APPENDIX S
COMPONENTS OF THE GENETIC AUTOPSY FOR INVESTIGATION OF METABOLIC DISORDERS

Extract from: Christodoulou J, Wilcken B. Perimortem laboratory investigation of genetic metabolic disorders. Seminars in Neonatology 2004;9(4):275-280.

Dedicated examination of the stillborn infant for a metabolic disorder should only be performed after consultation with a clinical geneticist and/or metabolic physician. Where there is no specific suspicion of a metabolic disorder, routine chromosome evaluation with microarray using umbilical cord tissue sample or placental sample would constitute appropriate genetic evaluation of a stillborn infant (see Appendix K). If in doubt, DNA can be stored from the umbilical cord/placental samples if additional genetic testing is being considered.

Components of the Genetic Autopsy

- Careful family history, including three generation pedigree
- Invite a clinical geneticist with expertise in dysmorphic syndromes to inspect the infant
- Clinical photographs
- Full skeletal survey
- Parental investigations for a haemoglobinopathy
- Maternal investigations for a thrombophilic disorder

Samples to collect from the baby

Blood

- Dried blood spots on filter paper (newborn screening cards, at least two to three cards stored at room temperature but NOT in a plastic bag (for acylcarnitine profile analysis and is a source of DNA))
- Whole blood (5ml in lithium heparin tube (for carnitine, quantitative amino acids, very long chain fatty acids; separated within 20 mins of collection and stored at -70 ºc); AND 5ml in EDTA tube (for DNA extraction; can be stored at 4 ºc for 48 h) AND 5ml in lithium heparin tube (for chromosome analysis; must be commenced within 4 h of sample collection))

Urine

- Freeze and store (5ml or more if possible, stored at -70 ºc; (for amino acid and organic acid profiles, acylglycines, orotic acid))

Cerebrospinal Fluid

- Freeze and store (1ml stored at -70 ºc (for amino acid profile))

Skin

- Biopsy (3x2mm full thickness collected under sterile conditions (DO NOT use iodine-containing preparations) into culture or viral transport, or saline soaked gauze. Store at 4 ºc. Best collected within 12 h of death. Cartilage may be taken for culture if there has been a prolonged period after death before biopsies can be taken. Send as soon as possible to a cytogenetics laboratory. To be cultured for archiving in liquid nitrogen)

Other biopsies

- Liver and muscle biopsies (for electron microscopy, histopathology and enzymology (for the latter wrap in aluminium foil, snap freeze and store at -70 ºc). Collect within 4 h (preferably 2 h) of death. Consult metabolic physician or histopathologist before collection of samples)
- Other tissue biopsies if specific diagnoses are under consideration