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twin. This is why, when one fetus dies, the risk of death for the co-twin can be as high as 60%. It also explains why a surviving co-twin has a significant risk of brain injury.

The intertwin anastomoses account for a range of other pregnancy complications. When placenta sharing is equal but there is a significant mismatch in blood flow and blood volume, twin-to-twin syndrome (TTTS) can develop. In this scenario, the imbalance progresses to the extent that one twin becomes a “donor” of blood volume and the other twin becomes the “recipient.”

A decline in blood volume for the donor twin leads to decreased urine output to the extent that bladder filling virtually ceases and oligohydramnios may progress to anhydramnios. The recipient twin, in the meantime, urinates excessively, leading to polyhydramnios and possibly preterm labor.

TTTS develops in about 10%-15% of monochorionic pregnancies. Overall, however—if you add the approximately 10% that are affected by selective IUGR, and an unknown percentage of pregnancies that may have a bit of both problems or are complicated in other ways to this 10%-15%—I estimate that as many as one-third of monochorionic twins have some kind of significant complication.

For TTTS, endoscopic laser ablation (or laser coagulation) of placental anastomoses has been shown to be an effective treatment and a preferable first-line approach for severe cases diagnosed before 26 weeks. These therapies, however, are available only at specialized centers—a fact that adds to the value of early diagnosis of chorionicity and prospective monitoring for complications.

The Need for Early Diagnosis

We cannot attempt to alleviate complications and improve survival unless a diagnosis of monochorionicity is made early. The diagnosis of chorionicity certainly is more difficult in the second trimester.

However, if a patient has not had a first-trimester scan, a diagnosis should



At left, the presence of chorionic tissue between the layers of amnion from the two sacs produces a “Lambda” sign (circle) that indicates a dichorionic diamniotic pregnancy. At right, the absence of this sign (arrow) indicates monochorionic placentation.

still be attempted.

Monochorionic twin pregnancies remain largely unpredictable. At 12 weeks’ gestation, however, if we have diagnosed identical twins, there are several ultrasound parameters we can measure to begin to predict how the pregnancy will proceed and what fetal complications might develop.

Some studies have shown, for instance, that a discrepancy in nuchal translucency between the co-twins of more than 60% means that there is a 60%-70% chance that TTTS will develop.

There also may be some discrepancies in size of other structures that are apparent in the first trimester, such as differences in abdominal circumference, for example, as well as differences in amniotic fluid volume, or bladder size that might be helpful in planning fetal surveillance.

After initial evaluation, we generally recommend that monochorionic twins be evaluated again at 16 weeks, based on research by Dr. Liesbeth Lewi of the University Hospitals in Leuven, Belgium, showing that a combined risk assessment in the first trimester and at 16 weeks can predict selective IUGR or TTTS with greater than 80% accuracy.

In a study of 200 monochorionic diamniotic twin pregnancies, Dr. Lewi found that significant predictors of TTTS, selective IUGR, or intrauterine death in the first trimester were crown-rump length and discordant amniotic fluid volume. At 16 weeks, significant predictors were the differences between the co-twins in abdominal circumference, amniotic fluid volume, and the site of cord insertions. [The site of cord insertion was classified as velamentous, eccentric (more than 2 cm from the placental edge), or marginal (less than 2 cm from the placental edge), and a discordant cord insertion was considered to be the combination of a velamentous cord insertion in one fetus and an eccentric cord insertion in the other fetus.]

The differences between the co-twins in the ultrasound parameters were additive when measured in the first trimester and at 16 weeks. Combined risk assessment detected 58% of the fetal complications by classifying 21% of the 200 pregnancies as high risk, with a false-positive rate of 8%, while the predictive value of one assessment alone was significantly lower (Am. J. Obstet. Gynecol. 2008;199:493.e1-7).

Dr. Lewi’s research was among the literature considered recently by a panel of experts assembled by the North Ameri-



The fetus on the left has a larger abdominal circumference and a higher maximum vertical amniotic fluid pocket, which can point to unequal placenta sharing and/or unequal blood volume and requires follow-up evaluation.

can Fetal Therapy Network. The panel has been working on a consensus statement that, when finalized, will make recommendations for early diagnosis of monochorionicity and basic combined risk assessment.

