

Autopsy Report

AC-24-00134NIKOLAOU, Baby of elvira
50282290

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Final Diagnosis

Fetal death in utero discovered at 32+6 after presentation with reduced fetal movements.

Positive FMHq result (equivalent to 58ml packed cells) confirming fetomaternal haemorrhage.
Autopsy limited by consent to external examination only.

Baby: (external examination only)

- Male with appropriate growth for gestational age (external measurements 50-95th percentile)
- Mildly-macerated
- Normal external morphology apart from incidental tongue-tie
- Pale appearing baby
- Meconium staining (lips, tongue, and a little in skin creases)

Radiology: Unremarkable X-ray.

Placenta:

- Normal placental weight 292g (25-50th percentile, and typical of 31 weeks)
- Generally pale placenta
- **Significant subchorionic haematoma 116 x 60 x 13mm extending from disc margin to central disc including under cord insertion and separating chorionic plate from underlying villous tissue**
- Normal umbilical cord: Length 400mm (10-50th percentile), coiling 0.14 coils/cm, diameter 16-18mm (normal 16.6+/-2.4mm), and eccentric insertion.

Placental microscopy:

- Subchorionic haematoma as above
- Inconspicuous/subtle fetal vasculature containing circulating immature red cell precursors, compatible with the known fetomaternal haemorrhage and a fetal response to stress and haemorrhage
- Meconium staining - fetal stress response, with reactive amnion.
- Appropriate preterm third trimester development.

Microbiology: Placental swab = No growth

Overall, the baby and placental findings are consistent with the now confirmed fetomaternal haemorrhage, and this is considered the cause of fetal death in utero.

Dr Michael Krivanek
(Electronically signed by)
02-JUL-2024

Summary of Measurements and Weights

Autopsy performed by Dr Michael Krivanek on 24/6/24.
Gestation: 32+6/40

	Observed	Normal @ 32/40
Birthweight	2138g	
Weight @ autopsy	2062.4g	1736.8 ± 226.2 g
Crown-Heel Length	467mm	429 ± 30 mm

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Crown-Rump Length		
Head Circumference	312mm	299 ± 22 mm
Head A. P.	317mm	288 ± 18 mm
Bi-Parietal Diameter	101mm	
Inner Canthus	92mm	
Outer Canthus	25mm	
Philtrum	56mm	
Ear below Eye	8mm	
Pinna Length	-	
Hand Length	29mm	
Finger Length	58mm	
Upper Arm	25mm	
Lower Arm	77mm	
Chest Circumference	72mm	
Inter Nipple Distance	286mm	259 ± 21 mm
Abdominal Circumference	63mm	
Umbilical cord	249mm	234 ± 26 mm
Upper Leg Length	59mm	
Lower Leg Length	91mm	
Foot Length	83mm	
(MK/ld)	71mm	64 ± 4 mm

Clinical Information

This baby is received from Westmead Hospital on 24.6.24.
Consent was for an external only autopsy.
The mother is a 37-year-old lady. Her medical history includes fibromyalgia, L4/5 microdiscectomy, gastric sleeve, anxiety/depression/PTSD.
Her obstetric history is G2, P0, with 1x sTOP at 6/40.
The EDD by dates was 7.8.24.
Antenatal screening serology was negative, MSU negative, morphology ultrasound (report not provided) reportedly showed normal anatomy and a posterior placenta COO.

She presented at 32+6 with absent fetal movements and was found to have fetal death in utero.
Induction of labour was performed, labour course 39 hours with no complications.
Normal vaginal delivery with cephalic presentation of a stillborn male single baby weighing 2138g on 22.6.24 at 1:56 AM (33+3/40).

Results received after the external autopsy was performed;
FMH quantitation test: Positive
- "...2.63% fetal red cells detected in the maternal sample by HbF flow cytometric method. This corresponds with a fetal bleed of approximately 58ml of packed cells..." (MK/mk)

External Examination

This is a mildly-macerated male baby. Skin slippage and denudation is present involving the trunk and upper and lower limbs. Skin and soft tissues appear pale. Autopsy weight is 2062g. External weights and measurements are all in keeping with the stated gestational age of 32 completed weeks, all being above average 50-95th percentile. Most are typical of 34-35 weeks.

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The head retains a normal shape with the anterior fontanelle admitting one-two fingers. The eyes are normally located with horizontal palpebral fissures. Eyelids are open over normally formed globes. Conjunctiva is pale. The nose is normally sited and formed with patent posterior nasal choanae. The philtrum and mouth are normal. Lips and tongue appear meconium stained. The tongue is normal apart from a tongue tie. The palate is intact. The chin is normally formed. There is no facial dysmorphism. The ears are normally sited with well-formed pinna and patent external auditory canals. There are no pre- or post-auricular pits or sinuses.

