Intrauterine Growth Restriction

Episode 238 · July 15, 2021 · with Dr. Steven Rad

IN THIS EPISODE

Dr. Steven Rad, a Los Angeles obstetrician, gynecologist and maternal-fetal medicine specialist, joins Dr. Elliot Berlin, DC to explain intrauterine growth restriction — IUGR, now more often called fetal growth restriction. He defines it by estimated fetal weight or abdominal circumference below the 10th percentile, and explains why that comparison to standard growth charts can both over-call babies who are constitutionally small and miss babies who should be much larger for their parents. Dr. Rad walks through the two screening routes — fundal-height measurement when ultrasounds are not routine, and ultrasound biometry itself, including how the estimated weight is calculated and how accurate it really is — and breaks the causes down into mother, placenta and fetus: placental function, preeclampsia, genetic and infectious causes, and maternal conditions and exposures. He then lays out what a diagnosis actually triggers: weekly monitoring, growth scans every two to three weeks, non-stress tests, amniotic fluid and umbilical cord blood-flow checks, and the signs that shift care toward hospital monitoring or early delivery. Is there anything — nutrition, rest, medication — that can make a growth-restricted baby grow, does IUGR in one pregnancy raise the risk in the next, and what happened when it appeared in Dr. Rad's own family?

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DR. ELLIOT BERLIN, DC: Welcome to the informed pregnancy and parenting podcast. I'm your host. Dr. Elliott Berlin in this episode We're talking about I UGR which stands for intrauterine growth restriction simply put that's when a baby in the womb doesn't grow As big as is expected Diagnosing I UGR figuring out the underlying cause and determining the best course of care can be quite tricky My guest today is here to help us better understand I UGR He is a highly sought-after Los Angeles based expert practicing obstetrics gynecology maternal fetal medicine and specializing in high-risk pregnancy He has extensive training and experience abundant accolades and a passion for both medical research and teaching Dr. Steven rad welcome to the podcast

DR. STEVEN RAD: Thank you. Dr. Berlin for this opportunity to join you for a podcast today

DR. ELLIOT BERLIN, DC: It certainly is an honor and it's an honor to have you hopefully the first of many Before we jump into the topic at hand, I gotta ask you how you got the coolest name in the world. Dr. Rad

DR. STEVEN RAD: Well, simply I was born with that name you come from an entire rad family Yes, a very long lineage of and large rad

DR. ELLIOT BERLIN, DC: You know when I heard about you a couple of years ago, they were like, yeah, you gotta meet dr Rad, I was like what my name is so boring and I wanted to change it from dr. Berlin to dr. Bodacious But I wasn't born with such a cool name anyway, where are you from originally?

DR. STEVEN RAD: So I was born and raised and grew up in Los Angeles and haven't really ever left I completed my undergraduate training at USC my medical school at UCLA and Residency and fellowship training at cedar sign a medical center I only left LA for a short period of time to be on faculty at UCSF Medical Center But quickly returned to be with my roots and family here in Los Angeles I now have a lovely family of six with my wife We have 14 month old twin baby girls and just now a three week old boy And our firstborn as we call him or a dog, so our hands are cool, but it's quite an exciting time for us

DR. ELLIOT BERLIN, DC: Wow, congratulations. I have no idea how you got a way to do this podcast, but I'm grateful Amazing I couldn't do anything without my wife. Did you come from a family of doctors? When did you develop an interest in medicine?

DR. STEVEN RAD: Yes, actually my mother is an internal medicine specialist And so I was passionate about becoming a doctor from a young age But I really developed my interest in middle school. Was there a specific thing that kind of triggered you? So growing up I loved science and during middle school I started teaching a lot on helping other students and I was always like an honor student And so the combination of teaching and my love for science and my background with my mother and working in Volunteering in her office really started my interest in medicine and then I looked into it and wanted to become a surgeon

DR. ELLIOT BERLIN, DC: In middle school you realize you wanted to be a surgeon

DR. STEVEN RAD: Yes, that's not I ended up doing surgeries as well. But like a general surgeon

DR. ELLIOT BERLIN, DC: Yeah

DR. STEVEN RAD: I wanted to be a general surgeon and surgical oncologist taking care of cancer And then when I went to medical school was like the first or second week of medical school the OB-GYN interest group came to our class and offered to have any of the students attend labor and delivery at UCLA and I thought it would be a cool story to tell friends and family and I went in one of the nights and I experienced my first birth and they told me about gynecologic oncology, which is specialist in women's cancer surgery. And it was completely unexpected, but to be experiencing and seeing your first birth. And it was very new because I was always thinking of surgical oncology and dealing with cancer and ultimately death.

