Intrauterine fetal death: What is the right follow-up?

Besides being emotionally challenging, fetal demise raises a host of questions and increases an obstetrician’s medicolegal risk. An expert recommends strategies for determining etiology, counseling the patient, and protecting against litigation.

Very few circumstances in obstetrics evoke feelings as strong as those brought on by third-trimester fetal demise. These events demand that we provide not only emotional support, but also a thorough, objective evaluation of the cause of the death. But because such losses differ significantly from those that occur early in pregnancy, their assessment is unique. The patient and her family will ask “why,” seeking answers ranging from the theological to the medical. Our goals should include:

• providing the family with information about the cause of death, as well as emotional guidance;
• determining whether a loss is likely to recur and suggest possible ways to decrease the risks; and
• minimizing the care provider’s liability exposure.

To ensure all these goals are met, a systematic protocol, such as the one described in this article, is vital.

The history and other clues

Once the diagnosis of fetal death is confirmed, and the woman and her family are prepared to move forward, it is critical to obtain a thorough history. Suggested questions include: “Has the patient felt normal over the preceding 24 to 48 hours?” “Has she experienced any recent gastrointestinal (GI) or febrile illnesses?” If either answer is yes, the cause of death may be related to listerosis, chorioamnionitis, or other infectious processes. See Table 1 for a complete list of questions and their rationales.

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KEY POINTS

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### Documentation recommendations: checklist for reducing medicolegal risk

#### HISTORY

Patient’s recent condition, especially 24 to 48 hours prior to fetal demise:

- GI or febrile illness? [Yes, No]
- Blurred vision? [Yes, No]
- Headaches? [Yes, No]
- RUQ pain? [Yes, No]
- Abnormal swelling of face or hands? [Yes, No]
- Trauma? [Yes, No]
- Domestic violence? [Yes, No, Ongoing?]
- Bleeding or fluid leakage? [Yes, No]
- Decreased fetal movement? [Yes, No]

#### LABORATORY STUDIES

- Betke-Kleihauer or flow cytometry
- Urine drug screen
- VDRL
- Rapid plasmin reagin
- Parvovirus antibody
- Cytomegalovirus
- Immunoglobulin M and G
- Antinuclear antibody
- Anticardiolipin antibodies
- Lupus anticoagulant screen
- Factor V Leiden
- Antithrombin III
- Factor C, Factor S
- Hemoglobin A1C
- Creatinine
- Complete blood count with platelets
- Liver function tests
- Uric acid
- Type and screen
- Coombs’ test
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CONTINUED

**IMAGING STUDIES**

- Ultrasound
- MRI (if autopsy declined)

**GROSS EXAMINATION OF PRODUCTS OF CONCEPTION**

- Gross description of anatomic evaluation, including presence or absence of facial abnormalities, number of digits on all extremities, ventral wall defect, number of cord vessels, spinal defects, genitalia, patent anus, and cleft palate:

- Foot length

- Obvious trauma?

- Weight and assessment of appropriateness of growth

- Degree of maceration


- Did placenta come easily or with difficulty? Evidence of abruption? If D&C performed or placenta manually removed, was uterine cavity normal?

- Cord accident noted?

- Amount, color, and odor of amniotic fluid?

- How much did mother bleed at delivery?

D&C = dilatation and curettage; GI = gastrointestinal; MRI = magnetic resonance imaging; RUQ = right upper quadrant; VDRL = Venereal Disease Research Laboratory [tset]
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A recent demise would not yet demonstrate overlapping cranial sutures or postmortem skin edema. Look closely for evidence of fetal growth restriction, which may provide clues to the cause of death. Long bone measurements may be more reliable measures of fetal size than head and abdominal measurements, due to postmortem soft tissue changes.

Laboratory and autopsy studies

A n often overlooked cause of fetal death is fetal-maternal hemorrhage. To evaluate for this, obtain a Betke-Kleihauer test or flow cytometry study prior to amniocentesis or induction of labor. Other laboratory analyses useful in determining the etiology of fetal demise include a urine drug screen and creatinine and hemoglobin A1C levels. For a complete list of potential tests and their rationales, see TABLE 2.

Once the patient delivers, a careful gross examination of the fetus, cord, membranes, and placenta should be documented in the chart, even if an autopsy permit is obtained. Your notes should detail anatomic evaluation of the fetus, with a description of any facial abnormalities that can survive for several weeks following a fetal demise, consider amniocentesis for karyotyping prior to induction of labor. If amniocentesis is unacceptable to the patient, pass an intrauterine pressure catheter after amniotomy to obtain an amniotic fluid sample as a backup in case the fetal biopsy specimen fails to grow.

If invasive testing is not feasible or acceptable, other tissue may be used, although it likely will have a lower rate of successful cell culture. If the fetal demise occurs within 24 hours of delivery, obtain for karyotyping a heparinized sample of the fetal cord blood or a blood sample by fetal cardiac puncture. Other acceptable tissue samples include 1 cm² of fetal skin, Achilles tendon, or retro-patellar cartilage. Fetal tissue should be sent, refrigerated, in isotonic saline to the cytogenetic laboratory.

