

QUIZ QUESTION

Stillborn Twins at 26 Weeks of Gestation

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Abstract

A 42 year-old woman with a twin pregnancy presented at 26 weeks of gestation with vaginal bleeding. There was no fetal movement detected and delivery was induced. Photograph of the stillborn twins is presented and a question on the most likely diagnosis is posed. An answer and a short explanation are provided.

Case Presentation

The attached gross photograph is taken of stillborn twins, delivered at 26 weeks gestational age. Complete post mortem examination showed no dysmorphic features and no evidence of anatomic cause of stillbirth.

Quiz

What is the most likely cause of stillbirth in these twins?

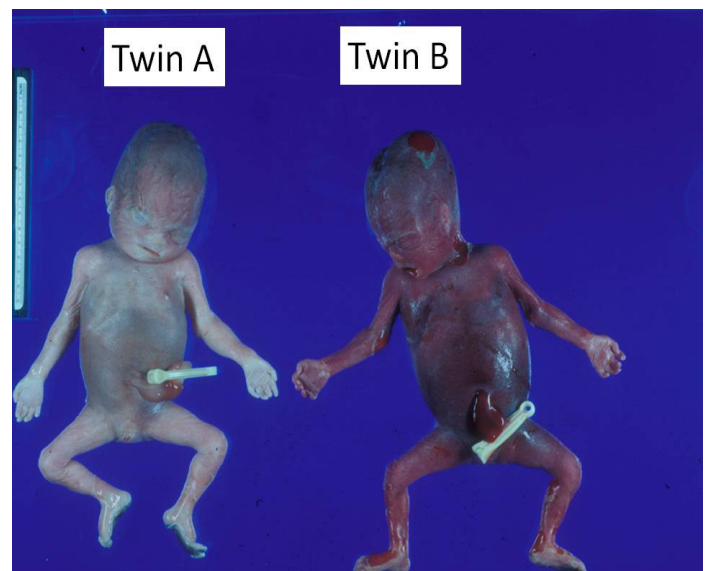


Figure 1: Stillborn twin fetuses; twin A is pale and slightly smaller than the plethoric fetus twin B.

Answer

The cause of stillbirth for these twins is Twin-to-twin transfusion syndrome (TTTS).

Clinical History

A 42-year-old woman, gravida 1 para 0, with a twin pregnancy presented at 26 weeks of gestation with vaginal bleeding. Ultrasound examination revealed polyhydramnios in one of the twins and oligohydramnios in the other. There was no fetal movement detected and delivery was induced.

Pathologic Findings at Postmortem Examination

Twin A weighed 596.5 grams and had external measurements consistent with the stated gestational age of 26 weeks. He had pallor of skin and internal organs. The heart weighed 3.2 grams. His hematocrit was 5%. These findings are consistent with a donor twin in TTTS. Twin B weighed 747.8 grams and had external measurements consistent with stated gestational age. He was plethoric. The heart weighed 8.3 grams and his hematocrit was 20%. These findings are consistent with recipient twin of TTTS. Examination of Placenta showed monochorionic membranes. The gross photo (Figure 1) shows fetal maceration which is more advanced in Twin B (the recipient) than in Twin A (the donor). This is in keeping with the well documented fact that the recipient is more likely to suffer complications earlier compared to the donor and die first.

Discussion

Twin-to-twin transfusion syndrome is a severe perinatal complication affecting monochorionic diamniotic twins (MCDA). The condition is characterized by unbalanced chronic blood transfer from one twin, defined as the donor, to the other, the recipient. TTTS complicates about 8-10% of MCDA pregnancies, a prevalence of approximately 1-3 per 10,000 births (1). Most cases of TTTS develop during the second trimester of pregnancy (weeks 15 to 26) (2). If untreated, TTTS has an extremely high perinatal morbidity and mortality rate; approaching 100% when the onset is in pre-viable gestational ages. It is estimated that TTTS accounts for up to 17% of total perinatal mortality in twins, and about half of all perinatal deaths in MCDA twins (3). A net transfer of volume to the recipient fetus results in volume overload and fetal hypertension that may ultimately produce congestive heart failure and hydrops fetalis. By contrast, chronic hypovolemia and hypoperfusion in the donor fetus may result in tubular atrophy and renal dysfunction (1). These pathological conditions can ultimately terminate in

loss of one or both fetuses.

Twin-to-twin transfusion syndrome is diagnosed by ultrasonography, with particular attention paid to the size of the twins' amniotic sacs. It is advised that MCDA pregnancies be monitored by sonography every two weeks. Two criteria must be fulfilled for the diagnosis of TTTS: first, the presence of an MCDA pregnancy; and second, the presence of oligohydramnios (a maximum vertical pocket of <2 cm) in one amniotic sac coupled with polyhydramnios (a maximum vertical pocket of >8 cm) in the other (3). The underlying pathophysiology of TTTS is not entirely understood, however inter-twin vascular anastomoses in the placenta are thought to be implicated. Complex interactions involving the renin-angiotensin system (RAS) in both twins is also thought to play a role. An imbalance of blood flow through the placental anastomoses leads to volume depletion in the donor twin and volume overload in the recipient, accompanied by oligohydramnios and polyhydramnios, respectively (3).

Early stage TTTS regresses in approximately 85% of cases, therefore only conservative management and continuous monitoring are indicated. In more advanced cases, therapeutic interventions include serial amnioreduction and laser photocoagulation of placental anastomoses (1). Compared with amnioreduction, fetoscopic laser therapy is associated with higher survival rates for at least one fetus (76%-88% vs 51%-60%), and a reduced rate of neurologic complications (13%-17% vs 29%) (2).

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