 4 times higher compared with an equivalent non-pregnant population. Pathology of ACS in pregnancy is different and pregnancy post additional challenge to investigation and management. This highlights the need for a specific investigation and management framework for this unique population to ensure timely diagnosis and treatment.

Methods:

Literature review on ACS in pregnancy was identified using the PubMed search engines for the period January 2000 to January 2021. A hand search of the reference lists of relevant articles was conducted to identify additional studies. Framework for investigating and early management of suspected ACS in Pregnancy proposed based on available evidence. Framework subsequently peer reviewed by cardiologist, obstetrician, and obstetric anaesthetist local and nationally.

Results:

For all patient with suspected or confirmed ACS, 12 lead ECG and blood troponin should be the immediate investigation. Oxygen saturation should be maintained >94%. 15 degrees left lateral tilt or manual uterine displacement for patients >20 weeks gestation to relieve aortocaval compression. 300mg aspirin should be administered. Manage pain with GTN and/ or opioid. Heart rhythm, blood pressure and O2 saturation should be monitored and in patients with ongoing symptoms, a repeated 12 lead ECG is advised. An early escalation to senior clinicians for MDT management. The priority for STEMI is to achieve coronary reperfusion. Thrombolysis should not be routinely administered. Instead, patient need immediate referral to tertiary centre for consideration of coronary angiography. For NSTEMI, early involvement of senior cardiologist is advised. For both STEMI and NSTEMI, clopidogrel and or heparin should be considered with advice from cardiologist. Patient should be transferred to an appropriate HDU/CCU/ICU setting with ongoing ECG monitoring. Ongoing foetal monitoring is required for prepartum patients. The priority is to administer treatment of ACS to patient in a timely fashion and should not be delayed for delivery. If possible, delivery should be postponed for at least 2 weeks following ACS to optimise medical treatment.

Discussion:

The framework is design to encourage timely diagnosis and treatment for a rare but unique patient population. Each patient's management should be individualised with an MDT approach.

ALL suspected / confirmed ACS

- Obtain a**12 lead ECG and blood sample for troponin** as immediate investigations
- **Check oxygen saturation** and administer oxygen if appropriate aiming for SpO2 >94%
- **Relieve aortocaval compression** if > 20 weeks gestation, by 15 degrees of left lateral tilt or manual uterine displacement. Most patients with cardiac chest pain will be more comfortable sitting up which is acceptable if not hypotensive.
- Give a single dose of **300mg aspirin** (unless known allergy)
- Manage pain with **GTN and/or opioid**, along with an antiemetic
- Patients should be **monitored for heart rhythm, blood pressure and O2 saturation**. In patients with ongoing symptoms **a 12 lead ECG should be repeated**.
- **Escalate early to senior clinicians** including a consultant cardiologist, obstetrician, anaesthetist and neonatologist for multidisciplinary decision making.

STEMI

- Patients presenting with symptoms compatible with myocardial ischaemia, and **new ST-segment elevation in 2 contiguous leads or new left bundle branch block** with an ischaemic repolarisation pattern.
- The priority is to achieve coronary reperfusion as quickly as possible.
- Initiate immediate referral to the nearest tertiary centre for interventional cardiology and communicate with the obstetric team covering that site.
- Dial 999 for urgent ambulance transfer.
- Urgent coronary angiography should be considered for all patients presenting with acute STEMI, or delayed presentation (>12 hours) with ongoing symptoms of myocardial ischaemia.
- Clopidogrel and / or heparin should be given with advice from cardiology/ receiving interventional cardiologist.
- *In the situation where immediate transfer to a catheterisation lab is not possible e.g. long transfer time, decisions relating to acute management should be made with urgent consultation with the on-call interventional cardiologist. While thrombolysis is not absolutely contraindicated in pregnancy as it does not cross the placenta, there is a risk of bleeding and obstetric complications. In addition, thrombolysis may not be indicated for STEMI in pregnancy/post-partum due to the increased likelihood of spontaneous coronary artery dissection (SCAD) and the risk of progression of the dissection. Therefore, management decisions should be multidisciplinary and by experienced clinicians.*

Suspected NSTEMI

- Patients presenting with symptoms compatible with myocardial ischaemia without ST-segment elevation on ECG.
- Assess full clinical history including cardiovascular risk factors.
- Seek early involvement of senior cardiologist.
- Careful interpretation of resting 12 lead ECG and blood troponin results.
- Clopidogrel and / or heparin should be considered with advice from cardiologist.
- MDT discussion including consultant cardiologist, obstetrician and obstetric anaesthetist regarding early management, monitoring and consideration of coronary angiography.
- NB - inappropriate administration of dual antiplatelet therapy (aspirin + clopidogrel) or heparin may exacerbate bleeding in patients presenting with myocardial ischaemia due to anaemia or blood loss due to underlying obstetric or gastro-intestinal cause.

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