

CV Disease and Pregnancy - Peripartum Cardiomyopathy

Announcer: Welcome to the Mayo Clinic Cardiovascular Continuing Medical Education podcast. Join us each week to discuss the most pressing topics in cardiology and gain valuable insights that can be directly applied to your practice.

Dr. Bell - Hello everyone and welcome again to another now series of interview with the experts. My name's Malcolm Bell, I'm the vice chair for the Department of Cardiovascular Medicine and our topic today is cardiovascular disease in pregnancy and focusing on peripartum cardiomyopathy. I'm really excited to introduce my guest today, Dr. Katie Young, who's a senior associate consultant in our department here in Rochester and she's the director of our cardio OB clinic. So welcome Katie, and thanks so much for joining us.

Dr. Young - Yeah, thank you so much for having me. It's great to be here. Happy to talk on this topic.

Dr. Bell - Yeah, so obviously a lot to discuss in this broad topic but, but let me start off with just asking you, we hear a lot of in the and medical press about the very high maternal mortality in the United States. It's the as I understand the highest in the developing world and maybe, sorry in the developed world and maybe even approaching some of the developing worlds. And a lot of that is due to the burden of cardiovascular disease. And lemme just ask you, is that an accurate statement and does that surprise you?

Dr. Young - Yeah, I mean I think, yes. So yes, it's definitely accurate. So the maternal mortality rates in the US have been historically high and unfortunately continue to increase actually. And cardiovascular disease is among or is the top contributing cause of maternal mortality which is what makes what we're gonna talk about even more important. And I think it is surprising to a lot of people given that we're in a country with a lot of resources and a lot of access to care for most people. And so that's why, you know an awareness amongst the medical community is also very important to help do everything we can to decrease the maternal mortality rates.

Dr. Bell - Okay, so maybe right at the bat it's really important we just get our heads wrapped around that, you know, factual information. So let's now just focus on one of those causes of maternal mortality or morbidity is peripartum cardiomyopathy. And maybe we should just start off with you defining what is that?

Dr. Young - Yeah, so that's great question. So the diagnose, or the definition of peripartum cardiomyopathy or PPCM is the kind of abbreviation a lot of individuals use. It's really an idiopathic cardiomyopathy, meaning, you know women present with heart failure symptoms they're currently pregnant or recently pregnant, and there's no other identifiable or reversible cause identified. With that though, there needs to be evidence of left ventricular systolic dysfunction. And that is defined as a left ventricular ejection fraction, less than 45 percent. So

you need to have the heart failure combined with the systolic dysfunction that's documented with echocardiography. And really, as I mentioned women can present throughout pregnancy but most commonly they present late in pregnancy and most commonly actually the first month postpartum. So it's something we really need to keep in our differential and ask all of our young women we're seeing about pregnancy history as well.

Dr. Bell - So that would bring us then to, you know, trying to identify the patients, you know, the women who are at higher risk. So who are those at higher risk and who does this affect most commonly?

Dr. Young - Yes so they, common risk factors are women of older maternal age, and that's actually defined as older than 30 years old. Women of African American race, those with multi gestation pregnancies, as well as a concomitant hypertensive disorder of pregnancy. So women with either baseline hypertension, or women with preeclampsia, we can see an overlap in women with preeclampsia and peripartum cardiomyopathy sometimes up to 40 percent of the time.

Dr. Bell - And maybe before we go any further, and in terms of that cardiovascular burden of you know disease, is this one of the most common causes here that we would come up?

Dr. Young - Yeah. So actually, I mean in the United States it's not, the incidence is increasing probably because of more risk factors in the general population in women having pregnancies at an older age. But actually in the US it's not a super common cause of heart failure, cardiomyopathy. There's around 1300 new cases a year. It's certainly more common in other countries. For instance, in Nigeria, the instances you know, almost one in 100 women. So it's much more common in other areas of the world. But we do see it here in the United States as well.

Dr. Bell - But probably not as commonly as preeclampsia, for example. That may be--

Dr. Young - Correct.

Dr. Bell - Associated with this.

