PATERNITY CASES BASED ON MIXTURES

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Paternity cases may today be solved based on genetic information from, say, an alleged father and that of the child. But what happens when information comes from a mixture? DNA-mixtures are generally rarely seen in kinship cases. But in a case handled by the Norwegian Institute of Public Health, sample DNA was obtained after a rape case, resulting in an unwanted pregnancy and abortion. DNA was extracted from a uterine curettage, and the only available DNA from the fetus came in form of a mixture with the mother. Also, the mother (the victim) refused to give her reference data. Commonly used methods for paternity testing where no longer applicable, and new statistical methods were needed.

The DNA-mixture of the fetus and the mother was analyzed, and statistical calculations were developed based on these data and reference data from the alleged father. The hypotheses to be tested were H_1: alleged father is the father of the fetus, versus H_2: alleged father is not the father. Suitable likelihood ratios were found based on these hypotheses, and an overall likelihood ratio value was calculated and used for conclusions.