

Heteropaternal Superfecundation: A Case Report in Turkey

Ozlem Bulbul*, Gonul Filoglu and Havva Altuncul

Institute of Forensic Science, Istanbul University, Istanbul, Turkey

Abstract

Superfecundation is the fertilization of two or more ova from the same cycle by sperm from separate acts of sexual intercourse. Heteropaternal superfecundation occurs when two different males father fraternal twins. This article reports a case of paternity identification in twins. The results showed that each twin had come from a different father.

Keywords: Heteropaternal twins; Paternity testing; STR-DNA analysis

Introduction

Superfecundation is often used instead of heteropaternal superfecundation which refers to the instances where two different males father fraternal twins. The terms superfecundation by the same father is a common occurrence, it can only be proven to have occurred when there are multiple fathers. When the parents of fraternal twins are involved in a paternity suit, the odds are about 1 in 40 that the children are actually half-siblings [1-4].

History of the Case

DNA paternity and maternity tests were performed at the request of the married couple in Istanbul. The alleged mother gave birth to twins who have different blood groups. Parents claimed that one of the twins who has different blood group is not their baby. To solve this case, the blood samples were typed using 15 STR loci plus amelogenin marker (Applied Biosystems).

Material and Methods

Blood samples were collected from the twins, alleged mother and father. DNA was extracted from whole blood and dried blood stains samples by using two different methods, Chelex and QIAmp DNA Mini Kit (QIAGEN, Hagen, Germany) respectively. DNA was quantitated by using commercially available Qubit Fluorometer (Invitrogen).

Amplifications of 15 STR loci (D3S1358, vWA, FGA, D8S1179, D21S11, D18S51, D5S818, D13S317, D7S820, TH01, TPOX, CSF1PO, D19S433, D2S1338, D16S539) and a gender determination marker were performed by using the AmpFISTR® Identifiler® PCR Amplification Kit according to the user's manual recommendations [AmpFISTR1 Identifiler™ PCR Amplification Kit User's Manual, 2001]. The separation and detection of amplified products were conducted with the ABI Prism 3130 Genetic Analyzer 4-capillary array system (Applied Biosystems). Data collection was performed with Data Collection v. 2.0 software (Applied Biosystems) and samples were analyzed by GeneMapperIDX software (Applied Biosystems). Samples were investigated in duplicate.

Results and Discussion

The results of the possible genotypes of each individual are given in Table 1. The results are in favour of paternity of alleged father and maternity of alleged mother in relation to twin 1. All markers are in concordance with paternity. Calculation of the combined paternity index (CPI) of 2256416. This corresponds to a probability of paternity (W) equal to 99.9999% (using a prior odds of 50%). We also calculated

LOCI	ALLEGED MOTHER	ALLEGED FATHER	TWIn 2	TWIn 1
D7S820	11-Oct	10-Sep	10-Sep	11-Sep
CSF1PO	11-Oct	12-Nov	11-Oct	11-Nov
D3S1358	15-17	17-18	17-18	17-17
TH01	9-9.3	9-Jun	6-9.3	9-Sep
D13S317	12-Dec	12-Aug	12-Dec	12-Dec
D16S539	12-Nov	12-Oct	11-Sep	11-Oct
D2S1338	16-18	20-23	16-19	18-20
D19S433	13-15	13-14	15-15.2	13-15
vWA	17-19	16-17	17-17	17-19
TPOX	11-Aug	11-Aug	11-Aug	8-Aug
D18S51	13-14	14-15	14-14	14-14
D5S818	12-Nov	12-Nov	12-Nov	12-Nov
FGA	21-24	19-22	23-24	21-22
AMEL	X-X	X-Y	X-X	X-Y

Table 1: Paternity index values and STR analysis of samples of the alleged mother, the twin sisters and the alleged father. Alleged father 1 may be the father of twin 1, and is excluded as the father of twin 2.

combined Maternity index (CMI) of mother is 1312153 and corresponds to a probability of maternity (W) equal to 99.9999% (using a prior odds of 50%).

The results exclude alleged father 1 in relation to twin 2. Six genetic inconsistencies (D18S1179, D21S11, D16S539, D2S1338, D19S433 ve FGA) were observed among the 15 autosomal loci. Alleged mother was shown to be Twin 2's mother for all markers. Calculation of the combined maternity index (CMI) of 2308328. This corresponds to a probability of maternity (W) equal to 99.9999%. According to maternity the alleged mother was determined as mother of the twins.

In this case, a woman had sexual intercourse with two men where twins were conceived. She gave birth to twins from different fathers after two eggs were fertilized by the sperm of the two men. A report based on the paternity test has shown that there was a 99.999 percent chance that the twins were fathered by different men.

*Corresponding author: Ozlem Bulbul, Institute of Forensic Science, Istanbul University, Istanbul, Turkey, Tel: 0090 5353984526; E-mail: oslembul@yahoo.com

Received July 15, 2013; Accepted September 25, 2013; Published September 27, 2013

Citation: Bulbul O, Filoglu G, Altuncul H (2013) Heteropaternal Superfecundation: A Case Report in Turkey. J IVF Reprod Med Genet 1: 112. doi:10.4172/2375-4508.1000112

Copyright: © 2013 Bulbul O, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

References

1. Wenk RE, Houtz T, Brooks M, Chifari FA (1992) How frequent is heteropaternal superfecundation? *Acta Genet Med. Gemellol (Roma)* 41: 43-47.
2. Lu HL, Wang CX, Wu FQ, Li JJ (1994) Paternity identification in twins with different fathers. *J Forensic Sci* 39: 1100-1102.
3. Hansen HE, Simonsen BT (2008) A case of heteropaternal superfecundation in a pair of Danish twins. *Forensic Science International: Genetics Supplement Series* 1: 514-515.
4. James WH (1980) Gestational age in twins. *Arch Dis Child* 55: 281-284.