Dr. Young - But nevertheless and--

Dr. Bell - Right.

Dr. Bell - And you've made a distinction between, well making it very clear that this could occur at any time during pregnancy, but we see it more commonly postpartum or the very final stages.

Dr. Young - Yep, first month postpartum is what has been shown where most women present with peripartum cardiomyopathy.

Dr. Bell - So what should we be looking for? I mean there's obviously a spectrum. Someone could present with florid heart failure, pulmonary edema, and hopefully that would be obvious to most people. But leading up to that, what are the the symptoms and signs that you'd be looking for?

Dr. Young - Yeah and this is, I think this is what can be challenging, is because late in pregnancy there can be a lot of similar symptoms. Just with normal pregnancies women can feel more short of breath and have some swelling. So there can be an overlap of symptoms. And I think that can also kind of lead to delays in diagnosis and initiation of treatment. So I think it's really having a high index of suspicion, knowing your patients and, really having them, you know, investigate any symptoms that are, particularly if these are symptoms that are limiting their daily activities, their quality of life. If there's significant shortness of breath or , swelling, palpitations or, you know, raise your suspicion and at least consider, you know, further diagnostic testing. Which may be, you know getting an echocardiogram, checking an NT-proBNP, screening for these conditions. And really I think just having a high index of suspicion, especially the later in pregnancy when there can be an overlap of symptoms.

Dr. Bell - Okay. And then making that diagnosis then as you said, you are looking for an ejection fraction less than 45 percent. So even something a little borderline in someone who's complaining of shortness of breath, tell us how often then that that may then evolve into full blown heart failure if that's not taken, or not necessarily seriously, but if you don't tend to see.

Dr. Young - Yeah and so, and really during a pregnancy the ejection fractions should really remain normal. So there's not a normal drop in EF with pregnancy. So that's why you know, even less than 45 percent would be abnormal. And you're exactly right. So women have a more mild course, a more mild reduction in their EF, but some women will really present with that more fulminate course and may need more advanced therapies. And it's hard to predict who that will be and who may have that course. So it's really just, I think having that high index of suspicion and following these patients closely, and monitoring them, and asking them and telling them to come in if anything is changing or progressing, or worsening.

Dr. Bell - And then role for chest x-ray, I'm just thinking about the pregnant patient. It was your concern about radiation or the radiation from a chest x-ray is pretty minimal. Your views on that and recommendation?

Dr. Young - Yeah so there's, so yes, all of these things we have to consider obviously because now we have a mom with a, you know baby and their radiation exposure. So in the setting though, where it's, you know, mom is not doing well and these things are gonna change your management and help you take care of mom, and by that take care of baby, you would do the

testing you need to do. But if it's, if it's not needed or it can be avoided, we generally try to do that. But if it's a necessary test--

Dr. Bell - And of course many people say, well we've got point of care ultrasound now where we can look for--

Dr. Young - Yeah.

Dr. Bell - Elines on lung exam. So, so let's just move on then to the treatment. You know we've got a patient who maybe have the early signs of heart failure and let's just talk about just briefly that the patient who is remaining pregnant has not delivered yet.

Dr. Young - Yep.

Dr. Bell - And just walk us through, I mean, I'm assuming this is gonna be fairly standard care for heart failure the--

Dr. Young - Correct.

Dr. Bell - Maybe some drugs that we can, cannot use.

Dr. Young - Right.

Dr. Bell - And then maybe just, well maybe just tell us, what drugs would we avoid in the pregnant patients?

Dr. Young - So for you know, one of the main states you're exactly right, this is gonna be standard kind of, we try and implement kind of guideline directed medical therapy for heart failure. However, if mom is pregnant there are certain medications we cannot use such as our ACE inhibitors, ARBs, Entresto, spironolactone, all these medications we cannot use if mom is pregnant. We can use for afterload reduction, things like hydralazine and nitrates. Those are safe in pregnancy, we can use diuretics. So for decongestion, diuretics can be used and monitored with that. And beta blockers--

Dr. Bell - And beta blockers?

