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Managing heart conditions in pregnancy

Those caring for pregnant women should be aware that the risk factors for IHD and MI apply to pregnant woman as much as they do for the rest of the population, writes Margaret M Murphy



HEALTHCARE PROFESSIONALS are encountering more and more women with cardiac conditions contemplating pregnancy or when pregnant than ever before. Advances in surgical treatment of congenital cardiac anomalies mean many more women are now reaching childbearing age and contemplating pregnancy than would hitherto have been seen.

Due to the fact that Irish figures have not been available thus far on the effects of cardiac disease on pregnancy and vice versa, we have come to rely on statistics from our nearest neighbour the UK. The Centre for Maternal and Child Enquiries (CMACE) is an independent charity. Its mission is to improve the health of mothers, babies and children by carrying out confidential enquiries and other related work on a UK wide basis and widely disseminating the results. It produces a report every three years into maternal fatalities in the previous three-year period. The most recent report was published in 2007, reflecting the deaths that occurred in 2002-2005. In the most recent CMACE triennial report into maternal mortality (2002-2005) for the first time cardiac disease was found to be the leading cause of maternal death among women in the UK, with a maternal mortality rate for heart disease of 2.27 per 100,000 maternities.¹

It is interesting to note that in this triennium fewer women died from congenital cardiac disease than in previous reports. This may reflect improved pre-pregnancy counselling, improved methods of contraception or an improvement

in the care provided for these women.¹

These figures available to us from CMACE only represent maternal mortalities and are from a jurisdiction where termination of pregnancy is an option for women. What are not captured are the figures on how many women with congenital heart conditions are actually getting pregnant but avail the option to terminate their pregnancies.

Changes in lifestyle, diet and exercise patterns have also seen an increase in the numbers of women presenting in pregnancy with acquired cardiac disease in recent times. Heart disease is the leading cause of death in Ireland with over 5,000 people dying from ischaemic heart disease (IHD) alone in 2007.² However, the number of women of childbearing age (15-45 years) who died during 2007 is small $n=437$. Reassuringly, the World Health Organization quotes the maternal mortality rate in Ireland as very low at 1 per 100,000.³ This is encouraging considering the most recent Irish statistics show 70,620 births in Ireland for 2007.²

The principal cause of maternal death in this report was found to be myocardial infarction (MI) followed by dissection of the thoracic aorta. The incidence of maternal death from MI is a rising trend over several reports.¹ The authors' suggestion is that these deaths reflect an underlying association between maternal mortality and modifiable lifestyle factors such as obesity. In only 29 of the 45 cardiac deaths catalogued was there was a body mass index (BMI)



recorded. Of these 29 women, 14 were found to be overweight (BMI>25) and 15 were obese (BMI>30), reflecting the scale of obesity as a comorbidity. What is clear from the report is that all of the women who died from IHD all had identifiable risk factors for MI.

So morbidity, as well as mortality, should be of concern to healthcare professionals caring for pregnant women with co-existing cardiac disease. Again, in looking to the UK for recent statistics into maternal morbidity, the United Kingdom Obstetric Surveillance System Annual Report (UKOSS) cites an incidence of 0.6 cases of MI per 100,000 maternities.⁴

Irish statistics

As stated previously, statistics on the true extent of the mortality and morbidity surrounding cardiac disease and pregnancy in Ireland have been difficult to obtain and assess. In January 2009, Ireland joined the Centre for Maternal and Child Enquiries (CEMACE) in the UK. From that date on, Irish statistics will join with those from the UK to inform the next confidential enquiry into maternal deaths which, will be published in 2011. The statistics are collected by CEMACE Ireland at University College Cork/ Cork University Maternity Hospital under the directorship of Professor Richard Greene and his team. These figures then feed in with the UK statistics. CEMACE reports are very valuable in policy development; are widely disseminated and inform the multidisciplinary management and care of pregnant women.

The National Perinatal Epidemiology Centre also based in UCC/CUMH is in the process of publishing Irish figures on maternal morbidity. They will provide invaluable information on the Irish situation.

A national registry

What are the considerations for healthcare professionals who have contact with women of childbearing age who have pre-existing cardiac disease or those who may be at risk of acquired heart disease? These may include cardiologists, clinical nurse specialists, paediatricians, practice nurses, GPs and midwives.

The Royal College of Obstetricians and Gynaecologists (RCOG) has produced a document stating the consensus views arising from the 51st study group on Heart Disease and Pregnancy.⁵ It states the need for a national registry for the collation of data on pregnancy with heart disease. Due to the limited incidence of cardiac disease in pregnancy in any given country, a more global initiative was required. As a result, the European Society of Cardiology (ESC) has begun to collate such statistics through a Pregnancy and Heart Disease Registry.⁶

The objectives of the registry are to identify and quantify the incidence of heart disease in pregnant women throughout Europe; to assess both the maternal and fetal mortality and morbidities associated with these pregnancies; to identify the rates of congenital heart disease; to assess the impact of pregnancy on maternal cardiac function; to identify the complications of the pregnancy itself and to compare different treatment modalities. At present I am unaware of any centre in Ireland contributing data to the registry; however several large European countries are.