DR. STEVEN RAD: And then I got to see this whole new side of medicine and bringing life into the world. And then they said, well, you can do that. Plus be a gynecologic oncologist, which is being an expert surgeon in women's cancers. And so I fell in love with OB, completely unexpected. They offered and I really wanted to share with my family and friends that I got to see at birth. But I fell in love with OB-GYN that night. And once I went into residency, I got more exposed to the obstetric side and fell in love with maternal fetal medicine. And like gynecologic oncology, you deal with critical situations and critical pregnancies and helping women and babies deliver safely and bringing life into the world safely. And so I fell in love with that.

DR. STEVEN RAD: And also fetal surgery, which was in utero surgery, which is one of my passions and something that I'm very interested in. And so that's the story of how I got into medicine and unexpectedly into OB-GYN and then ultimately into maternal fetal medicine.

DR. ELLIOT BERLIN, DC: OK, so first of all, I definitely want to do an episode about fetal surgery while the baby's still inside. That sounds crazy and like it needs its own episode. But in short, what you're saying is you went to medical school because of your passion for medicine and surgery and cancer surgery specifically very early on. You got exposed just because you thought it would be a cool story to childbirth and overnight labor and delivery. And then you switch to because you're still thinking in cancer, you switch to gynecological oncology, women's cancer, and then you later fell in love with maternal fetal medicine. So for maternal fetal medicine and for gynecological oncology, you first become an OB-GYN, right?

DR. ELLIOT BERLIN, DC: You specialize in obstetrics and gynecology, and then you further specialize.

DR. STEVEN RAD: Right. So first you do a residency in obstetrics and gynecology. And that's four years. And then you can go out to practice obstetrics and gynecology, or you can continue your studies. And that's called fellowship training or subspecialty training. And under the umbrella of OB-GYN, you can choose gynecologic oncology, maternal fetal medicine. You can choose reproductive endocrinology or infertility, family planning, minimally invasive gynecologic surgery, as well as pediatric gynecology. And those are extra training. And so I chose, as we discussed, maternal fetal medicine training. And so it's subspecialty training that at Cedars-Sinai as well.

DR. ELLIOT BERLIN, DC: I mean, generally, when an OB-GYN goes for a fellowship and becomes a specialist, specifically in maternal fetal medicine, do they generally continue to practice obstetrics? Or do they start to consult for other OB-GYNs?

DR. STEVEN RAD: Yeah. So this is a very important topic and question you bring up. And so it depends sort of on what your interest is and also where you're practicing. So in some parts of the country, it may be very normal for the maternal fetal medicine specialist to continue both obstetrics and consulting as a high-risk pregnancy specialist. In other parts, you may just be really focused on consulting as a high-risk pregnancy specialist and doing ultrasound. So my passion, you know, going into OB-GYN was obstetrics and first was gynecologic cancers. But once I started the residency, I fell in love with obstetrics and delivering babies and obstetrical surgeries as well as high-risk. And so personally, I continue to do both obstetrics or deliveries

DR. STEVEN RAD: as well as maternal fetal medicine, high-risk pregnancy as a consultant. So both of my own patients, as well as patients for other obstetricians take care of the high-risk pregnancy. So I do a combination of both. And so just depends on your passion. I would say that the majority of maternal fetal medicine specialists mainly focus on just the high-risk pregnancy consultations and the maternal fetal medicine or MFM part of the practice of specialty. But there are some of us like myself who continue to do both. And it only makes sense because that's why I went into it to begin with, because I love both.

DR. ELLIOT BERLIN, DC: So when you continue your obstetric practice, is it both high-risk in general OB or are all your patients more in the high-risk category?

DR. STEVEN RAD: So maternal fetal medicine specialists or high-risk pregnancy specialists, forgetting about the OB part, focus both on low and high-risk pregnancies and normal and high-risk pregnancies. Sure, by virtue of the specialty, we specialize in the non-routine or when your pregnancy is anything but routine or one that requires extra care. And we deal with the complications of the mother. and fetus, but all pregnancies require at least screening, you know, ultrasounds or an initial baseline consultation, a genetics consultation with a maternal fetal medicine special and we never know who's going to become high risk. Sure, there are some pregnancies that start out high risk because of a maternal condition that was pre-pregnancy or from

DR. STEVEN RAD: a prior pregnancy or a fetal complication or abnormality that was diagnosed early on, but a lot of the other pregnancies that become high risk we don't know until later. So generally you are see a high risk pregnancy specialist from the first trimester kind of get plugged in and then you're followed by your obstetrician. And then if you become high risk, you're sent back for more, you know, specialized care along with your obstetrician. In terms of my practice, I do both low and high risk pregnancies. You know, there are some patients who want closer monitoring and they have low risk pregnancies and we monitor those pregnancies as well. And the high risk pregnancies require

DR. STEVEN RAD: extra monitoring for sure, but it is nice to take care of low risk women who just want extra monitoring. With regards to also my practice, I have a close relationship with many midwives in Los Angeles, support women with both low and high risk pregnancies who are under the care of midwives. And we have a special program for those women who are high risk and want a hospital midwife birth with the Los Angeles midwife group. And so I also, you know, work closely with the midwives.

