# Investigation and management of a death in utero

## Preamble:

A death in utero is a devastating experience to the mother and her family. Some may never recover from such an experienceand affected women are known to have intense, protracted grief reactions and to have depression

## Definition

Death in utero is defined as the death of a fetus after the completion of the 28$^{th}$ week of gestation. Those with a birth weight of 500 grams or more without signs of life at the time of birth also belong to this group

## Diagnosis:

Absence of fetal cardiac activity on ultrasonography is the recommended method for diagnosing death in utero. Colour Doppler of cardiac activity and umbilical cord will supplement the diagnosis.

In a situation where there is a suspicion of the absence of fetal heard sounds on auscultation or cardiotocography, ultrasound examination to make a definitive diagnosis must be undertaken by without delay.

## Points about breaking the news

Keeping a woman in suspense without a definite diagnosis is very traumatic for her. This situation must be avoided at all costs.

It is important that the woman and her family are given the diagnosis unambiguously. The most experienced practitioner available must be involved in breaking the news.

It is best that that news is broken in a private environment. The presence of a companion will be very helpful. Avoid making any comments that would make the woman feel guilty for the death of her baby.

Address concerns regarding safety of the mother.

Explain investigations to find a cause and plan for delivery. Discuss autopsy. The initial time of breaking the news may not be the best time to discuss this.

Avoid speculation regarding the cause until results of investigations are available, unless there is an obvious cause.

**Care of the mother**
Depending on risk factors and available facilities, consider managing the mother in a setting away from other pregnant women and babies.

The mother must be assessed to ensure that there are no immediate risks to her life (e.g. from sepsis or preeclampsia or hemorrhage or uterine rupture or uncontrolled diabetes)

Vital parameters must be monitored regularly.

**Investigations:**
In a high proportion, the cause of Death in Utero (DIU) will remain unexplained despite investigations. It is likely that the most common cause is undiagnosed late-onset fetal growth restriction.

Nevertheless, it is important that these cases are investigated as best as possible, since finding a cause and even the absence of a detectable cause will have implications for managing future pregnancies and also

help in the grieving process of the woman and her family.

This guideline recommends a set of "Core Investigations" in all cases of DIU. These recommendations are based on consensus on their cost effectiveness. In cases where there appears to be an 'obvious' clinical aetiology, there could be an underlying and/or associated cause.However, discretion is needed in cases with lethal fetal anomalies.

The investigations are divided asthose that are recommended:

A. at the time of diagnosis
B. immediately following delivery
C. 6 weeks following delivery

A. Core investigations to be done at the time of diagnosis od DIU
    a. A comprehensive maternal, family and social history
    b. Ultrasound to measure amniotic fluid volume and detect possible fetal anomalies
    c. Blood investigations
        i. Full blood count –
        ii. Kleihauer-Betke test (see annex I for method)
        iii. Unexpected antibodies (irrespective of Rhesus status of mother)
        iv. Toxoplasma IgM
        v. Rubella IgM in women who have not been immunized
        vi. VDRL
        vii. HIV screen
        viii. Serum AST/ALT
        ix. Serum TSH
        x. $HbA_{1c}$ (except in motherswho were known to be poorly controlled diabetics)

B. Core investigations following birth
    a. On the baby
        i. External examination (see Annex II for details)
        ii. Ear swab for culture
        iii. Blood from the cord or by cardiac puncture for:
            1. Microbiological culture
            2. *Full blood count*
            3. *Blood group and Rhesus*
            4. *Coomb's test*
        *iv.* If there are skeletal dysmorphic features, an X Ray examination of the baby is recommended
        *v.* Autopsy, preferably by a Perinatal Pathologist.Where consent for autopsy is not given, placenta and membranes must be sent for histopathological examination.
    b. Examination of placenta, cord and membranes (see Annex III for details)
    *c.* Where DIU is managed conservatively beyond three weeks after the death or it is suspected to have occurred prior to three weeks, aPTT and PT

*C.* Six weeks following delivery

Investigation for thrombophilia should be undertaken six weeks postnatally where a fetal death is associated with fetal growth restriction, pre-eclampsia, abruptio placentae, maternal thrombosis and/or maternal family history of thrombosis, vasculitis or thrombosis on placental histology or remains unexplained following core investigations. These tests include:

a. Anticardiolipin antibody(IgG&IgM)
b. Lupus anticoagulant

**Selective tests**

These are tests that could be arranged selectively, based on need following discussions with the patient.

A. At the time of diagnosis

a. Thrombophilia screen
    i. Anticardiolipin antibodies (IgG&IgM)
    ii. Lupus anticoagulant
b. Maternal blood for parvovirus B19 and cytomegalovirus antibodies
c. Serum bile acids
d. Anti Ro/La antibodies where the fetus is hydropic

**Delivery**

Vaginal delivery is preferred

Do not hesitate to resort to a cesarean section despite a dead baby, if that would save the mother's life e.g. placental abruption with active bleeding where delivery is not imminent

Most women would wish to be delivered early, but there is no contraindication to conservative management.

Women with sepsis, preeclampsia and ruptured membranes and placental abruption are not suitable for conservative management.

Prostaglandins are preferred for induction of labor.

Repeated vaginal examinations and artificial separation of membranes must be avoided

Artificial rupture of membranes must be avoided unless delivery is imminent or there is a placental abruption

In case of conservative management, the woman must be monitored with twice weekly full blood counts. Routine use of antibiotics is not recommended in these women

Women with a scarred uterus will require close monitoring for rupture of the scar during labour

The woman must be provided support during labor. Allow a companion to be present, wherever possible. Adequate pain relief is very important and may be provided by opioids and epidural. Morphine is preferred to pethidine

A longer time duration may be allowed for the second stage of labor.