Education and counselling

The current literature from the Irish Crisis Pregnancy

Agency informs us that anywhere from 16-54% of women may experience an unplanned pregnancy.⁷ This heightens the necessity to educate women about pregnancy, cardiac disease and the associated risks. This education may need to be provided to those with pre-existing cardiac disease while these girls are teenagers to reduce the likelihood of an unplanned pregnancy. Despite exhaustive efforts, I was unable to find out if anyone was providing this information in a structured manner in Ireland. As each case is unique, the onus of responsibility falls to every individual cardiologist to advise their patients based on the specific cardiac condition that they have. This information will need to be discussed with the consent of the girl's parents also. CEMACE (2007) advise that this vital component of care should take place at timely manner and should not be postponed until the girl has been transferred to the adult cardiologist service. Clinical nurse specialists could prove invaluable in providing a key function in respect of patient education. However it is important to stress that the majority of maternal mortalities reported are in women who have never been identified as being 'at risk'.⁵

The majority of women with cardiac complications will have a favourable outcome in pregnancy.⁸ However the risks are ever present. Even women in New York Heart Association (NYHA) class I and II may not have good outcomes. This can be because the normal physiological changes in the cardiovascular system in pregnancy may result in problems for previously asymptomatic women with, eg. mitral or aortic stenosis. Nevertheless, there are certain cardiac conditions where the risk to the mother is so great that pregnancy should definitely be discouraged. These include pulmonary vascular disease; fragile aortas, eg. Marfan's syndrome; left-sided obstruction; poorly functioning left ventricle or any woman in NYHA class III or IV.⁸ Difficulties can arise because these women are less able to cope with the superimposed complications of pregnancy. It is because obstetricians and cardiologists see so few of these women annually that the ESC is hoping to improve outcomes as a result of the previously mentioned registry. The

RCOG⁵ stresses the need for tailored contraceptive advice and the need for speedy access to emergency contraception if unprotected sexual intercourse has occurred. It also states that 'urgent access to termination of pregnancy should be readily available'. This is not an option for women currently in Ireland; however Irish doctors are able to provide information to women on this option and its availability in other jurisdictions without risk of censure.⁹

Antenatal care

A multidisciplinary approach is the option of choice for women with pre-existing cardiac disease once pregnancy is confirmed. This includes obstetricians, cardiologists, anaesthetists, general practitioners, dieticians and midwives. The frequency of antenatal visits will need to be adjusted upwards.

Antenatal care should take place where there is suitable equipment and trained staff available for antenatal screening, eg. ultrasound scanning to detect any fetal abnormalities. CEMACE¹ recommends extra consideration should be given to immigrant women who may not have had childhood screening available to them and who are at greater risk of undiagnosed cardiac disease.



Intrapartum care

A tertiary level hospital should be the place of choice for the birth. The principle of care should be to promote normality where possible and to reduce any strain on the cardiovascular system. To these ends, spontaneous vaginal birth is preferred with low dose epidural. Limiting the exertion of the second stage of labour by use of an instrumental birth, eg. forceps or vacuum may be advised to reduce undue cardiac strain.

Induction of labour may be necessary due to deteriorating maternal condition but this should be balanced against the increased risks of operative birth in women less than 41 weeks gestation.⁵

Postnatal care

Surveillance is important during and following birth, particularly during and immediately following the third stage of labour to avoid hypotension and hypertension from uterotonic agents.¹⁰ The woman's condition in the immediate postnatal period requires close monitoring due to the initial risk of fluid overload as a result of uterine tonicity. Multidisciplinary observation should continue until the woman's condition is stable and she may be discharged.⁵

Acquired heart disease


Sixteen women died from ischaemic heart disease (IHD) in the last reported triennium. This figure was double that in the previous report.¹ All of the 16 women who died from MI or IHD had identifiable risk factors. They included obesity, hypertension, smoking, family history and type 2 diabetes. There was also a higher mortality rate among older mothers, particularly when comparing those women with acute MI to those without. The report also highlighted the fact that healthcare professionals were failing to recognise the classical symptoms of acute myocardial infarction, ie. crushing, radiating chest pain or ECG changes. The report's author recommends a low threshold for investigation of such pain, particularly in women with identifiable risk factors for IHD. Another noteworthy point is that MI may present with uncommon symptoms in pregnancy such as abdominal or epigastric discomfort with or without vomiting.¹ Appropriate investigations should be instigated in light of identifiable risk factors in women presenting with chest pain. These include, though not exhaustive, ECG, CXR, cardiac enzymes (Troponin), echocardiography and CT pulmonary angiography.

Joint decision

The decision to plan a pregnancy is one that a woman with cardiac disease should make following discussion with

her cardiologist and others in the multidisciplinary team. Once a woman has made the decision to proceed with a pregnancy she should be supported by the multidisciplinary team to strive to achieve the optimal fetal and maternal outcome.

Women with identifiable risk factors for IHD should be screened pre-conceptually where possible and counselled accordingly to minimise their modifiable risk factors. Any risk factors should be identified antenatally and care tailored to reduce the potential for complications in these women. Healthcare professionals caring for pregnant women should be aware that the risk factors for IHD and MI apply to pregnant woman as much as they do to the rest of the population.

Vigilance should be the key word when dealing with symptoms of IHD and MI in otherwise apparently healthy pregnant women. In conjunction with improved awareness, education and care, the data gathered by NPEC, CMACE Ireland and the Euro Heart Survey on Pregnancy will help improve care for all pregnant women with and at risk from cardiac disease. 

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