DR. ELLIOT BERLIN, DC: Wow. So you have the full spectrum, you know, low risk, more naturally minded pregnancies and birth to higher risk and sometimes high intervention pregnancy and birth.

DR. STEVEN RAD: Exactly. You know, I love my specialty. And so I want to be able to serve the whole spectrum, which is unique among some of the high risk pregnancy specialists and part of that was because for a short period of time when I went to the UCSF, they have a high risk midwife program and I got exposed to that. And then I had the opportunity to work with the LA midwife group here with Lily and Naomi. And, you know, you're sort of trained as a high risk pregnancy specialist to be very complex monitoring and very close monitoring. But working with the midwives, they help you become a little bit more open minded and support those women who are either low or especially high

risk in one of the midwives. And so I'm open to

DR. STEVEN RAD: that too. And it's one of my passions to giving those women the opportunity to have both cares. And so I support the full spectrum and I love it.

DR. ELLIOT BERLIN, DC: All right, we're gonna take a break. When we come back, we are going to talk all about IUGR. We'll be right back with Dr. Steven Pratt. Welcome back to the Informed Pregnancy Podcast. We're talking to Dr. Stephen Rad. The topic of this episode is IUGR. Let's jump right in. Dr. Rad, what exactly is IUGR?

DR. STEVEN RAD: Okay, Dr. Brilliant. So, one of the major focuses of prenatal care is to determine whether the fetus is growing normally and to identify those that are not. Fetal growth is a reflection of the interaction of the fetus's predetermined growth potential and the effects of the health of the fetus, the placenta, and the mother, plus genetic and environmental influences. So, IUGR or intrauterine growth restriction, and we'll talk more a little bit about the terminology, or fetal growth restriction is a term that's used to describe when the baby or fetus isn't growing as quickly as they should inside the womb and as a result has not reached its full growth potential. And IUGR or fetal growth restriction

DR. STEVEN RAD: may be pathological or abnormal, or it may be constitutional or physiologically normal small fetus. When we talk about this now, when we talk about what constitutional or physiologically normal small fetus, these constitutional factors include the maternal ethnicity, parity, their body mass index, and genetics, for example. As many as 70% of fetuses that may be small, that are identified as being small, may be due to constitutional factors and not actually pathological.

DR. ELLIOT BERLIN, DC: So, when you say small, compared to who? Meaning, if you have two large parents, I would assume you expect a larger baby. If you have two very small parents, I assume you're expecting a smaller baby. So, just based on genetics, when we say a baby is measuring small, who are we comparing them to?

DR. STEVEN RAD: Okay. So, officially, IUGR is defined as an estimated fetal weight or an abdominal circumference below the 10th percentile for the stage of the pregnancy. And it's determined by comparing the fetal weight or abdominal circumference to what we call growth standard or reference. And there are various growth standards and references that have been developed over the years. Actually, the most accurate one is by Hadlock for the 1980s. And then there's some that are population or ethnicity specific, or even specific to the parent's factors, like their ethnicity and their size and genetics, as you were alluding to. So, when we're defining IUGR less than the 10th percentile,

DR. STEVEN RAD: we're comparing it to these reference charts, which are sort of generalized. The issue with that is that you may overcall IUGR when actually the fetus can be normal or physiologically small because of constitutional factors, like the parents being small. Similarly, if the parents are big, you may define a fetus as being normal. For example, the 20th percentile, but based on their parent's size, they should really be at the 80th or 90th percentile. So, you may miss those because they're above the 10th percentile. So, there is some error or inaccuracies in the definition because of this issue with constitutional factors. And so, you may be under-calling or over-calling IUGR because you're comparing it to just a standard growth reference.