Fetuses with structural abnormalities face a higher risk of intrauterine death than normal fetuses. If the patient will allow it, a complete sonographic evaluation of the fetus for anatomic evaluation is important, especially if one was not done earlier in the pregnancy. Ultrasound also may help determine the approximate time of the demise. For instance, if the patient allowed a complete sonographic evaluation of the fetus for anatomic evaluation is important, especially if one was not done earlier in the pregnancy. Ultrasound also may help determine the approximate time of the demise. For instance,

<table>
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<td>1. Has the patient felt normal over the preceding 24–48 hours? Has she had any GI or febrile illnesses recently?</td>
<td>Listerosis, chorioamnionitis, or other infectious processes</td>
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<td>2. Has she had blurred vision, headaches, right upper quadrant pain, or abnormal facial or hand swelling?</td>
<td>Preeclampsia with uteroplacental insufficiency</td>
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<td>3. Has she been hit, kicked, slapped, or fallen? Has she been in even a minor automobile accident?</td>
<td>Domestic violence or other trauma</td>
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<td>4. Has she had any vaginal bleeding or leakage of fluid?</td>
<td>Abruption, amnionitis, or cord prolapse</td>
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<td>5. When did she notice decreased fetal movement, if at all?</td>
<td>A clue to timing of the event</td>
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<tr>
<td>6. Has her pregnancy been uncomplicated until now?</td>
<td>Clues to placental problems: elevated maternal serum alpha-fetoprotein, growth problems, smoking, diabetes, hypertension</td>
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inexperienced or uncomfortable performing perinatal pathology. Discuss with the pathologist any additional information you would like, and confirm that a tissue block can be preserved for potential genetic studies. As the Human Genome Project elucidates the genetic basis for an increasing number of disorders, it is likely that the genetic basis for some fetal deaths will be identified. Having tissue available for future analysis may be helpful. The College of American Pathologists (CAP) publishes practice guidelines for performing and reporting perinatal necropsy.

Request neuropathologic evaluation. If liquefaction does not preclude examination, central nervous system (CNS) changes such as white-matter gliosis, macrophage infiltration, karyorrhexis, and vascular proliferation can provide evidence of earlier hypoxic episodes.

Also request a pathologic examination of the placenta, even if the request for

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<td>Betke-Kleihauer or flow cytometry*</td>
<td>Fetal-maternal hemorrhage</td>
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<td>Urine drug screen*</td>
<td>Cocaine or other drug use</td>
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<tr>
<td>VDRL or RPR, Parovirus antibody, CMV, IgM and IgG</td>
<td>TORCH infection</td>
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<tr>
<td>Antinuclear antibody</td>
<td>Lupus, other autoimmune disorders</td>
</tr>
<tr>
<td>Anticardiolipin antibodies (IgG, IgM), lupus anti-coagulant screen, factor V Leiden, antithrombin III, factor C, factor S</td>
<td>Thrombophilia</td>
</tr>
<tr>
<td>Hemoglobin A1C</td>
<td>Diabetes</td>
</tr>
<tr>
<td>Creatinine</td>
<td>Renal disease</td>
</tr>
<tr>
<td>Complete blood count with platelets</td>
<td>Need baseline in case of bleeding; abnormalities point to preeclampsia, disseminated intravascular coagulation screen</td>
</tr>
<tr>
<td>Livar function tests, uric acid</td>
<td>Preeclampsia</td>
</tr>
<tr>
<td>Type and screen and Coombs’ test</td>
<td>Isoimmunization; patient may need to go to the operating room for significant bleeding or failure to deliver</td>
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CMV = cytomegalovirus; IgG = immunoglobulin G; IgM = immunoglobulin M; RPR = rapid plasmin reagen; TORCH = toxoplasmosis, other infections, rubella, cytomegalovirus infection, and herpes simplex; VDRL = Venereal Disease Research Laboratory [test]

* Obtain prior to any other procedure.
autopsy is declined. Placental abnormalities such as circumvallate placenta or infarcts involving more than 20% of the placental surface may cause or be associated with fetal demise. Histologic evidence of infection can be present even when there are no clinical signs of chorioamnionitis; this may be a clue to the diagnosis. The pathologist can best describe any other significant placental pathology, such as floor infarction, fibrosis, and amnion nodosum.

The CAP guidelines emphasize the importance of the pathologist obtaining adequate information about the case, noting: “It is especially true in fetal and perinatal autopsies that the quality and usefulness of autopsy and placental data depend on the effort of the pathologist to obtain the medical history of the mother and integrate the outcome of the pregnancy.” Provide enough history to the pathologist so that she or he can target the evaluation appropriately.

If the mother declines autopsy, consider requesting total-body magnetic resonance imaging (MRI). In one investigation, 3 radiologists interpreted MRI studies performed on 26 postmortem, delivered fetuses; their interpretations were compared to autopsy findings. All 3 radiologists correctly detected 79% of the autopsy-proven major malformations; at least 1 radiologist identified 91%. Although it is not considered the “gold standard,” MRI may provide valuable information for families who decline autopsy.

Counseling the patient

The results of postmortem evaluation may not be known for several weeks. Once the evaluation is completed, schedule an appointment for the patient and her family to return to review all of the findings (if they desire to do so). Spend at least part of this visit assessing the patient’s grief response to diagnose possible depression.

Even if the studies fail to pinpoint a specific reason for the fetal death, it can be reassuring when many things are “ruled out.” If a specific diagnosis has been reached, explain it and any possible recurrence risks. (It may be helpful to have a genetic counselor participate in the discussion.) Identify specific behaviors, such as folic acid supplementation, cessation of tobacco use, or controlling blood sugar levels, that may decrease the patient’s risks of poor pregnancy outcomes in the future. It also is important to detail your thorough investigation—and counseling—in the patient’s chart, in the event of subsequent litigation. The patient should leave your office with a thorough understanding of what is known and unknown about the death of her fetus.

REFERENCES

Dr. Chescheir reports no affiliation or financial arrangement with any of the companies that manufacture drugs or devices in any of the product classes mentioned in this article.

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GYNECOLOGY

- Postmenopausal bleeding
- Fertility in women of advanced reproductive age
- Cutting your legal risks on laparoscopy