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Comparison of G-banding karyotyping and NGS for chromosome testing of products of conception after spontaneous abortion.

Yoshie Nagatakidani¹, Michiko Anmae², Yoshiko Asai¹, Tomoko Inoue¹,

Yoshiharu Morimoto¹

1 HORAC GRAND FRONT OSAKA Clinic 2 IVF NAMBA Clinic

【Background】

Clarifying the cause of a miscarriage is important in deciding on the strategy of treatment of infertility or recurrent fetal loss. Currently, chromosomal G-banding karyotyping (G-banding) method and NGS method are major techniques for testing products of conception (POC) in Japan. We compared the usefulness of the two analysis methods using the past data.

【Subjects and Methods】

We retrospectively investigated the results of a total of 223 cases who underwent POC chromosome analysis at our clinic between June 2015 and March 2023.

【Results】

One hundred twenty-one tests were performed with G-banding and 102 tests with NGS. Of the cases analyzed with G-banding, 28.1% were normal karyotypes, 47.1% were aneuploid. (In normal karyotypes, 70.6% were female while 29.4% were male.) Of those analyzed by NGS, 38.2% were euploid, 50.0% were aneuploid. (In euploid, 64.1% were female while 35.9% were male.) Results with suspected endometrial cell contamination were observed in 8.3% by G-banding and 2.9% by NGS. In the G-banding method, Growth failure occurred in 5.8% of cases after cell culture, and polyploidy was detected in 4.1% of cases.

【Conclusion.】

There was no difference between the two methods in terms of the detection rate of chromosomal aneuploidy. Moreover, there was no significant difference in the male-to-female ratio in the results of normal karyotypes (euploidy), but a higher number of female types were detected in both cases. Whichever method is used, the possibility of not being able to fully assess chromosomal status should be considered.