Material for examination of chromosomes

Prenatal examination

🔎 *For more information see Amniocentesis, CVS, Cordocentesis.*

The karyotype of a fetus is most often determined from amniotic fluid cells - amniocytes. Amniocytes are cultured *in vitro* for approximately two weeks. It is also possible to examine cells of the chorion or umbilical cord blood. Umbilical cord blood lymphocytes obtained by cordocentesis are cultured *in vitro* for 72 hours and processed similarly to peripheral blood lymphocytes.

Postnatal examination

The karyotype is most often determined from peripheral blood lymphocytes, but it is also possible to use cells from other tissues (e.g. fibroblasts, bone marrow cells or tumor cells). Venous blood collection is performed in a sterile syringe treated against blood clotting with lithium heparin. Cultivation of lymphocytes in nutrient medium (RPMI-1640, L-glutamine, fetal calf serum) takes place at 37 °C for 48-72 hours. Cell division is stimulated by the addition of phytohaemagglutinin. Colcemid is added at the end of the culture to stop cell division in metaphase. This is followed by centrifugation and removal of the culture medium in the form of a supernatant. A hypotonic solution (0.075 M KCl) is added to the sediment, which increases the cell volume, causes thinning of the plasma membrane, and loosens individual chromosomes. Repeated fixation is performed with a fixation solution (3:1 mixture of methanol and acetic acid). The resulting suspension is dripped onto cooled glass slides.

Links

ws:Materiál k vyšetření chromosomů

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Related Articles

- Indications for karyotype examination
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