Dr. Young - Beta blockers can be used. Metoprolol succinate is the most common used and that's generally what we go for, or utilize. But yes, beta blockers can be used when mom is pregnant.

Dr. Bell - So good information but now the question's going to come up, can this be a vaginal delivery or does it need to be cesarean? Tell us the thinking there.

Dr. Young - I think it's, so in part that's really gonna depend on how mom is doing. So this is peripartum cardiomyopathy in and of itself is not a reason to have a cesarean section, but unstable heart failure in a very fulminant course maybe. And that would maybe what would put someone to a c-section. And the timing of delivery is really gonna depend if mom is pregnant, if this is diagnosed late in pregnancy and mom is, it's really gonna depend on mom's status. So it's hard to say, it's always gonna look one way, because it's so dependent on the patient and their course. But certainly if it's late in pregnancy and the pregnancy is viable and baby's okay, they may, we may deliver sooner than we would have had she not been diagnosed with peripartum cardiomyopathy. And certainly at unstable heart failure would be a reason where mom may undergo a c-section.

Dr. Bell - Right and, in short of that then presumably very close cardiology follow up.

Dr. Young - Yep.

Dr. Bell - Presence there and, you know intensivist help. So, babies delivered and--

Dr. Young - Yep.

Dr. Bell - And mom either has continuing to have symptoms or new onset of symptoms.

Dr. Young - Mhm.

Dr. Bell - How are we gonna treat that? And obviously, the mother wanted to breastfeed. So again just tell us, just high level what drugs we can use. I mean, and again it sounds as though you're saying we should still treat it just as we would with any other patient with heart failure.

Dr. Young - Yeah, yep absolutely. So you will now and again. So you're gonna, you know diuretics again can be used postpartum as well for mom. The difference being is that if mom has delivered, there, you can use some of the ACE inhibitors and they're safe in breastfeeding. So we, I generally use either captopril or Enalapril, are generally what are the ones that are considered most safe for moms that are breastfeeding. We can use spironolactone or other, you know, during breastfeeding as well. Beta blockers also can be used. You can utilize, you know, so beta blockers, spironolactone, and your ACE inhibitors would probably be what you're gonna be implementing in the postpartum period.

Dr. Bell - Now this is a hypercoagulable state here, and I know that maybe there's some, you know, differences in how people approach the question of that and whether or not the patient

should be, or the mother should be anticoagulated. I mean at this point, you know, they are a patient, they they've got their own disease here.

Dr. Young - Yep.

Dr. Bell - Is there an indication for oral anticoagulants or only if they've had an embolic phenomenon? LV thrombus--

Dr. Young - Sure.

Dr. Bell - What's the recommendation there?

Dr. Young - Oh I mean obviously all of those, yeah. So if there's embolic phenomenon or LV thrombus, that would be indication for that. And then also need to consider it for severely reduced LV ejection fraction. And that depending on where you look, it may be defined as less than 35 or 30 percent. For LV ejection fraction you would consider implementing therapeutic anticoagulation as well. The other place where you may put a mom on anticoagulation is if, a bromocriptine is utilized. Now, the role of bromocriptine has been controversial. Currently there is a multicenter trial investigating the therapeutic role of bromocriptine on myocardial recovery in PPCM called Rebirth. Mayo Jacksonville and student Mayo Rochester will both be active enrolling sites in that as well. But if a mom is started on bromocriptine generally we also would put a mom on the anticoagulation as well. They kind of go together.

Dr. Bell - And bromocriptine of course would stop breastfeeding.

Dr. Young - Correct.

Dr. Bell - So there won't be any issue of transferring anticoagulant activity to a newborn.

Dr. Young - Yes, some moms would need--

Dr. Bell - But my under, yeah, my understanding of the bromocriptine story is that it's not really used very much in the United States--

Dr. Young - Correct.

Dr. Bell - But looking more in Europe and some other areas. But I do wanna just get back to one other thing here. And, we haven't really touched on this, but in the patient who really has significant symptoms, is this a patient who should be transferred to an institution that can provide

very high level advanced heart failure support? So I'm thinking about your mechanical surgery support, echo, even transplantation.