DR. ELLIOT BERLIN, DC: That makes sense. So, you know, are there other factors that you use to diagnose besides just, you know, how this baby compares in size to the standard growth

DR. STEVEN RAD: reference chart? Yeah, so we define fetal growth restriction as less than 10 percent on the growth standard for the estimated fetal weight or the abdominal circumference. But then, as we go into the monitoring and management of IUGR, which we'll probably discuss later, we look at the other factors, including the maternal characteristics. We look at how the baby's growing in between over a two- to three-week period. We look at the famiotic fluid volume and the placenta function. And so, oftentimes, we take the cautious route and we don't assume that it's constitutionally smaller normal. And we monitor closely, but we don't necessarily take action. So, there's a lot of

DR. STEVEN RAD: monitoring that goes along, ultimately determining if there's something pathologic or dangerous going on. And you're needing, like, for example, early delivery. But, you know, in the absence of these secondary factors, we don't take action in terms of, like, delivering early unless there is, you know, something else, like the fluid being abnormal or placenta findings or blood flow abnormalities, in terms of making actual decisions. So, the definition is just a baseline screening to determine, you know, which fetuses are at risk for poor outcomes during the pregnancy or being small at birth.

DR. ELLIOT BERLIN, DC: Okay. Some people don't really do that many ultrasounds during a pregnancy. So, without ultrasound, what would be the first sign that maybe there's a growth problem?

DR. STEVEN RAD: Okay, right. So, that goes into prenatal screening and detection of fetal growth restriction. My ad just really briefly, so basically, IUGR is, the fetus isn't growing well in utero or suspected to not be growing well in utero. And in terms of the terminology, we use IUGR as intrauterine growth restriction, is also known as intrauterine growth retardation, so you may hear that term, but the current or more modern term is fetal growth restriction or FGR, which is really the most clear and proper terminology. In terms of diagnosing and screening for fetal growth restriction or FGR, which you just brought up, this is very important. So there are two ways to screen for IUGR, and one of them is in the case that you're

DR. STEVEN RAD: not getting ultrasounds, like you mentioned, so that's where we look at the synthesis fundal height measurement, so this is the measurement of the distance between the upper edge of the pubic symphysis bone and the top of the uterine fundus or top of the mother's belly. We use a simple tape measure, usually starting after 20 weeks gestational age, and the mother's belly or fundal height should be a certain number of centimeters that corresponds to how many weeks there are. So believe it or not, if you're like 32 weeks, your fundal height should be 32 centimeters. And if your fundal height conveniently matches and if your fundal height is at least three centimeters, we say off more than two centimeters, less than what it

DR. STEVEN RAD: should be for that gestational age, then there's a suspicion that it may be a fetal growth restriction, then you reflex the checking of the fetal weight on ultrasound.

DR. ELLIOT BERLIN, DC: Oh, yeah, I'm just a quick question about that. It seems to me that there's, again, a wide variation in how large or small someone's belly is regardless of the pregnancy.

DR. STEVEN RAD: Absolutely. You know, if you have a large body mass index or you have fibroids in your uterus or there's increased fluid or just the way the shape of your body is, then your fundal height can be off or you have like a smaller frame, for example. And so this is just a screening tool. It's actually been shown to be pretty good. And if your fundal height is less than three centimeters, less than it should be, then we reflex the ultrasound. So you're not being diagnosed with IUD at that point. It just is, you know, a screening tool to say, OK, now you need to get an ultrasound to check the fetal weight.

DR. ELLIOT BERLIN, DC: OK, great. And then you said there's a second screening measure.

DR. STEVEN RAD: Yeah. The second method is what you said is those folks who are getting universal ultrasound. And generally we do those at approximately 18 to 20 weeks and then 28 to 32 weeks and then again around 36 weeks. If you're going to get one ultrasound, it would be best to do it at 32 to 36 weeks.

DR. ELLIOT BERLIN, DC: And when you're looking at ultrasound at the percentile, are we looking at how much we think they weigh?

DR. STEVEN RAD: OK, so with regards to the ultrasound, so we measure the estimated fetal weight of the fetus using biometric measurements, as they're called, measuring the baby's head size, the femur length and the abdomen circumference. And this gives us an estimated fetal weight. And then we compare the fetal weight to the population based growth reference, which we discussed. And that tells us what the fetal size should be for that gestational age and that stage of the pregnancy. And using a graph, you can determine what percentile your fetus is at. And so we look at the estimated fetal weight percentile and the abdominal circumference percentile. And if either of them are less than a tenth percentile, then that

DR. STEVEN RAD: constitutes a criteria for fetal growth restriction.

DR. ELLIOT BERLIN, DC: Here you're talking about the baby's abdominal circumference.

DR. STEVEN RAD: Correct.

