

Diagnostic Checklist for Skeletal Dysplasias and Malformations after Pregnancy Interruption or Fetal/Neonatal Demise

General Rule: the demise of a fetus or newborn is a particularly sad and stressful situation. Nonetheless, it is important to closely follow the rules to allow for a maximum of diagnostic information to be gained. Later counseling will depend completely on the quality of information obtained at this crucial stage.

Diagnostic Checklist:

- ✓ **Radiographs** remain the single most important diagnostic means for skeletal dysplasias. They can be informative as early as in the 14th week of pregnancy. Obtain AP and lateral projections, and separate images for the hands and feet (that are usually overexposed on babygrams) if possible. For very early fetuses, the use of mammography film or paper (rather than regular films or screens) may allow to see more subtle detail.
- ✓ **Clinical photographs** may show body proportions, external malformations and facial features. Obtain pictures of the whole body, face AP and lateral, hands, feet and genital area.
- ✓ **Ultrasound images** and fetal measurements from prenatal scans should be included in the documentation.
- ✓ **Cartilage and Bone histology** are extremely valuable and in some cases pathognomonic. Histological sections should include a complete growth plate and epiphysis from the distal femur or proximal tibia; costo-chondral junctions are easy to sample but not as informative. Histological stains should include H-E, PAS, Mallory and Alcian blue. Electron microscopy can be very useful.
- ✓ **Pathology:** Length, weight, head circumference; macroscopy and histology of brain, heart, lungs, liver, kidneys, spleen, pancreas, adrenals, and intestine. Organ malformations and tissue dysplasias can be clues to the underlying diagnosis. When autopsy is not possible, a total body MRI may be a valuable alternative.
- ✓ **Genomic DNA** is of paramount importance. It can be extracted from blood or muscle tissue. It is useful to prepare DNA of both parents at the same time, to be stored together.
- ✓ **Fibroblast culture** from a skin or muscle biopsy should always be obtained. The culture may be helpful for confirmatory studies such as collagens or enzyme studies and for caryotyping.
- ✓ **Chromosome determination (karyotyping)** is indicated in the presence of either severe growth retardation or malformations. It can be done on either blood cells or cultured fibroblasts.

Research procedures:

Fresh (unfrozen) cartilage samples may be useful for isolation and cultivation of chondrocytes. Ask the laboratory for more information.

Samples from bone and cartilage tissues should be deep-frozen for later studies.

More information and contacts:

www.skeldys.org