Genetic counselling in PGD

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Disclosure of interests

Sérgio Castedo is the CEO of GDPN, a private genetics diagnostic lab, involved in postnatal and prenatal genetic screening and diagnosis, including PGD.

Aims of this session

- To understand the meaning and scope of genetic counselling
- To discuss practical examples of genetic disorders in a family
- To address the similarities and differences between genetic counselling in the context of “conventional” PND and PGD

Professional Issues

A New Definition of Genetic Counseling: National Society of Genetic Counselors' Task Force Report

The National Society of Genetic Counselors' Definition Task Force

"*Genetic counseling is the process of helping people understand and adapt to the medical, psychological, and familial implications of the genetic contributions to disease."*

According to the Portuguese law:

Genetic counselling is the process of personal communication with the aim of providing the patient or at-risk person with information about the nature of the genetic disease involved and its transmission mode, as well as supporting the adaptation and decision-making, including reproductive choices.

Genetic counselling

Involves:

- Interpretation of family and medical histories
- Education about inheritance, testing, management, prevention, resources and research
- Counseling to promote informed choices which seem to the counsellee(s) appropriate in view of his/their risk, his/their family goals, and his/their ethical and religious standards
- Counseling to promote adaptation to the risk or condition

Genetic counselling

The importance of being supportive and non-directive:

- If patients have all available information, they should be able to decide freely
- After all, it is the patient, not the doctor, who will be affected by that decision
- Counsellors should refrain from expressing their own personal views on the patient's situation or dillemas ("what would you do if you were in my situation?")

Genetic counselling

Requires:

Training

and...

TIME!!!

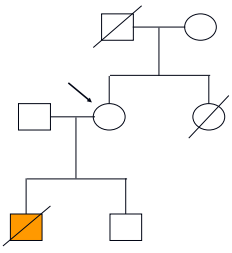
Main reasons for referral to Genetic counselling

- Patient with or family history of a genetic condition, congenital malformation of common birth defect (CL/P, NTD, clubfoot, etc.)
- Known familial chromosomal abnormality
- Couples of "advanced age" (females over 35 and/or males over 55)
- Consanguinity
- Pregnant women, or women planning pregnancy, exposed to potential teratogens
- Couples with questions about prenatal diagnosis for any disorder
- Familial cancer disorders

Genetic consultation

Get as much information as possible concerning the family to avoid surprises:

Unremarkable family can get...

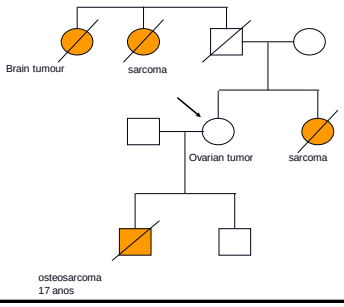


osteosarcoma
17 anos

Genetic consultation

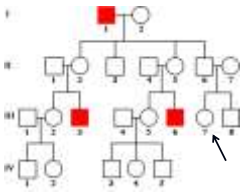
Get as much information as possible concerning the family to avoid surprises:

Li-Fraumeni family!



Genetic consultation

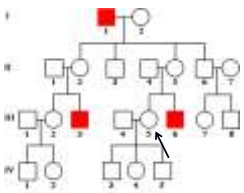
Sometimes familial genetic disease poses no increased risk to some relatives



X-linked disorder

Genetic consultation

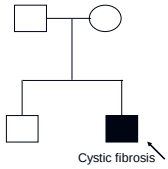
But frequently it does!



X-linked disorder

Genetic consultation

Not all hereditary conditions have a positive family history...

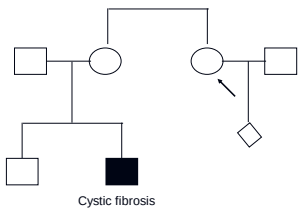


Recurrence risk for parents: 1 in 4

PND or PGD are possible

Genetic consultation

...but may have an impact in healthy family members ...



What is the risk of CF in child?

PND possible

Genetic consultation

How to express a risk?

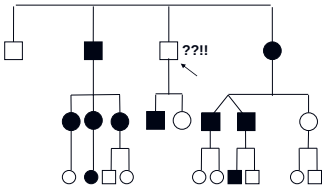
5%
Or
1 in 20?

10% of being affected
Or
90% of being healthy?

Genetic consultation

Sometimes an “obligate carrier”... is not a carrier at all...

Family with Brugada Syndrome



Carriers of pathogenic mutation

Carriers of wild type allele

How to explain??

Main reasons for requesting PGD

1. Looking for specific genetic condition

- Either member of couple is carrier of chromosomal abnormality
- Previous child born with chromosomal abnormality
- High risk of child being affected with a specific genetic disorder

2. Screening for aneuploidies in IVF

- Advanced maternal age
- Recurrent miscarriages
- Repeated unsuccessful implantation

Rare indications for PGD

- HLA selection
- Gender selection (X-linked conditions)
- Cancer predisposition

Why PGD?

- PGD makes is very likely that child is born without specific genetic condition
- PGD is the best option for couples who consider TOP unacceptable
- PGD may decrease the risk of another miscarriage
- PGD may increase the success rate of IVF

PGD in Portuguese Law

Law 32/2006 , July 26

CHAPTER V

PGD
Art. 28.º

1 – The aim of PGD is the identification of embryos that are not carriers of a severe anomaly, before their transfer to the woman's womb, by means of ART (may include gender selection if at all necessary)

PGD in Portuguese Law

Law 32/2006 , July 26

CHAPTER V

PGD
Art. 28.º

1 – The aim of PGD is the identification of embryos that are not carriers of a severe anomaly, before their transfer to the woman's womb, by means of ART (may include gender selection if at all necessary)

How severe must an anomaly be to be considered severe? Who decides?

Genetic counselling in PGD

Important issues to address

- Physical and psychological impact of a PGD cycle
- Limited success rate of IVF/PGD – may result in no pregnancy
- PGD is not yet currently available to all genetic disorders
- PGD is no guarantee of a healthy baby
- PGD may warrant confirmatory testing by CVB or amniocentesis, or after delivery

Controversial issues in PGD

- PGD for late-onset diseases
- PGD for genetic conditions with low penetrance
- PGD for potentially treatable diseases
- PGD for genetic non-medical conditions