

Don't Miss Myocardial Infarction in Pregnancy

BY HEIDI SPLETE
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Overall, acute myocardial infarction remains rare in women of child-bearing age, but the prevalence is expected to rise as more women postpone pregnancy, according to a review of 103 women who had acute myocardial infarctions during pregnancy.

Coronary dissection was the cause of AMI in more than a quarter of the cases. A total of 28 patients (27%) had 41 dissected coronary arteries, even though this condition is rare as a cause of AMI in nonpregnant patients, according to the investigators, Dr. Arie Roth of Tel Aviv University and Dr. Uri Elkayam of the University of Southern California, Los Angeles.

"The coronary dissection is unique to pregnancy," Dr. Elkayam said. "That means when a pregnant woman has acute MI, the clinician has to consider that many [of these women] would not have the usual atherosclerotic disease."

It's important to define the nature of the MI by angiography before deciding on an aggressive therapy, and to avoid the automatic use of thrombolytic therapy, he said.

"Most physicians don't see patients like this or they see one in their lifetime, and it is difficult to know what to do, and so the patients may not get the appropriate care," Dr. Elkayam said.

The physicians conducted this review of cases between 1995 and 2005 to update characteristics of AMIs during pregnancy from their 1995 analysis of 125 women who had AMIs during pregnancy between 1922 and 1995.

In the current review, the women's ages ranged from 19 to 44 years, but 72% were older than 30 years. The average age for women in both study groups was 33 years (*J. Am. Coll. Cardiol.* 2008;52:171-80).

"The diagnostic and therapeutic changes have been revolutionary," Dr. Elkayam noted. For example, data on the coronary anatomy were available for only 54% of the early group, compared with 93% of the current group, a statistically significant difference.

Consequently, the approach is more aggressive in terms of performing angiography and angioplasty and placing stents in young women, said Dr. Elkayam, director of the heart failure program and a professor of ob.gyn. and medicine at the University of Southern California, Los Angeles.

Advances in technology helped to reduce the mortality rate from 21% in the earlier review to 11% in the current review. Although this difference was not statistically significant, it supports findings of reduced mortality rates from other studies and suggests "a significant improvement in the outcome of pregnancy-related AMI in the last decade," the investigators noted.

The fetal mortality rate in the current study group was 9%, and two pregnancies were terminated because of concerns about drug teratogenicity.

Despite the relatively young ages of the women studied, risk factors for AMI were fairly common. Overall, 45% of the women were smokers, 24% had hyperlipidemia, 22% had family history of MI, 15% had high blood pressure, and 11% had diabetes.

"The incidence of MI in pregnancy is very low, but it was surprising that the risk factors were high," noted Dr. Elkayam. Many younger women may not recognize risk factors such as a family history of MI or receive treatment for risk factors such as high cholesterol, or high blood pressure prior to pregnancy, he said.

Treating MI risk factors in pregnant women remains a challenge because the drugs that clinicians use are potentially risky to the mother, fetus, or both.

"Pregnant women are always excluded from trials," Dr. Elkayam said. "So we are somewhat limited and we must consider true benefit vs. potential risk."

Because physicians are treating two patients—mother and fetus—they need to make medication decisions wisely. "Sometimes we may have to use the therapy if the patient is at high risk," he said.

It is difficult to conduct research with pregnant women, Dr. Elkayam acknowledged. But physicians must continue to report data from cases of acute MI in preg-

nancy in order to build a knowledge base to help manage these patients.

"We need to continue to follow these patients and perhaps start a registry so we can increase our understanding. For example, there are no data on the use of drug-eluting stents in pregnant women."

Several techniques for evaluating possible AMI in nonpregnant patients are safe for pregnant women, with modifications as necessary based on concerns for fetal safety and factors associated with normal pregnancy. Safe choices include an echocardiogram and exercise testing, but radiation exposure should be limited, the investigators noted.

AMI in pregnant women is often overlooked or dismissed as reflux or indiges-

tion, which can lead to a delay in diagnosis, Dr. Carole Warnes, a cardiologist at the Mayo Clinic, Rochester, Minn., said in an interview.

"AMI must be recognized by emergency physicians and internists as well as ob.gyns," she said, and patients should be referred to a cardiologist promptly if AMI is suspected.

Consider AMI in any symptomatic pregnant patient with a suggestive history and rule it out only after a detailed cardiac evaluation, Dr. Warnes advised.