Active management of the third stage of labor is recommended

**Puerparium**

After delivery, the baby may be shown to the mother or the mother allowed to hold the baby, depending on her wishes

Be cognizant of severe bereavement reactions and possible clinical depression. The mother needs constant support to cope with her loss. She and her family will need reassurance that the death was not due to their fault. Anxiolytics and hypnotics may be required. Suspicion of depressive symptoms warrants referral to a psychiatry team.

Suppress lactation with cabergolin 1 mg as a single dose. Ask the mother not to express milk in case the breasts become engorged. She mayneed to wear a well fitting brassier. Simple analgesics may be required to alleviate pain in the breasts.

Expedite the investigations, autopsy and administrative requirements. Continue observations of

maternal vital parameters. Discharge the mother from hospital as early as is safely possible.She may prefer to be in her own environment at this time of grief. Avoid situations where the mother is required to stay in hospital until completion of investigations (e.g. autopsy), despite her being fit to be discharged.

Documentation must be done thoroughly.

The diagnosis card must include the following minimum information:

- Best estimation of gestational age at the time of death
- Antenatal complications
- Birth weight
- Dysmorphic features
- Placenta & cord
  - Weight
  - Evidence of abruption
  - Cord insertion – central/peripheral
  - Number of vessels
- Preliminary findings of autopsy (if available)
- Whether the placenta was sent for pathological examination
- Investigations

**Debriefing**

A debriefing, preferably with the Consultant after four to six weeks is recommended. Address their concerns and explain the possible cause for the loss. In a sizeable proportion, despite tests and autopsy, the death may remain unexplained.

The woman may be advised that she may try for her next pregnancy from any time she feels ready, provided correctable problems found in her reports are addressed.

Advise that her next pregnancy needs to be planned. Recommend a suitable family planning method

**Management of the next pregnancy**

Early booking is recommended in future pregnancies and dating must be confirmed by ultrasound.

Start low-dose aspirin where appropriate

It is common for women who have experienced a death in utero to be intensely anxious during future pregnancies. They require constant reassurance.

In women with previous DIU that has been unexplained or due to growth restriction or abrutio placentae, arrange tests to ensure satisfactory placental function. These include mid trimester uterine artery Doppler, growth scans from 28 weeks onwards and middle cerebral artery Doppler in later third trimester. In women with past unexplained stillbirths at or close to term, consider delivery one to two weeks before the time of the previous death, depending on fetal maturity.

References:


1. Flenady V, King J, Charles A, et al., for the Perinatal Society of Australia and New Zealand (PSANZ) Perinatal Mortality Group. PSANZ Clinical Practice Guideline for Perinatal Mortality. Version 2.2, Brisbane April 2009. www.psanzpnmsig.org
2. Management of Stillbirth Green-Top Guideline. Royal College of Obstetricians &Gynaecologists

# ANNEX I

## Kleihauer test

### Principle

An acid elution cytochemical method which identifies individual cells containing haemoglobin F. Depends on the fact that HbF containing cells resist acid elution to a greater extent than do normal cells.

### Reagents needed

Fixative – 80% ethanol

Elution solution –

Solution A – 7.5g/l haematoxylin in 90% ethanol

Solution B – $FeCl_3$ 24g , 2.5 mol/l HCl 20ml in doubly distilled water to 1 litre

For use – Mix well 5 vols of A and 1 vol of B

The pH of the solution should be approximately 1.5

Once prepared, the solution may be kept and used for about 4 weeks.

Counter stain – 1g/l aqueous erythrosine or 2.5g/l aqueous eosin.

### Method –

EDTA blood can be used

Prepare fresh air dried films.

Immediately after drying fix the films for 5 min in 80% ethanol. (in a Coplin jar)

Rinse the slides rapidly in water and stand them vertically on a blotting paper for 10 min to dry.

Place the slides in a Coplin jar containing elution solution for 20 sec.

Wash the slides thoroughly in water

Finally place them in counterstain for 2 min

Rinse in tap water and allow them to dry in the air

Fetal cells will stain red

Adult ghost cells will stain pale pink

Stain controls as follows alongside the test films

Positive control – from a mixture of cord blood and adult blood

Negative control – Normal adult blood

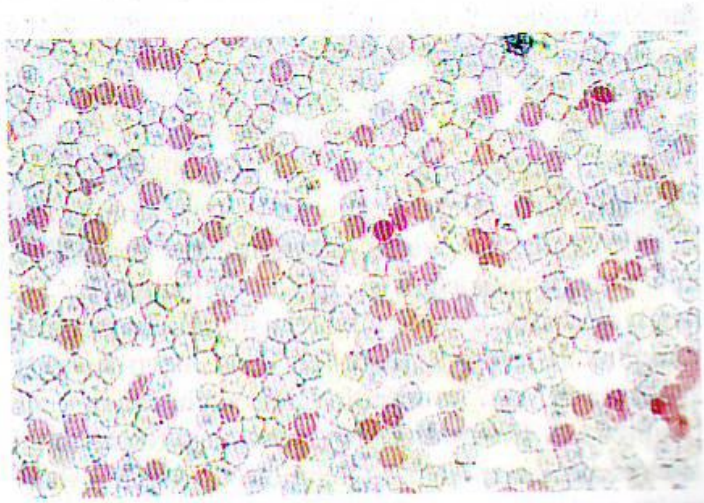

Figure 13.9 Cytochemical demonstration of fetal haemoglobin. Acid elution method. The preparation consists of a mixture of cord and normal adult blood. The darkly staining cells are fetal cells.

**Calculation of volume of F-M haemorrhage using the Kleihauer test**

A count of 200 pink staining HbF containing cells in 50 low power fields (i.e 4 HbF cells in 1 low power field ) is equivalent to a FM haemorrhage of 4ml.

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