Preimplantation Genetic Diagnosis

Legislations & Ethics

Martínez Plana, Maria. Genetics degree final project (UAB). Prof. Josep Santaló Pedro





Introduction

Preimplantation genetic diagnosis (PGD) is the process of testing preimplantation stage embryos or oocytes for well-defined genetic defects. It has been developed for couples whose potential offspring are at risk of severe mendelian disorders, structural chromosome abnormalities or mitochondrial disorders, and as an alternative for pre-natal diagnosis and selective termination pregnancies. As a reproductive technology involving embryo selection, PGD has been associated with a wide range of controversies. The aim of this project is to analyse the ethical and social issues related with PGD, as well as its legislation in different

In vitro diagnostic procedures

	Polar body biopsy	Blastomere biopsy	Blastocyst biopsy
Day of extraction	1 st polar body: pre- fertilization 2 nd polar body: post- fertilization	After 3 rd division (3 rd day after insemination)	5 th or 6 th day after insemination
Removed cells	Polar body	1 blastomere	Blastocyst cells
Analysed material	Maternal	Maternal/paternal	Maternal/paternal

Analysis techniques **PCR FISH** aCGH

Spanish legislation and its comparison with other countries

In Spain, PGD is regulated by human assisted reproduction techniques' law 14/2006.

14/2006

→ PGD's applications: early-onset severe inherited diseases without post-natal treatment.

PGD's application for another purpose, such as HLA-matching embryos, will require extraordinary authorization.

Countries where PGD is legal Countries where PGD is illegal PGD permissible under

professional guidelines

Harper & SenGupta, 2012

Worldwide, PGD is usually addressed in a wide regulatory scheme. Four approaches can be observed:

Prohibition of PGD

Austria Germany Italy Switzerland Western Australia

Belgium India New Zealand South & Victoria Aus. France Others (7)

Canada Israel Japan Singapore South Africa United Kingdom

*General legislative framework + authority's professional guidelines

Geraedts et al., 2009

United States



Ethic controversies & concerns

Does the embryo have full moral status?

Conservative Embryo has full moral status from the time of fertilization

- PGD is not accepted by a conservative view because of the destruction of embryos
- PGD is accepted by a gradualist view

Should we use PGD for late-onset diseases and susceptibility disorders?

- Affected embryos could have a worthy healthy life before the disorder shows up.
- Knowing the child could/will be affected may cause anxiety and suffering.
- Is it possible to quantify penetrance, age of onset & seriousness of the disease to determine at what point selection becomes acceptable?

Where is the limit in sex selection?

Medical reasons • Sex selection for

≪ → Social reasons 🗡 Tamily balancing X

- → Sex selection for <u>social reasons</u> can increase gender discrimination and reinforce gender bias.
- → Sex selection for <u>family balancing</u> can reinforce gender stereotypes and commodification of

Are HLA-matching embryos used as an instrument?

The child is conceived as an instrument, X contrary to ethical requirement: people should not be treated as means but as

A child who serves as a tissue donor is considered ethical if the child is also valued in their own right.

Slippery slope argument

Differences should be settled between disorders, illnesses and characteristics.

Parents will pursue "the perfect child".

This will lead to a consumerist attitude towards children.

Does PGD have a bad-side effect against the disabled?

PGD induces discrimination against the disabled.

PGD implies a judgment as to which lives are worth living.

PGD avoids children from suffering, pain, medical procedures, mental impairment, etc. It is a preventive decision.

Is PGD available for everyone?

PGD illegal: Only available for those who can afford to travel abroad.

PGD legal: Covered by public insurance Not covered by public insurance Not available

Available

Conclusions

PGD is globally controversial in terms of ethics and legislation. Further debate is needed to agree the applications and limits of this technique to prevent misuse.

Bibliography

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