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HETEROPATERNAL TWINS INVESTIGATION WITH MISSING ALLEGED FATHER

Abstract: Twins paternity investigation (male and female) was performed as requested by the Court of Justice. As the alleged father was missing, the Court asked for DNA analysis comparison with a biological son of the missing man and their mother. Seventeen autosomal STRs and eleven Y-STR *loci* were analysed. The results showed that twins had different biological fathers.

Introduction

Superfecundation describes a situation where two ova can be fertilized giving rise to dizygotic twins. Sexual intercourse of a woman during the same polyovulatory period with two different partners may lead to superfecundation with the resulting twins having two different fathers, a phenomenon known as heteropaternal superfecundation. Although rarely among humans, this phenomenon has been described by other authors, particularly involving genetic disease studies and disputed paternities (1- 4). In this study we describe a heteropaternal twin investigation in a case of missing alleged father.

Materials and Methods

DNA was extracted by Chelex method from individual buccal swabs from the twins, the biological son of the missing alleged father and their mother. DNA analysis was performed using AmpF1STR® Identifier (Applied Biosystem) and PowerPlex® 16 System (Promega) to study a total of 17 autosomal STR *loci*. Additionally, 11 Y-STRs contained in the PowerPlex® Y System (Promega) were investigated. Samples were analyzed in a 3130xl Genetic Analyser (Applied Biosystem) with Genemapper® ID v3.2. Statistical analysis was performed with “Familias” program (version 1.5).

Results

After studying 17 autosomic STR *loci* (Table1), “Familias” program was performed for statistical brotherhood analysis. A twin sisterhood probability of 99,99942% to the alleged brother and a twin brotherhood probability of 0,00841% was found. These results were confirmed by Y-STR analysis – six genetic inconsistencies between the male twins and the alleged brother were detected (Fig. 1). These results showed that twins had different fathers.

Discussion and Conclusions

Performing paternity testing investigations, we have detected several twin heteropaternal cases. The first report on a STR mutation in a double paternity case where both biological fathers were indisputable identified was performed in our laboratory (5). The frequency of twin cases with different biological fathers is probably underestimated, because this phenomenon is mainly detected when paternity investigation is performed. This situation depends not only on whether tests are done, but also on social behaviour (3). Thus, special attention should be taken in similar situations when twins’ paternity is being investigated.

References

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Table1 – Results of the 17 STR loci from twins, their alleged brother and their mother.

Locus	Mother	Female Twin	Male Twin	Alleged brother
D3S1358	16-17	15-17	15-17	17
TH01	6-8	6-8	6-7	8-9
D21S11	28-29	28-29	28-29	28-31
D18S51	15-17	13-15	13-17	17
PENTA E	8-12	7-8	7-12	8-12
D5S818	11-12	11	11-12	11-12
D13S317	12	12	11-12	12-13
D7S820	10	8-10	8-10	10-11
D16S539	11	11	11	9-11
CSF1PO	7	7-12	7-12	7-12
PENTA D	12-14	5-12	5-12	12-14
vWA	15-19	17-19	14-19	15-20
D8S1179	12-14	13-14	12-14	12-14
TPOX	9-11	8-11	8-11	8-11
FIBRA	23	23-24	23	23-24
D2S1338	16-23	16-25	16-25	16-22
D19S433	13-14.2	13-14	14-14.2	12.2-14.2

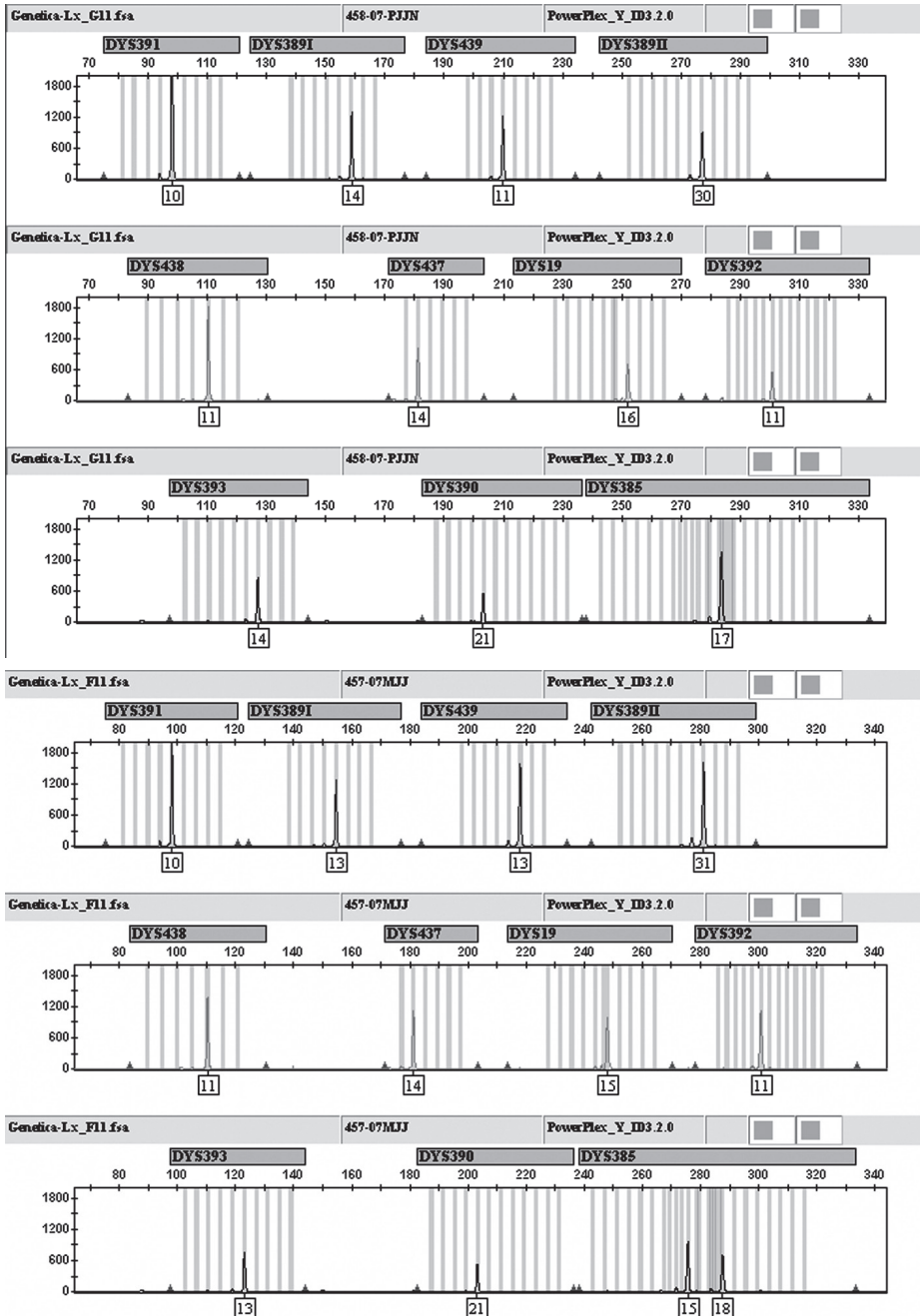


Figure 1 – Y-STR electropherograms of the alleged brother (A) and the twin male (B) showing six genetic inconsistencies in *DYS391I*, *DYS439*, *DYS391II*, *DYS19*, *DYS393* and *DYS385* loci.