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How a Woman's Iron Status Today Can Impact a Baby's Health Tomorrow – and Through the Years

Announcer:

Welcome to CME on ReachMD. This episode is part of our MinuteCME curriculum.

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Dr. Munro:

Hello. This is CME on ReachMD, and I'm Dr. Malcolm Munro, Professor at UCLA Obstetrics and Gynecology. Today I'm with Professor Michael Georgieff from the University of Minnesota Medical School, and we're talking about iron and the fetus.

Michael, I think we all know that there are increased iron requirements in pregnancy and there are a number of issues that may arise from this, and what we're going to talk about with you is particularly the development of the fetal brain. So what can you tell us?

Dr. Georgieff:

Iron is absolutely critical for development of the fetal brain. There's evidence that Mom's iron status during pregnancy – in fact, even pre-pregnancy – has an influence on that developing fetal brain. And in fact, iron is 1 of 3 nutritional conditions that we now know are important to be in proper status prior to pregnancy. That would include folate, which we all know about, and maternal obesity.

Iron intake by the mother and iron status of the mother in that first trimester has been linked to – the deficiency in a mom has been linked to autism; second trimester iron deficiency has been linked to schizophrenia in the offspring; third trimester has been linked with neurocognitive deficits that last out to perhaps 30 years in the offspring. So the stakes are very high in terms of that, ensuring brain development through proper iron status.

The mom during pregnancy has increased iron requirements because she expands her blood volume, now she has a placenta that has very high iron requirements, and then you have the fetus, too.

Dr. Munro:

When a woman who is in early pregnancy shows up for her first visit, which might be as early as 6 or 8 menstrual weeks but maybe more typically 10 menstrual weeks, that there's already potentially been damage done?

Dr. Georgieff:

Yes, absolutely. So data show that even periconceptually, even before she is pregnant, her iron status will influence the outcome of that child to be, if you will.

You know, I think the studies are unclear whether once you're behind, whether you can actually catch up or not. I mean, the iron needs of the pregnancy are so great. This is one of those situations where an ounce of prevention is worth a pound of cure.

Dr. Munro:

Right. So I know from other data that even individuals in their first trimester of pregnancy, the first visit, that maybe 50% are iron deficient. So I guess this makes a strong argument, as you've indicated, for ensuring that women are iron replete prior to conception.

I think we can see how iron deficiency periconceptually may have long-term effects in the life of the individual, be they male or female, including difficulties with jobs, hyperactivity, ADD, and autism spectrum that have an incredible adverse effect on themselves and on the people around them.

Dr. Georgieff:

Right, absolutely. I mean, this is a chance to break an intergenerational process.

So It's important for myelination – so that means speed of processing – and, indeed, studies show long-term effects, slower speed of processing in kids that were iron deficient. It's important for energy metabolism, and what that translates into is a good structure of the brain. Building the brain takes a lot of energy, and iron is involved in ATP generation, and it's involved in monoamine neurotransmitters, so dopamine, serotonin, all the things that shape your reward system. So if you don't plot those correctly during the period of development, there are plenty of data both in preclinical models and in humans that you get lifelong effects.

The first thing we need to know is who out there needs iron therapy because they are deficient. There's no argument out there whether iron deficient people should be treated with iron.

Dr. Munro:

It's been brief but illuminating. Thanks for listening

Announcer:

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