Doppler ultrasound (US) measurements of the umbilical arteries, which depict resistance in the blood vessels and resultant blood flow, also may be helpful. Just as with singleton pregnancies, Doppler US provides information in the monochorionic pregnancy about the vasculature of the placenta and the amount of placenta the fetuses have available for nutrient exchange.

In monochorionic pregnancies, however, Doppler US has the added benefit of being key to diagnosing and evaluating hemodynamically significant arterio-arterial anastomoses that induce variations in diastolic velocity not seen in singleton pregnancies.

The imbalance in blood flow exchange between the co-twins’ circulations—again, the primary contributor to the development of TTTS—also can be examined using Doppler assessments of two additional vascular beds: the middle cerebral artery (MCA) and the ductus venosus.

The MCA peak systolic velocity reflects how fast blood is flowing in the brain. Large differences in the MCA can point to TTTS. The ductus venosus, a unique fetal vessel that funnels a proportion of nutrient-rich umbilical venous return directly into the right atrium, similarly can be used to evaluate cardiac status. Doppler screening of the ductus venosus and MCA has its most useful role early in pregnancy.

Again, because most of the amniotic fluid from 16 weeks on is due to fetal urination, and because changes in urine output reflect changes in blood volume status, the assessment of bladder filling and amniotic fluid volume reveals much about blood volume status and possible TTTS.

Whenever we see a monochorionic twin pregnancy, therefore, we face a range of questions: What are the sizes of the fetuses? Is there a discrepancy? What is the ultrasound end-diastolic velocity in each twin? Is it normal? Or, is there variability in the waveform, which is indicative of hemodynamically significant arterio-arterial anastomoses? Is the amniotic fluid volume normal? What do the bladders look like? Does one fetus have a bladder that’s barely filling?

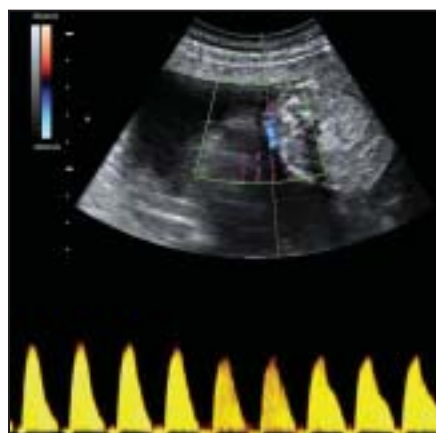
By regularly asking these questions—and using the pregnancy as its own control—we will be alert to the potential problems associated with monochorionicity and more able to proactively plan our monitoring schedules.

A new discrepancy or a change from a previous exam might mean seeing the patient weekly as opposed to every 2 or 3 weeks.

Frequent monitoring is prudent throughout pregnancy as severe TTTS can develop until 22-23 weeks’ gestation, even when findings are normal at 18 weeks.

Moreover, milder forms of TTTS, as well as milder forms of selective IUGR, can develop even later. ■

Dr. Baschat reported that he has no disclosures regarding this article.



Umbilical artery Doppler shows significant variation in end-diastolic velocity from positive/absent to markedly reversed, as well as scalloping of the waveform. This indicates the presence of hemodynamically significant arterio-arterial anastomoses.

Finacea Advocated for Treatment Of Acne, Rosacea in Pregnancy

SAN FRANCISCO — For treatment of acne or rosacea in pregnancy, think first, and last, of azelaic acid gel 15% twice daily, Dr. Joseph Bikowski advised.

“It is pregnancy category B. It’s the Rice Krispies and Corn Flakes of therapy; you can eat the stuff. It’s the one thing you can use for acne and rosacea in pregnancy where you’ll never do any harm, and you may do some good,” Dr. Bikowski said in a therapeutic pearls session at the annual meeting of the American Academy of Dermatology.

Other treatments for acne and/or rosacea are rated categories C through X, creating potential medicolegal exposure in the event of a bad pregnancy outcome, he noted. And although other formulations of azelaic acid are also rated category B, azelaic acid gel 15% (Finacea) is less irritating, said Dr. Bikowski, a dermatologist in private practice in Sewickley, Pa.

Dr. Bikowski disclosed that he is a consultant to and on the speakers bureau for Intendis Inc., which markets Finacea.

—Bruce Jancin