DR. ELLIOT BERLIN, DC: OK. How accurate? Because you basically, it sounds like you're saying you take three measurements of size and come up with an estimated fetal weight. Is that a measurement that you do or the ultrasound machine does for you? And how accurate is it?

DR. STEVEN RAD: Yeah, so that's where you want someone with expertise in ultrasound to do it. Because it's done by, not by the ultrasound machine, but by a human, you measure the fetal head size, the abdomen, and the femur. And along, we can also measure other bones and other parts of the fetal brain, for example. And they can give you various ratios. But you get multiple measurements of each of those. And then they should be very close to each other. And there are certain landmarks, certain positions the fetus needs to be in and certain landmarks of the head and abdomen and femur that you measure very carefully. And then there is a formula that's stored in the machine that was created in the 1980s.

DR. STEVEN RAD: And that combines these various measurements and gives you the estimated fetal weight.

DR. ELLIOT BERLIN, DC: OK, so you as a human make the measurements and then the machine uses the formula to come up with a estimated fetal weight. My question is also, how accurate is that fetal weight? It seems like we have ways to tell because we do estimated fetal weights all the way up to the end. And then the baby's born, we can actually weigh them.

DR. STEVEN RAD: So yes, so there's about a 10 to 15 percent error and the more experienced you are in ultrasound the more careful you are with your measurements the better you are and I checked personally for the years I've been checking if they're born here at Cedars or one of our affiliate hospitals have access to I checked and I did an ultrasound close to time of birth especially if I was following them for IUGR I checked the birth weight and see how close I was and over the years I've been able to you know perfect my measurement but in general I'm very critical of myself and I go back and check but and fortunately I'm proud to say that I got very close measurements the actual weight but in general you know depending

DR. STEVEN RAD: on the the operator as we call it who's doing the ultrasound there's a 10 to 15 percent error and you know no matter how good you are in ultrasound the formula isn't perfect the ultrasound machine isn't perfect your measurements aren't perfect there will be some error and and you may not always get exactly bullseye on the the fetal birth weight that's why along with measuring the fetal growth when we decide to do any interventions particularly delivering early we look at the amniotic fluid volume we look at the fetal movements or what we call biophysical profile we look at blood flow and umbilical cord and the placenta and the and the fetal brain and making decisions about when to deliver

DR. STEVEN RAD: so we don't decide in isolation based on the weight we look at these various factors we also look at the growth or the weight in between the ultrasounds and the trajectory or the you know the interval we call it interval growth or the trajectory of the growth of the fetus between the ultrasounds and determining what course of action to take and so sure you want someone who has expertise in ultrasound who does a lot of growth measurements who is a specialist in high-risk pregnancies and it's better if the same person scans you

DR. ELLIOT BERLIN, DC: each time that makes sense okay i want to know also like the treatments and the options once you figure out that the baby's not growing well but we're going to take a quick break and we will talk about those when we get back welcome back to the informed pregnancy podcast we're talking about iugr with dr steven rad all right dr rad when in the pregnancy does iugr tend to develop or could it be any time so iugr can develop any time it's more cause for

DR. STEVEN RAD: concern the earlier it happens rather than later in the pregnancy and therefore iugr is classified as early or late and it's also the finest symmetric or asymmetric so early iugr is less than 32 weeks and late iugr is after 32 weeks and the symmetric iugr is when everything is growing small and asymmetric iugr which is the majority of iugr is when specifically the abdomen size is small compared to the head size and femur yeah so asymmetric iugr the abdomen size specifically reflects the subcutaneous fat tissue and liver volume where sugar stores are in and so the idea is that if your abdomen is small in particular then there might be an issue with the nutrition or placental function to

the fetus and

DR. STEVEN RAD: so that comprises about 70 to 80 percent of the iugr that we see and symmetric which is about 20 to 30 percent of the iugr population that we see is when all the measurements are small those cases are more likely to be early onset and more pathologic where everything is growing small and we worry about more genetic fact you know genetic abnormalities for example

DR. ELLIOT BERLIN, DC: i have a question pop into my head because i have a place where i'm going with this but this is kind of a side topic is there a correlation between how much weight the pregnant person gains and the growth of the baby so there may be not necessarily but there

DR. STEVEN RAD: may be one of the indicators of iugr may be poor maternal weight gain or the other way around for maternal weight gain may increase your risks especially in the second and third trimester of iugr and so maternal weight gain is important it may increase the risk by two-fold of developing iugr or if you also have poor maternal weight gain that may signify the fetus isn't growing well and you know you may want to check for the fetal size so in both directions poor maternal weight gain may signify abnormality but i have to say even in the face of poor maternal weight gain the placenta is a very special organ and tends to take the appropriate nutrients needed to feed the baby. So, you know, you would have to be pretty malnourished

DR. STEVEN RAD: in order for it to start to affect the baby though, mother's nutrition and weight gain is very important.