Dr. Young - Yep. Yep, so the kind of the rates of transplant and other advanced therapies in the first year postpartum, for peripartum cardiomyopathy is around five to 10 percent. But certainly if a mom is presenting with a more fulminant course, heart failure bordering you know shock state, yes. These are moms that should be transferred to, you know higher levels of care where they can be evaluated and you don't have these other therapies if they're candidates.

Dr. Bell - Now that's quite a high threshold to transfer them. Is there a lower threshold and a patient you think may be at risk of deteriorating who seems to be stable or, how--

Dr. Young - Yeah, I think--

Dr. Bell - What advice would you give there?

Dr. Young - Yeah I think that some of that, again, so everyone will, each patient will present a little differently. And so some of that will be kind of the clinical, just on clinical judgment on how mom is doing. If they're tolerating medical therapy, they're doing well, you know, things are going okay, then you know I think you can get them started on some medical therapy, have very close follow up. But if there is concern, if there's clinical concern about mom and she's not doing well or not tolerating medical therapy, I think absolutely reaching out for transfer to higher levels of care is absolutely appropriate.

Dr. Bell - Well we've got about a minute left here Katie and just wanna ask you then, what proportion of these patients ultimately have a full recovery?

Dr. Young - Yeah.

Dr. Bell - That's my first question, I'm gonna follow up with another one here.

Dr. Young - Yeah so, many women do recover. So many women diagnosed with peripartum cardiomyopathy do recover. One of the studies we referenced for that, the IPAC study, they had about 70 percent of their women recovered by six months to one year. So many women diagnosed do recover. However, there still will, there are some, that smaller percentage, which do have a more severe presentation. But we are hopeful by again six months to one year, many do, can show recovery.

Dr. Bell - Okay. So now that woman, who a mother now, who has a newborn and hopefully healthy, in the mother who has had either full recovery or, you know, most, you know, maybe not quite normal recovery, I mean, this group of patients.

Dr. Young - Yeah. Yep.

Dr. Bell - What advice are you gonna give them about future pregnancies?

Dr. Young - Yes, so this is really important in any woman diagnosed with peripartum cardiomyopathy should receive counseling about future pregnancies. And it should be, you know kind of discussed almost. And I try and discuss with them every time I see them in follow up, you know, what are your plans, where are we you know, just because it, keeping an open dialogue with that. We define recovery, is defined as a left ventricular ejection fraction is 50 percent. So if a mom recovers and their LVEF is above 50 percent, you know, we consider that kind of recovered. And in that situation, they may consider pregnancy is in the future, but they need to be counseled that they're at increased risk of relapse. About 20 percent risk of relapse. And they will need to be monitored very closely through pregnancy, with serial clinical visits, echocardiography. But it's possible that they, you know, can have another successful pregnancy. Women that do not fully recover. So their EF does not come above 50 percent, we advise against future pregnancies. And that's because of such a high morbidity and mortality for moms with other additional pregnancies.

Dr. Bell - Does genetic testing help you in making this determination and giving advice?

Dr. Young - Well genetic testing, so I personally offer genetic testing to moms that I, you know, we diagnosed with peripartum cardiomyopathy. There hasn't been aging or any you know identified, but you know, sometimes you may identify actually an underlying genetic cardiomyopathy. I don't know that that per se influences oftentimes yes or no on future pregnancies. I think we more so look at their heart function and their recovery, and kind of their overall functional status. It's kind of what we look at.

Dr. Bell - Well Katie, I'm sorry. We have to sort of wrap it up here but, it's really been a fascinating discussion. It seems that we've covered so many things about a very important and life-threatening disease, and would love to get you back another time to discuss cardiovascular, other cardiovascular diseases that may contribute to the health or mortality of women during pregnancy. So thank you so much for taking the time to be with us today.

Dr. Young - Yes.

Dr. Bell - We really enjoyed it.

Dr. Young - Happy to be here and happy to come back. Yes, thank you.