



Unexpected stillbirth from umbilical cord hematoma

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Received: 8 March 2022 / Accepted: 25 June 2022 / Published online: 25 July 2022
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Abstract

Background Umbilical cord hematomas (UCHs) can cause life-threatening outcomes, although extremely uncommon. They can lead to fetal distress and stillbirth. They have been observed in about 1:5500 pregnancies; they are associated with poor outcome in about the 50% of all cases. UCHs commonly occur due to rupture/lesion of umbilical vein's walls, or less frequently of umbilical arteries' ones.

Case Report We present a case of a fetal demise which acutely and unexpectedly occurred in the last phases of labor. In this fetus, the identification of the cause of death was made only after post-mortem examination. The present report depicts the uncommon eventuality of umbilical cord hematomas which can cause unexpected fetal demise.

Conclusion This case points out that in these cases careful examination of umbilical cord's macroscopic/microscopic examination is fundamental to clarify the natural cause of fetal death for statistical purposes; to close parents' mourning process; to ascertain medical malpractice claims.

Keywords Umbilical cord hematoma · Stillbirth · Autopsy · Unexpected death

Introduction

Among all causes of fetal distress and stillbirth, umbilical cord hematomas (UCHs) are uncommon. However, they can determine unexpected fetal deaths during perinatal procedures [1–3]. These cases can remain unexplained unless careful macroscopic and microscopic evaluations of placenta and umbilical cord [4]. We present a case of a fetal demise which acutely and unexpectedly occurred in the last phases of labor. In this fetus, the identification of the cause of death was made only after postmortem examination.

Case Report

A 32-years-old pregnant woman (gravida 0, para 0, abortus 0—G0, P0, A0) was transported by ambulance to the local emergency department because of premature rupture of membrane (at 39 weeks of gestational age). She had no known diseases, and the amniocentesis had been negative. Right after admission of the woman to the hospital, physicians registered: fetus in cephalic position; clear amniotic fluid; unremarkable cardiotocography (CTG) recorded continuously for 30 min. In the second stage of labor, fetal heart rate was characterized by normal range (110–160 bpm) with moderate variability (6–25 bpm). Some early decelerations and bradycardia (which lasted < 5 min) were registered in the last phases. Then, the fetal heart rate was not heard for about 10 min before the delivery. Healthcare operators performed an operative vaginal delivery using a vacuum assisted procedure. At delivery, the fetus was non-reactivity to stimuli, atonic, and cyanotic; the Apgar scores were 0, 0, 0; fetal blood evaluation revealed pH 6.593. Prompt intubation, ventilation, and cardiopulmonary resuscitation were carried out but with not avail. A forensic autopsy was performed to define the cause of the demise and to ascertain medical

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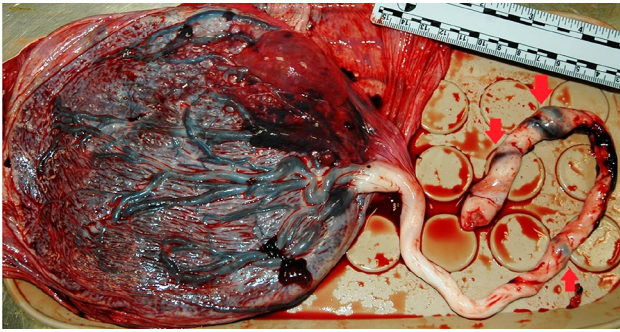


Fig. 1 Gross examination of the umbilical cord showed three (red arrows) dark/red areas correspondent to the hematomas

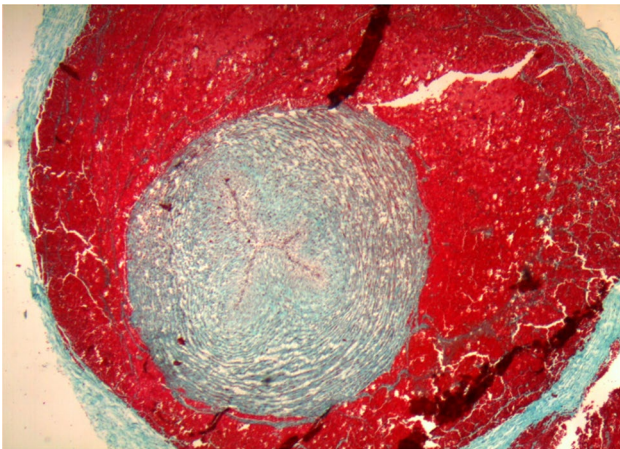


Fig. 2 Microscopic examination of the umbilical cord (trichrome stain, 4x) demonstrated compression of the artery by the hematoma

responsibility. Indeed, parents raised formal complaint for medical malpractice.

At autopsy, the fetus was identified as male, with normal somatic development and weighing 3280 g. The external examination showed cutaneous cyanosis, dark purple hypostasis, and meconium on gluteus skin. At internal examination, petechiae were observed on the surface of the lungs. No congenital malformations were identified. At the gross examination, the placenta weighed 450 g and the umbilical cord had marginal insertion and a length of 40 cm. The macroscopic examination of the umbilical cord revealed three areas with dark/red discoloration and markedly increased thickness (Fig. 1). The microscopic examination (hematoxylin–eosin and trichrome stains) showed the presence of umbilical cord hematomas which compressed vessels (Fig. 2).

In the light of the above, the forensic pathologists declared that the demise was due to fetal hypoxia caused by the perinatal and unexpected occurrence of UCHs. Medical malpractice was excluded because before the

delivery there were no elements which should have induced the physicians to suspect UCHs. In particular, it is important to note that at emergency department admission CTG was unremarkable. In addition, when fetal heart rate demonstrated non-reassuring signs in the last phases of the second stage of labor, the delivery was completed in the shortest possible time.

Discussion

UCHs can cause life-threatening outcomes, although they are extremely uncommon. They can lead to fetal distress and stillbirth. UCHs have been observed in about 1:5500 pregnancies, and they are associated with poor outcome in about the 50% of all cases [1–4]. UCHs commonly occur due to rupture/dissection of umbilical vein's walls, or less frequently of umbilical arteries' ones. The etiology of UCH remains unexplained. Risk factors include morphologic anomalies of the umbilical cord (length or thickness of vessels' wall), true knots, cord prolapse, traction or shortness of the cord, infection (i.e., chorioamnionitis and funisitis), post-maturity, and mechanical trauma [2–4]. Fetal death or hypoxia may be caused by complete or partial compression of umbilical vessels by the blood extravasation in Wharton's jelly [1–4].

In the present case, even if histologic examination allowed to ascertain UCH as cause of the demise, no risk factors were identified. Thus, the specific trigger of UCHs was not identified. The present report points out that in these cases, pathologists should execute a carefully evaluation of the macroscopic/microscopic appearance not only of the fetus but also of the placenta and umbilical cord. This can allow to clarify the natural cause of fetal death for statistical purposes; close parents' mourning process; and ascertain medical malpractice claims. Indeed, in this case the latter was rejected because other examinations and/or procedures to avoid the demise were not indicated, nor predictable.

Acknowledgements None.

Funding None.

Declarations

Conflict of interest None.

Informed Consent Informed consent was obtained.

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