DR. ELLIOT BERLIN, DC: Okay, aside from nutrition and the weight gain, what are some of the other potential causes or risk factors for IUGR?

DR. STEVEN RAD: So I like to break up, you know, the causes of IUGR into what we say maternal or the mother, and then the placenta or uterus abnormalities, and then fetal and genetic and infectious abnormalities. So we always, whenever we have a phase of the high risk pregnancy or a fetal complication, we always think mother, fetus, and placenta. So some of the causes of IUGR can be a placenta abnormality where the placenta isn't functioning well, not giving proper nutrition to the baby. There can be a genetic abnormality such as a chromosomal abnormality. You can have fetal birth defects. You can also have abnormal placenta from preeclampsia. And then you can have infections such as CMV or cytomegalovirus and toxoplasmosis.

DR. STEVEN RAD: You can have maternal conditions like hypertension, diabetes, even though diabetes can give you big babies as well, asthma, thyroid abnormalities, cardiac abnormalities in the mother, alcohol use, drug use, smoking, other environmental exposures. And then in the case of constitutionally small fetuses, there can be certain ethnicities such as Asian or Indian population, which oftentimes have small babies.

DR. ELLIOT BERLIN, DC: So do they just have small babies, but they're healthy or are they more at risk for IUGR?

DR. STEVEN RAD: No, those very ethnicities tend to have smaller babies, but that's just because that's their genetic makeup. And those are the healthy normal or what we call physiologic or constitutionally small fetuses. Again, it's a problem of these generic reference charts or growth charts

that we compare the fetal weight to define the small fetal weight does not take into account the ethnicity. And so as a result, they're over called. They're incorrectly called IUGR when it's just because of their ethnicity.

DR. ELLIOT BERLIN, DC: It almost feels like we should have various charts depending on ethnicity and other factors.

DR. STEVEN RAD: So I know another thing, too much time, but there are certain charts that have been developed based on ethnicity and country of origin. I mean, they have tried very, very hard to what we call customize the growth charts. But in terms of outcomes and determining actual birth weights, and so we always reflex back to one of the most common charts, which is from the 1980s are called the Hadlock chart. Believe it or not, still seems to be the most accurate in determining. There's been many, many international studies trying to find the best customized growth charts, but we still reflex back to the basic one.

DR. ELLIOT BERLIN, DC: It almost feels like it should be an app that you enter.

DR. STEVEN RAD: They've tried that too. They do exist. There's an app you plug into the bedside by ethnicity, but, and some people still do that in practice, but the most common one is still this basic one from the Hadlock chart.

DR. ELLIOT BERLIN, DC: Okay, does IUGR not just small babies, but actual IUGR run in families?

DR. STEVEN RAD: I mean, those we tend to think more those to be the constitutionally smaller, normal small fetuses, unless there's some kind of genetic abnormality that's running in the family or pathological. I mean, I'm not sure if you're asking this, you know, if your mom or sister had IUGR.

DR. ELLIOT BERLIN, DC: Exactly.

DR. STEVEN RAD: Possibly we don't necessarily use that as a screening, or I don't really necessarily separate those women, but if there is a concern or a tense around the family, we would have a heightened surveillance or heightened monitoring for those cases, or, you know, specifically focus on the fundal heights for gum.

DR. ELLIOT BERLIN, DC: How common is IUGR?

DR. STEVEN RAD: So, IUGR depends on the population, but generally about three to 8% or so.

DR. ELLIOT BERLIN, DC: Three to 8% that need more monitoring, or three to 8% who ultimately are diagnosed with a true clinical problem?

DR. STEVEN RAD: No, those that need monitoring, and the actual true, you know, small for gestational age birth weights are even less.

DR. ELLIOT BERLIN, DC: Smaller. Okay, once you figure out that the baby is truly measuring small, and there's a problem, what are the courses of action that you can take, and when do you do it?

