Introduction

- Products of conception (POC) analysis for miscarriage samples can determine underlying genetic causes for pregnancy loss.
- Preimplantation genetic testing for monogenic disorders (PGT-M) tests embryos created through in vitro fertilization (IVF) for known familial mutations or chromosomal deletions/duplications (del/dups).
- For specific cases, using a POC sample could be the only option for PGT-M test development.

Objective

- To report a PGT-M case following identification of a familial X chromosome del by POC analysis.

Methods

- POC testing was performed at 6 weeks 0 days of gestation on the 5th spontaneous abortion (SAB) for a 34-year-old gravida 5 para 0-0-5-0 with a history of ectopic pregnancy and 4 SABs.
- A POC and maternal blood sample were shipped to a reference lab for genotyping using Illumina Human Genome Project (HapMap) SNP SNP microarrays with informatics.
- SNP data from the SNP microarrays were analyzed using Parental Support technology.

Results

- Testing identified a male fetus with an approximately 3.5 Mb interstitial deletion of chromosome Xq26.2q26.3 (Figure 2).
- This del is not reported to cause miscarriage, but includes developmental genes known to cause multisystem syndromes in males.
- Female carriers can exhibit symptoms due to skewed X-inactivation.
- SNP data from the POC sample showed an approximately 3.5 Mb del/dup of chromosome Xq26.2q26.3.
- This del is not reported to cause miscarriage, but includes developmental genes known to cause multisystem syndromes in males.
- Preimplantation Genetic Testing for Monogenic Disorders (PGT-M) tests embryos created through in vitro fertilization (IVF) for known familial mutations or chromosomal deletions/duplications (del/dups).
- For specific cases, using a POC sample could be the only option for PGT-M test development.

Discussion

- POC microarray testing detects smaller del/dups that could be missed by standard cytogenetic karyotype analysis.
- The use of a POC sample for PGT-M test development could be required depending on the “carrier” status and/or availability of samples from other relatives.
- Banking DNA from an affected pregnancy or miscarriage should be considered as it may be necessary for PGT-M test development.
- The Xq26.2q26.3 del is not a known cause of miscarriage, but carries reproductive implications.
- POC microarray testing was not performed until the patient's fifth loss, possibly delaying reproductive decision making.
- Spreading awareness of the utility of POC microarray testing for pregnancy loss is necessary to increase identification of familial recurrence risks and provide patients with the opportunity of additional reproductive testing options (Figure 5).

References

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