

Preimplantation Genetic Diagnosis

Preimplantation genetic diagnosis (PGD) is a relatively new, highly specialized method designed to identify chromosomal aberrations or monogenically inherited diseases and before implanting the embryo into the womb of the future mother. Therefore, this method can only be used in connection with the in vitro fertilization (IVF) program within assisted reproduction.

The **indication** for this method is a very high risk of congenital chromosomal aberration or serious monogenic hereditary disease for the offspring of the respective couple. It also concerns couples burdened by long-term unsuccessful infertility treatment (including unsuccessful IVF cycles), repeated miscarriages, etc. The current trend is to expand the spectrum of indications.

'*Performance* of the method requires a basic IVF protocol. Material for the relevant examination is obtained by biopsy:

- polar body (typically in countries where interference with embryos is not legally permitted),
- blastomeres (most often),
- blastocysts.

This is followed by a molecular genetic or cytogenetic (or molecular cytogenetic) examination of the obtained material.

The '*principle* of the method is to *implant only "healthy" embryos* - which are those in which the monitored abnormality has not been proven during PGD (exclusion of the mutation of the monitored gene, of course does not exclude the possibility of mutation of another - unexamined gene).

The **disadvantage** of this method is the limited amount of material to be examined (often only 1 cell!). A big problem can therefore be chromosomal mosaic in a particular embryo. This method is quite controversial due to the intervention in the human embryo and its application is not legal in all states.

Links

Related Articles

- Congenital developmental defects
- First week of human development

External links

- Preimplantation genetic diagnosis (<https://www.lekari-online.cz/lecba-neplodnosti/zakroky/preimplantacni-geneticka-diagnostika>)
- Current state of preimplantation genetic diagnostics in the Center for Assisted Reproduction FN Brno (PPT) ([http://kgn.umbr.cas.cz/prednasky/708%20Genetika%20cloveka%20\(Oltova\)/PGD.ppt](http://kgn.umbr.cas.cz/prednasky/708%20Genetika%20cloveka%20(Oltova)/PGD.ppt))

References

- OGILVIE, CM, PR BRAUDE a PN SCRIVEN. Preimplantation genetic diagnosis--an overview. *J Histochem Cytochem* [online]. 2005, year. 53, s. 255-260, available in <<http://www.jhc.org/cgi/content/full/53/3/255>>. ISSN 0022-1554.