



Pathology/Biology Section - 2016

H40 Massive Fetomaternal Transfusion (FMT): Case Reports and Review of the Literature

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After attending this presentation, attendees will develop a better understanding of the importance of an accurate protocol to identify cases of FMT.

This presentation will impact the forensic science community by emphasizing the importance of requiring the Kleihauer-Betke Test (KBT) to confirm cases of FMT.

Introduction: FMT is the transplacental passage of fetal blood cells to the maternal circulation due to disruption of fetal vessels within the chorionic villi. The passage of fetal blood into maternal circulation is often asymptomatic due to the low volume of blood transfused. In some cases, it would seem that intervillous thromboses, present in these asymptomatic cases of FMT, probably serves as a protective mechanism to limit a possible massive hemorrhage. The incidence range is 3/1,000 for 30ml of fetal blood loss and 1/1,000 if the loss exceeds 80ml. The latter case usually leads to fetal death. FMT is associated with events or conditions that lead to stillbirth or neonatal death such as placental disorders, abdominal trauma, or alloimmunization. It can be suspected in cases of neonatal anemia, decreased or absent fetal movements, or hydrops fetalis. The diagnosis is difficult because of the limits imposed by available tests. The test used most often is the quantitative KBT. This test relies on a cytochemical process that allows differentiation of the adult red blood cells from fetal erythrocytes on a maternal blood smear. Although valid, this test has many disadvantages; it is time intensive and overestimates maternal conditions leading to HbF production.

Goals: Etiology, clinical presentation, obstetrical antecedents, and outcomes of pregnancies complicated by large FMT were reviewed in the Hospital Sant'Anna in Turin, Italy, and compared to literature.

Materials and Methods: A descriptive study was conducted by analyzing autopsies performed at the Gynecological and Obstetrical Hospital Sant'Anna in Turin from 2004 to 2014. Cases of FMT were extrapolated and attention was focused on cases of perinatal death occurring between the third trimester of pregnancy and the first week of extra-uterine life.

Results: From 2004 to 2014, 3,395 autopsies were performed and among these were 456 perinatal deaths. There were 12 cases of suspected FMT with an incidence of 2.6/100 perinatal deaths. The age range of the women was between 22 years and 40 years, with an average age of 32 years. Their countries of birth were Italy (8), Romania (2), Morocco (1), and Tunisia (1). Three women were primiparas; five were experiencing their second pregnancy; two, their third pregnancy; and two previously had an abortion. Ten cases out of twelve were stillbirths; the other two were neonatal deaths. Six women were Rhesus -, the other six were Rhesus +. Indirect Coombs tests were positive in three cases and negative in the remainder. Amniocentesis was performed in only two of the pregnancies. Decreased or absent fetal movements had been perceived in each of these pregnancies. Two women had beta thalassemia. Histological examination of the placenta presented some common traits. Intervillous hemorrhages and villous immaturity were evident in all cases. Erythroblastosis and corangiomas were noted in some cases. The results of the KBT were positive in eight cases, negative in three cases, and the test had not been performed in one case.

Conclusions: The variability of the predisposing factors and the characteristics of women contributed to a difficulty in diagnosing FMT. In cases where there are characteristics of a pale fetus with pale viscera, FMT must be suspected. A positive KBT result is essential for confirming diagnostic suspicions, especially in cases with poor blood transfusion. FMT is a rare, dramatic, and underestimated event that often leads to death of the fetus. It is important to use KBT to confirm the diagnosis of every case of suspected FMT. It is recommended that the KBT test be included in all stillbirth protocols.

Fetomaternal Transfusion, Kleihauer-Betke Test, Perinatal Deaths