DR. STEVEN RAD: Okay, so once you're diagnosed with IUGR, we have very close surveillance to the pregnancy. The mother gets an ultrasound and monitors at least weekly. We monitor the growth

every two to three weeks. You would be getting a non-stress test, which we can talk about weekly, or up to two to three times a week. So non-stress test, that's where the mother strapped to a fetal heart rate monitor belt, and you monitor the fetal heart rate for about 20 to 30 minutes, and it's called a non-stress test. We look for specific patterns in the fetal heart rate that signify that the fetal heart rate is reacting or changing normally to movements. and changes in the fetal physiology of the heart. And this lets us know that the fetal brain

DR. STEVEN RAD: is being perfused well with blood and oxygen, the placenta is functioning well, the nerves of the heart and the fetal physiology are basically working properly. So we look at a specific fetal heart rate pattern when you're under the monitor of the non-stress test. Okay, so we talked about doing ultrasound and monitoring the fetal growth and then checking the fetal growth every two to three weeks. We talk about doing a non-stress test every week or sometimes up to two to three times a week, depending on the level of concern. And then the next thing we look at is blood flow in the umbilical cord. And this is done by doing Doppler ultrasound and it measures the speed of the blood flow in the umbilical cord. And this tells us the resistance

DR. STEVEN RAD: of the blood flow in the placenta and how the placenta is functioning and how blood is flowing through the umbilical cord, which is extremely important since the baby's life depends on the placenta and the umbilical cord to function and the blood flow in that. And depending on what other factors you find in the fetus, whether it's a birth defect or other abnormalities that suggest a genetic or infectious abnormality, we would be getting infection and genetic testing as well.

DR. ELLIOT BERLIN, DC: So these are all more along the lines of diagnosis, like trying to make sure that the baby's getting what they need. What if you find out that they aren't?

DR. STEVEN RAD: Okay, so that's a great question. So you're doing all this monitoring and so you're doing all this monitoring. What do you need to do if any of those are abnormal? So if the fetus stops growing in these every two to three ultrasound, or there's an abnormality in a non-stress test, or if there's really most importantly, an abnormality in the blood flow in the umbilical cord, something just to add really quickly, in addition to the non-stress test, whenever you do a non-stress test, we also check the amniotic fluid volume, which along the same lines is the amniotic fluid volume tells us how the placenta is functioning, how the fetus is urinating because the fluid is largely the fetal urine. And if the baby's getting hydrated,

DR. STEVEN RAD: well, it's gonna pee a lot, just to be frank. And so the fluid volumes will be very important. But anyway, so you're doing all this monitoring the blood flow, the anesthesia, and the amniotic fluid volume and the growth in between every two to three weeks. And if there's an abnormality in any of these parameters, then they're increased in monitoring or you start thinking about delivery. So that the fetus isn't growing, then depending on the gestational age, you may decide to deliver the fetus or admit him to the hospital and do continuous monitoring. If there's an abnormality in non-stress test, similarly, you might send him to the hospital for further monitoring. If there's an abnormality in the blood flow

DR. STEVEN RAD: and umbilical cord or amniotic fluid volume, you would send him to the hospital for extra monitoring. And depending on the degree of abnormality in any of these factors, you would decide whether or not early delivery is warranted. Early delivery is before 38 or 39 weeks of gestation.

So because the baby, for example, depends on the blood flow and the ambilical cord and the placenta function. If the blood flow and the ambilical cord is so abnormal, sometimes we deliver the fetus as early as 32 to 34 weeks. Or let's say you're 36 weeks and the baby stops growing, then maybe that's better to take the baby out and feed it outside if it's not growing inside. So the ultimate idea is when to deliver the fetus

DR. STEVEN RAD: because the risk of IUGR is if there is something wrong, is the baby not getting nutrition, not getting oxygen. In the worst case, there's a placenta abnormality. And so those can cause stillbirth or brain injury. And so you want to prevent that from happening. So the whole idea of all this monitoring is to prevent a stillbirth or brain damage. And so the purpose of all the monitoring, if you see any abnormalities, the next step would be to admit him to the hospital, do closer monitoring. And then if any of the parameters are abnormal, then it's better to deliver, significantly abnormal enough, then it's better to deliver the fetus because we don't want to have a stillbirth or brain injury.

DR. STEVEN RAD: That defeats the whole purpose of having a healthy baby.

DR. ELLIOT BERLIN, DC: Are there remedies that you can do to help the baby grow? Like if you're not at that point where you need to send them to the hospital or bring the baby early, are there nutritional things that they can do? If, for example, you see that there's a small belly on the baby, are the nutritional changes? Or if you see the blood flow not perfusing well, then could they increase their exercise or perhaps you would recommend bed rest? Or are there any medical interventions that can be done? Like sometimes you said it's caused by infection. Can we control the infection rather than deliver the baby?

