ESTABLISHMENT OF PGD OR PRENATAL GENE DIAGNOSIS METHOD FOR A FAMILY WITH SHFM

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Abstract Body

ABSTRACT: Objective: In order to explore the gene variant for a family with congenital split hand/foot malformation (SHFM) during reproductive management, we analyze and establish the gene diagnostic method for PGD (preimplantation genetic diagnosis) or prenatal diagnosis.Materials and Methods: A healthy 26-year-old women and a 29-year-old SHFM husband want to have healthy baby. The husband's family has a total of 6 SHFM patients, which affects multi-generations of male and female.The phenotype of SHFM were analyzed on family investigation of physical examination and limb X-ray. Gene from peripheral blood were analyzed by using the haplotype analysis by D10S1709, D10S192, D10S597, D10S1693 and D10S587 loci. The mutation duplication loci were confirmed by Array-CGH detection. Results: The proband's phenotype was typical congenital SHFM. X-ray findings: absent of 2nd metacarpal bone, 1st, 2nd and 3rd phalanges of the right hand, dysplasia of the third metacarpal bone. Absent of distal phalanges of the left hand, dysplasia of the distal phalanges of the thumb, the proximal phalanges of the index finger and the distal phalanges of the ring finger, malformation of the proximal middle phalanges and ring phalanges. Both feet were absenting of 2nd, 3rd metatarsals and 2nd, 3rd, 4th phalanges, deformity of 4th, 5th metatarsals and toes. Genetic analysis shown autosomal dominant inheritance. The haplotype analysis showed there was a repeat of at least 610 kb in chromosome 10q24.31-10q24.32 region. Array-CGH analysis showed a 10q24.31 (102,832,650-103, 511, 083) ×3. Haploid analysis of the proband, his brother and parents confirmed that the pathogenic gene of the family was 10q24.31-10q24.32 gene duplication, and the haplotype 165-251-289-219-102 was the allele of the disease.Conclusion: The SHFM pathogenic gene of this family is duplication of 10q24.31 (102,832,650-103,511,083). Its haplotype 165-251-289-219-102 can be used as a disease marker for detection SHFM in PGD or prenatal genetic diagnosis.