If AMI is diagnosed, "manage the patient, preferably in an ICU where combined cardiac and obstetric care can be provided with a multidisciplinary team approach," she said. ■

Risk Categories for Therapy Options For Treating AMI in Pregnant Women

Drug therapies that were noted in the review fit into the Food and Drug Administration's pregnancy risk categories as follows:

Risk Category B (Drug has shown no risk to the fetus based on animal studies, or animal studies showed a risk that was not confirmed by controlled studies of women in the first trimester of pregnancy.)

- ▶ Organic nitrates: nitroglycerine.
- ▶ β -Adrenergic blocking agents: metoprolol.
- ▶ Aldosterone blocker: eplerenone.
- ▶ Low-molecular-weight heparin.
- ▶ Antiplatelet therapy: thienopyridine derivatives (clopidogrel, ticlopidine), glycoprotein IIb/IIIa inhibitors (eptifibatide, tirofiban).

Risk Category C (Drug poses potential risk to the fetus and should only be given if the potential benefit justifies potential risk.)

- ▶ Organic nitrates: isosorbide dinitrate.

▶ β -Adrenergic blocking agents: atenolol.

▶ Calcium channel blockers: nifedipine, diltiazem, verapamil.

▶ Unfractionated heparin.

▶ Antiplatelet therapy: aspirin, glycoprotein IIb/IIIa inhibitors (abciximab).

▶ Angiotensin converting enzyme (ACE) inhibitors and angiotensin receptor antagonists (ARBs). Contraindicated for pregnant patients.

▶ Morphine sulfate: One study of 448 exposures showed no evidence of teratogenic effects.

Risk Category X (Drug has shown evidence of causing fetal abnormalities and the risk to the fetus outweighs any possible benefit).

▶ HMG-CoA Reductase Inhibitors (statins): Use of these drugs is not recommended in pregnancy because of evidence of inhibition of DNA replication and of fetal abnormalities in animal studies.

Source: *J. Am. Coll. Cardiol.* 2008;52:171-80

Diabetic Women Are Less Likely Than Men to Achieve Targets

BY MIRIAM E. TUCKER
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WASHINGTON — Significantly fewer diabetic women than men achieved target LDL cholesterol and blood pressure levels despite equivalent medication prescriptions in a study of 211 underserved inner-city and rural patients.

Evidence suggests that diabetic women carry a greater risk both for the development of cardiovascular disease (CVD) and for mortality after an acute cardiac event than do either diabetic men or women without diabetes. The finding of gender-based differences in achieving lipid and blood pressure goals suggests that sex-based physiologic differences may account for the increased cardiovascular risk in women with diabetes, Carol J. Homko, Ph.D., and her associates said in a poster presented at the annual meeting of the American Association of Diabetes Educators.

"Women with diabetes are at very high risk for CVD mortality and need to be aggressively treated to target in regards to blood pressure and cholesterol, as well as glu-

cose," Dr. Homko, of Temple Telemedicine Research Center, Philadelphia, said in an interview.

The patients whose charts were reviewed were enrolled in a telemedicine trial to reduce CVD risk. All had type 2 diabetes and a 10% or greater CVD risk on the Framingham 10-year absolute risk index, but they did not have overt heart disease. There were 123 women and 88 men, with no differences in mean age (61 and 59 years, respectively), body mass index (35 vs. 33 kg/m²) or Framingham risk (20% vs. 21%). Only 37% of the women and 41% of the men had achieved a hemoglobin A_{1c} target of less than 7%.

Total cholesterol levels were significantly higher in women compared with men (201 vs. 185 mg/dL). Fewer women had total cholesterol levels of less than 200 mg/dL (57% vs. 73%), and significantly fewer were treated to an LDL cholesterol target of less than 100 mg/dL (33% vs. 48%). Similarly, mean blood pressure (BP) was higher in the women (145/79 vs. 141/83 mm Hg) and significantly fewer women achieved a target BP of less than 130/80 mm Hg (18% vs. 28%). Despite these differences, rates of in-

sulin, aspirin, antihypertensive, and statin therapy did not differ between the two groups, the researchers reported.

It is not clear why the women in this study were less likely to be treated to target despite receiving the same pharmacotherapy that the men received. It may be that women were less compliant with their medications, although most previous studies have found women to be more compliant than men, Dr. Homko said in the interview.

"We only looked at prescription rates," she said. "We did find that the women in our study had significantly lower rates of exercise tolerance, indicating that the men were more physically active. Therefore, the men may have experienced greater drops in BP and cholesterol because of the combination of medication and lifestyle." And, she added, there may be some physiologic difference in response to medications between the two sexes.

The next step will be to examine gender-based differences in coagulation and endothelial function, she said.

Dr. Homko serves on the advisory board of Abbott Diabetes Care. ■