DR. STEVEN RAD: Those are great questions. So logically, you would think that correcting some of those abnormalities, we identify an underlying cause that that would help. Unfortunately, based on evidence-based medicine, as we call it, and research, unfortunately there is not necessarily any dietary changes or supplements or medications you can give or bed rest to fix or prevent IUGR. We don't recommend bed rest anymore. So there's not necessarily evidence to show that those things matter. But we do want to ensure the mother has proper nutrition. she's not skipping meals, she's not malnourished, she's gaining proper weight. You want to make sure she's hydrated, getting adequate rest. Probably going to exercise is not the best idea at that

DR. STEVEN RAD: point. You want to make sure the uterus and placenta are perfused, you know, and so you want to sort of spare, you know, your blood flow and energy and resources to the uterus and placenta. So officially there is not evidence, you know, research-based evidence to show that those things matter, but obviously you want to mitigate any obvious causes. You make sure, like we said, the proper nutrition, hydration, and adequate rest, but we do not recommend bad rest. There isn't any specific medication you can give. In terms of the infections, in very special cases you can treat the infections, but these infections, to be honest with you, are generally very rare and are not the majority of cause of IUGR. Those are very

DR. STEVEN RAD: rare instances where you see CMV and toxoplasmos. The majority of the causes tend to be placental abnormalities and so officially there's not, but we do want to make sure that the mother is taking the proper precautions and keeping her in the best health possible. Along those lines, you want to make sure there aren't any medications that are causing IUGR. The blood

pressure is well controlled in our population, but not smoking, drinking alcohol, or using drugs, or they may be, and you don't know. So it's something to talk about and make sure with them, even though you may not suspect it in your patient, but it's possible you never know what they're doing. So it's important to make sure there's nothing underlying,

DR. ELLIOT BERLIN, DC: obviously, causing it. All right. I got one last question that I think anybody who experienced IUGR pregnancy would want to know. Does having IUGR in a pregnancy increase your risk of having

DR. STEVEN RAD: IUGR in future pregnancies? Yes, definitely. There's an increased risk in your future pregnancies and women who have previous IUGR recommended to monitor their fetal growth, and I personally recommend doing universal ultrasound screening in your subsequent pregnancy, making sure there's no underlying factors that we discussed, and removing those, and making sure you're in your best health before you become pregnant. And in some cases where there may be pre-clamps, your concerns for pre-clamps, your asthma may be recommended as a preventative measure

DR. ELLIOT BERLIN, DC: in future pregnancies. Dr. Rad, you have twin girls, and as fate would have it, they experienced IUGR. Tell me more about your experience with it.

DR. STEVEN RAD: So it's interesting because you just asked, you know, about IUGR happening again. So, you know, yes, I have 14-month-old twins, girls, and my wife just had a baby three weeks ago. Both pregnancies were complicated by IUGR. The twins were IUGR and were being monitored very closely during the pregnancy. She did end up breaking her bag of water early at 31 weeks, so that's a different story, and the babies ended up being born at two pounds, small for their age, and were in the NICU for two months. Her second pregnancy, her third baby, was born at 37 weeks, a little early on purpose because he was not growing well in between the last couple ultrasounds, and he was born at five pounds. And so my wife

DR. STEVEN RAD: experienced IUGR in both pregnancies, and in both pregnancies, the amniotic fluid volume, the blood from the umbilical cords, the growth in between the ultrasounds and towards the end of the pregnancy, and both, they were normal up towards the end. Our last pregnancy, we had to deliver a little early because it stopped growing. But because it happened twice and because these other parameters, there was no other birth defects, they didn't got any genetic abnormalities, for example. My wife herself is very petite, and so personally, I think it might be constitutional. She might just make small babies, but we did do all the monitoring that we discussed. And in fact, like I said, in the second pregnancy,

DR. STEVEN RAD: we ended up having to deliver a few weeks early because the baby stopped growing, and she was already at term at 37 weeks, early term, I should say. And so it made sense to deliver her and have the baby come out and feed it and have it grow outside. And so it didn't

DR. ELLIOT BERLIN, DC: seem to be growing anymore inside. Thank you for sharing that personal experience, Dr. Rad. I learned a lot. I'm extra grateful for having you on here. I know that our audience will learn a lot from this. I appreciate that you took time from your family of six to carve out a little time to help us out and understand this important topic. Where can we find you

DR. STEVEN RAD: online? So you can find me. I have a website, drsteverad.com, and we also have Instagram at Dr. Steve Rad. Or you can just call us and we'll be happy to take care of

DR. ELLIOT BERLIN, DC: you and answer any questions you may have. Amazing. Thank you so much. And at home, thanks for listening to the Informed Pregnancy Podcast. For more pregnancy and parenting-related media, occasional giveaways, and bonus clips. Follow me on Instagram at Dr. Berlin. That's at D-O-C-T-O-R-B-E-R-L-I-N.

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