The neck and back are normal with no neural tube defect. The thorax is symmetrical and nipples normally sited. The abdominal wall is intact. The attached portion of umbilical cord has a light red colour, is 42mm long, has 3 vessels and 1.5 coils. A piece of cord was stored at -80 degrees Celsius as the placenta had not yet been received at the time of autopsy.

The external genitalia are that of a normal male, with the urethra extending to the tip of the penis (M). The anus is normally sited and patent.

The upper limbs are symmetrical with 5 digits on each hand. Palmar and phalangeal creases are normal. Fingernail development is appropriate for age. The lower limbs are also symmetrical and include 5 toes on each foot, with appropriate toenail development. Gluteal folds are present. (MK/mk)

Internal Examination

Not performed. (MK/mk)

Placenta

POT LABELLED: Unlabelled as to site
SPECIMEN: Singleton placenta

Measurements prior to fixation:

SHAPE AND SIZE OF PLACENTAL DISC: Oval, flat, 192 x 177 x 7-11mm

TRIMMED PLACENTAL DISC WEIGHT: 291.8g (normal for 32 weeks = 25-50th percentile, most typical of 29-30 weeks).

Normal fetal:placental ratio of 7.33 (75-90th percentile).

UMBILICAL CORD:

- Total cord length received = 400mm (= 42+ 358mm) (=10-50th percentile)
- Portion attached to fetus: 42mm, 1.5 coils.
- Length attached to placenta: 358mm. Diameter 16-18mm. 4 coils.
- Separate cord segments with placenta: Nil
- Insertion: Eccentric, 57mm to the edge of the placenta
- Vessels: 3
- Overall coiling (0.14 coils/cm, normal is 0.1-0.3)
- Lesions: Not seen
- Additional cord segments also received: Nil

MEMBRANES:

- Colour: Pink, translucent
- Insertion: Marginal
- Completeness: Complete
- Site of rupture: 63mm to the edge of the placenta
- Velamentous vessels: Not seen

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FETAL SURFACE: Pink-grey, shiny. 1x small mobile tan plaque 6 x 5 x 1mm at edge of disc.
FETAL VESSELS: Normal appearing
MATERNAL SURFACE: Pale pink, complete, no indentation.
ADHERENT BLOOD CLOTS: Minimal, at periphery, 70 x 10 x 2mm.
PLACENTAL DISC: Mostly pale tan-pink (90-95% of disc), with some interspersed darker red areas. 1x firm pale tan and pink lesion seen at periphery of disc adjacent to basal plate, 20 x 13 x 15mm (less than 5% of disc volume). A subchorionic haematoma is seen extending from edge of disc to central disc, and under cord insertion site, measuring 116mm x 60mm x 13mm.

TRIAGE PRIOR TO FIXATION:
1x swab for microbiology
1x BxAdd of cord stored at -80C

Blocks:

- 1A: 2x umbilical cord
- 1B: 1x membrane roll
- 1C: cord insertion site with subchorionic haematoma
- 1D: central disc pale area with subchorionic haematoma
- 1E: central disc interface pale and red areas
- 1F: central disc interface pale and red areas
- 1G: peripheral disc interface pale area and tan-pink firm lesion
- 1H: peripheral disc pale area with chorionic plate plaque

Photographs taken
Timeout performed; blocks, specimen, and request form checked and match. (KT).

Microscopic Description

PLACENTA: The umbilical cord contains 3 vessels. There is no vasculitis or funisitis, and no chorionic vasculitis. Meconium deposition is seen in the membranes and chorionic plate. The amnion has a reactive appearance. No convincing haemosiderin seen. There is no acute or chronic chorioamnionitis. The peripheral chorionic plate plaque (1H) is a calcified yolk sac remnant. The fetal vasculature is patent without thrombi or calcification, but the lumens tend to be smaller and inconspicuous in the villi, and some contain circulating immature red cell precursors. There is villous vascular and stromal karyorrhexis. Noting the inconspicuous vasculature, only a few avascular villi are seen. Significant central and peripheral fresh subchorionic haematoma, partially lamellated, separates the chorionic plate from underlying villous parenchyma as described macroscopically (1C, 1D, 1G). The peripheral pale areas represent focal regions with increased intervillous fibrin deposition (1G, 1H). The villous ischaemic change or infarcts are seen. Villi show appropriate preterm third trimester development. Some have mildly oedematous stroma which has a myxoid quality in places. No convincing acute or chronic villitis or intervillitis is seen. No viral inclusions or villus plasma cells seen. The maternal floor decidua contains a patchy lymphocytic infiltrate without plasma cells, not reaching diagnostic criteria for chronic deciduitis. Maternal vessels are normally transformed without decidual vasculopathy. (MK/mk)

