

# Investigations at stillbirth



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**Investigating a stillbirth is like attempting to solve a mystery with a variable number of clues available. Information comes from different sources. As clinicians involved in the care of women who lose babies in pregnancy, we must remember that, while supporting women through this traumatic time, we also need to be looking for answers as to why this has happened.**

Women and their families will also be looking for ways to ensure a successful outcome in a future pregnancy.

Sometimes answers may be obvious, other times we may never know why a stillbirth has occurred. However, generally, the more information available, the more readily we are able to put the clues into some sort of order.

While the optimal evaluation of a stillbirth is controversial and is influenced by medical and non-medical factors, it is noteworthy that the proportion of stillbirths that are 'explained' is much higher in centres using systematic evaluation for recognised causes and potential causes of stillbirth.<sup>1</sup>

## Back to basics

Keep good medical records for all patients. Document maternal age as well as height and weight at the beginning of each pregnancy in order to complete customised growth charts and you may detect a growth restricted baby at risk of perinatal mortality.<sup>2</sup> The risk of stillbirth is almost twice as high among obese pregnant women compared with normal weight pregnant women.<sup>3</sup>

A thorough history is vital to investigating a stillbirth and the person who sees the woman first is often in the best position to get the most recent history. How have movements been? Has there been any bleeding or fluid leakage? Has there been any trauma, or, amongst some Pacific Island cultures, any traditional massage? Has the mother had a viral illness or is there any past medical, family or obstetric history of note?

## Ultrasound

Most stillbirths are confirmed by ultrasound examination and a scan can also be useful for giving other information. Is the liquor volume normal? Size, anatomy and placental location may also add to the 'clues'. If a chromosomal abnormality is suspected or there is a possibility of infection, amniotic fluid can be taken by amniocentesis and sent for cytogenetic assessment or microbiology and virology culturing.

## Maternal blood investigations

These should be requested as close to the diagnosis as possible. Hospitals will vary in the standard tests they request, but most would accept the following as a baseline:

- Full blood count including white cell count and platelets
- Group and antibody screen

- Kleihauer
- Rubella, Hepatitis B, \*VDRL and HIV if not already performed in booking bloods
- HbA1c
- Polycose and/or glucose tolerance test (GTT)
- Thyroid function tests
- Thrombophilia screen
- Antinuclear antibodies
- Lupus anticoagulant
- Anticardiolipin antibodies.

Serological investigations for intrauterine viral and protozoal agents, including toxoplasmosis, cytomegalovirus, herpes simplex and parvovirus, are of little clinical benefit.<sup>4</sup>

## Following delivery

A thorough examination of the baby, placenta and cord are important, especially if postmortem (PM) has been declined. Birth weight and measurements of head circumference, crown-heel length, crown-rump length and foot length should all be recorded. The degree of maceration, the colour of the baby and the amount of subcutaneous fat should be noted.

An excellent check list for baby examination findings can be found on the Perinatal Society of Australia and New Zealand Perinatal Mortality Group (PSANZ PMG) website.<sup>7</sup>

## The placenta

Examination of the placenta is an integral part of the baby examination. Look at the membrane colour and integrity. Are the chorionic vessels empty, full or normal? Is there any scarring or haemorrhage on the maternal surface? Does the parenchyma appear loose and pale or firm? Look at cord insertion, length and colour. Check for knots, areas of compression or haemorrhage into the matrix.

Placental histopathology alone can give a cause for stillbirth in up to 30 per cent of cases and consent should always be sought, even if consent for PM has not been obtained.<sup>7</sup> Histological evaluation of the placenta, membranes and umbilical cord can provide insight into varied potential aetiologies including infection, genetic abnormality, anaemia and thrombophilias.<sup>3</sup>

## Microbiology

Placental swabs can be useful, but are best if taken from between the membranes. Swabs taken from the maternal surface will be contaminated by maternal vaginal flora and of little use. As mentioned, amniotic fluid can be sent for microbiology and virology if taken at amniocentesis.

\* Venereal Disease Research Laboratory (VDRL)

If the baby is not for PM take pharyngeal swabs. Stomach and lung swabs will be taken at PM.

## Clinical photographs

Clinical photographs are an important aid to diagnosis, especially if PM is not consented to. Photos need parental consent. Once more, the PSANZ PMG website has excellent instructions for taking appropriate photographs.

## Cytogenetics

Fetal karyotype is valuable, especially in cases where PM is not being performed. If an amniotic fluid sample has been taken before delivery then further samples need not be sent. Otherwise, send cord blood or cut a clean sample of placenta from the fetal side and a one centimetre piece of umbilical cord, and send in saline or transport media.

## Postmortem examination

Postmortem examination is the single most useful diagnostic test in investigating a stillbirth and is offered to all women in our hospital. When PM is performed, up to 69 per cent of stillbirths can be explained, compared with 56 per cent when no PM is performed.<sup>5</sup> In addition to the identification of birth defects and morphologic abnormalities suggesting genetic or developmental abnormalities, PM can determine and/or confirm numerous other causes of stillbirth. Examples include infection, anaemia, hypoxia and metabolic abnormalities.<sup>3</sup>

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From our hospital in New Zealand, babies are flown to Wellington for PM, an hour's flight away. Despite this need to transport babies via escort in an aeroplane, the offer of PM is regularly accepted. The service is prompt. Babies are treated with the utmost respect and the findings are presented by the pathologist, who attends our monthly perinatal mortality meeting.

We have learnt that it is important never to assume that a family will want or not want a PM. All parents should be given the opportunity to make an informed decision with regard to PM examination of their child.

When offering a PM you need to be able to answer questions that the family may have: how long will the procedure take, where will my baby be cut, what will he/she look like afterwards? Parents should expect to be able to discuss the PM with an informed person once the results are available. They should expect to be able to see the baby following the PM and to attend a debriefing session with an obstetrician within two months of the death.

Despite the best of counselling, families may still refuse PM examination. Reasons for refusal include concerns around disfigurement and further suffering for the baby. There may be objections from family members for religious or cultural reasons.

## Magnetic resonance imaging (MRI)

MRI (if available) can be offered if PM is refused. It has advantages and disadvantages, being more readily accepted by some patients, but without the tissue examination of a PM. The diagnostic accuracy is also less than PM, with, in one study, ten of the 18 abnormalities found in PM being detected on MRI.<sup>6</sup>

## Summary

We investigate stillbirths for a number of reasons. Giving parents an answer can help with closure as they mourn the loss of their baby. It is important to use whatever information we have gathered to help them plan for a subsequent pregnancy.

## References

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7. A check list for baby examination findings. Perinatal Society of Australia and New Zealand Perinatal Mortality Group (PSANZ PMG) website: [www.psanzpnm.org/doc/Clinical%20Practice%20Guideline%20for%20PNM%20Section%202.pdf](http://www.psanzpnm.org/doc/Clinical%20Practice%20Guideline%20for%20PNM%20Section%202.pdf).

## CPD Points for Past Meetings

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[www.ranzcog.edu.au/meetingsconferences/pastmeetings.shtml](http://www.ranzcog.edu.au/meetingsconferences/pastmeetings.shtml)

Points for attendance at all RANZCOG accredited meetings are detailed on this list as well as some of the larger overseas meetings.

If you are attending an overseas meeting that is not included on this list please send a copy of the scientific program to:

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