External Reports

Placental swab (CHW): No growth

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"X-Ray Babygram (Verified)
24/06/2024, 4:05 PM, X-Ray Babygram

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Clinical History (as entered by the referring clinician): Clinical History: Presented with reduced fetal movements (duration not stated), fetal death in utero discovered at 32+6/40 after an otherwise unremarkable antenatal course. Reportedly normal morphology ultrasound.
Reason for Exam: Autopsy component

FINDINGS:

A nasal bone is present.
The maxilla and mandible are aligned.
There are 12 ribs on each side with 12 thoracic vertebral bodies, 5 lumbar vertebral bodies and 5 ossified sacral segments and a sacral ossification centre.
The ribs/vertebral bodies are normal in appearance.
The shoulder girdles and pelvis are normal in appearance.
The ischium and pubic bones are ossified as are the talus and calcaneus.

Long bone abnormalities are not present.
The measurements are as follows:
Humerus 60 mm = 36 weeks (range 33-38)
Radius 50 mm = 36 weeks (range 33-39)
Femur 66 mm = 34 weeks (range 32-36)
Tibia 60 mm = 36 weeks (range 34-38).

The short tubular bones of the hands and feet are normal in appearance.

IMPRESSION:

A skeletal abnormality is not present. The measurements and ossification centres would correspond to a gestational age of close to 33 weeks.

Report created by: denise.warner, 27/06/2024, 5:38 PM
Final signed by: denise.warner at 05:44 PM on 27/06/2024"

Pathologist Comment

This pregnancy was to a 37-year-old G2P0 lady, with a previous TOP at 6/40. Antenatal screening serology and imaging were unremarkable, but at 32+6/40 she presented with absent fetal movements and at this time fetal death in utero was confirmed.
Induction of labour resulted in delivery of a stillborn male baby weighing 2138g, with meconium stained liquor.

The autopsy was limited by the consent to an external examination only and imaging. The placenta was also received for examination.

Maternal fetal death in utero blood samples returned a positive fetomaternal haemorrhage quantitation test, showing 2.63% fetal red cells in the maternal sample, which correlates to a fetal bleed of

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approximately 58mL of packed cells. Fetal circulating volume is estimated at approximately 80 ml per kilogram, implying this baby would have had a volume of approximately 171mL of blood. As such, this is a clinically significant fetomaternal haemorrhage volume, and could certainly account for fetal death in utero. This is even before considering the fact there was also significant subchorionic haemorrhage in the placenta such that the amount of fetal blood lost may be higher. It is very difficult to make any assessment as to whether this was acute or an acute-on-chronic haemorrhage, but the lack of hydrops, and relatively low number of circulating red cell precursors, as well as the normal growth, all tend to favour an acute bleed without a significant chronic component.

The autopsy x-ray was unremarkable, with no evidence of a skeletal dysplasia, and age-appropriate radiographic measurements.

The placental culture was also unremarkable with no growth.
Tissue (umbilical cord) samples potentially suitable for chromosome microarray/DNA extraction will be kept for a period of 5 years from the autopsy date, and then discarded.

The external baby examination confirmed a normally grown, normally developed (externally) male baby. He was quite pale.
Assessable measurements were all above average normal (50-95th percentile) with no evidence of a small or large for gestational age growth pattern.

The umbilical cord was unremarkable;
- total length received 400mm (10-50th percentile)
- coiling 0.14 coils/cm (normal 0.1-0.3)
- Diameter 16-18mm (normal 16.6+/-2.4mm)
- Insertion eccentric.

The placenta had a normal weight of 292g (25-50th percentile, and typical of 31 weeks), and a normal fetal:placental weight ratio in keeping with an appropriately sized placenta and baby.
Placental findings were consistent with fetomaternal haemorrhage (generally mildly pale, circulating immature red cells) and there was an extensive subchorionic haemorrhage separating the fetal vasculature on the chorionic plate from the underlying placental tissue including at the cord insertion. Some of this blood may also represent loss from the fetal circulation. Acute fetal stress type changes including meconium staining resulting in a reactive amnion, and circulating immature red cells are also noted.

In summary, fetal death in utero occurred sometime after 32 completed weeks, likely a relatively short period before the presentation and is considered due to a significant fetomaternal haemorrhage of at least 58ml packed cell volume as demonstrated on HbF flow cytometry FMH quantitation blood testing. The baby (external only) and placenta show compatible findings of haemorrhage and an acute fetal stress response. Based on the external examination he was morphologically normal and appropriately grown, and an X-ray was normal.