LETTER TO THE EDITOR

SELF-INJURIOUS BEHAVIOR ASSOCIATED WITH TRISOMY 9p (9p13.1→p24.3)

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The 32-year-old female patient was the fourth child of non-consanguineous and healthy parents. When she was born, her mother was 24 years old and her father 26 years old. There was no family history of congenital malformations. She was delivered at 39 weeks of gestation with a birth weight of 3,500 g. When examined at 13 years of age, she presented with a body weight of 35 Kg (< 5th centile), a body height of 140.5 cm (< 5th centile), developmental delay, speech/language delay, moderate mental retardation, microcephaly, low-set ears, bilateral simian creases, brachymesophalangy of the little fingers, a bulbous nasal tip, a prominent nasal root, a large mouth with down-turned corners, epicanthic folds and the self-injurious behavior of deliberately cutting the edges of nails with sharp tools that caused active bleeding. The brain computed tomography scans and cardiac ultrasound findings were unremarkable. Cytogenetic analysis revealed a derivative chromosome 9 [der(9)] with inverted duplication of 9p (Fig. 1). The parental karyotypes were normal. At the age of 31 years, she developed an additional self-injurious behavior of digging her fingers into her throat to induce severe vomiting, which persisted for more than one year. When examined at 32 years of age, her body height was 154 cm (5-15th centile), body weight 49 Kg (15-50th centile) and head circumference 50.8 cm (< 5th centile). She manifested mental retardation, speech/language delay, facial dysmorphism, short fingers and toes, and premature ovarian failure (Fig. 2). Oligonucleotide array-based comparative genomic hybridization (aCGH) using CytoChip™ Oligo (BlueGnome, Cambridge, UK) showed a 38.61-Mb duplication of 9p24.3→p13.1 (194,221 bp-38,805,446 bp) (Fig. 3). Cytogenetic analysis of the blood revealed a karyotype of 46,XX,inv dup(9)(p13.1→p24.3::p24.3→qter).

Trisomy 9p, or 9p duplication syndrome, has distinct clinical manifestations including psychomotor and growth retardations, microcephaly, down-slanting palpebral fissures, hypertelorism, a prominent or bulbous nose, down-turned corners of the mouth, low-set ears, short

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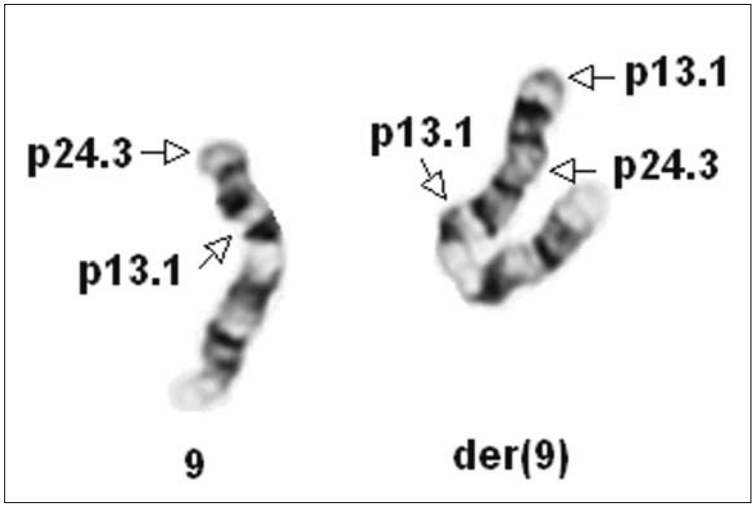
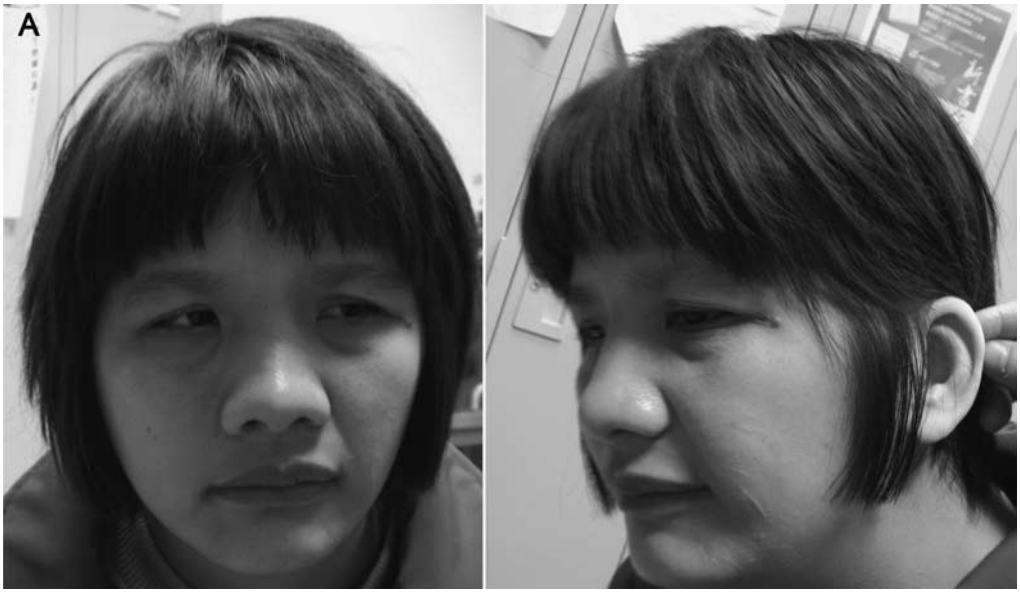


Figure 1: Partial karyotype shows a derivative chromosome 9 [der(9)] consisting of inv dup(9) (p13.1→p24.3::p24.3→ qter).

fingers and toes, hypoplastic phalanges of the fifth fingers, hypoplastic nails and genital hypoplasia (7-8). Fryns *et al*. (1) first suggested that the 9p22 region is correlated to the characteristic phenotype of trisomy 9p. Subsequently, Fujimoto *et al*. (2) and Guanciali Franchi *et al*. (3) suggested that 9p22→p23 is the critical region for the 9p duplication syndrome. Recently, Zou *et al*. (8) suggested that critical region for mental retardation lies within 2.6 Mb of the 9p22.3-p23 segment, and the critical region for speech/language delay lies within 4.9 Mb of the 9p21.2-p21.3 segment. The present case had a duplicated 9p segment encompassing the reported critical regions and manifested characteristic clinical features of 9p duplication syndrome.

The peculiar aspect of the present case is the association of self-injurious behavior. Ricart and Pareja (5) first reported self-injurious behavior associated with trisomy 9p in a 25-year-old woman who deliberately scratched and rubbed her skin causing multiple intractable keloids on the back. Self-injurious behavior is a self-directed act that results in tissue damage. Self-injurious behavior has a gene-brain-behavior relationship in addition to environmental factors (4, 6). Genetic disorders associated with self-injurious behavior include Lesch-Nyhan syndrome, Smith-Lemli-Opitz syndrome, Coffin-Lowry syndrome, Gomez-Lopez-Hernandez syndrome (cerebellotrigeminal dermal dysplasia), Cornelia de Lange syndrome, Norrie disease, Smith-Magenis syndrome, Rett syndrome, neuroacanthocytosis, fragile X syndrome, Tourette's syndrome, Down syndrome, Prader-Willi syndrome and succinic semialdehyde dehydrogenase deficiency. The present case additionally provides evidence that self-injurious behavior may be a clinical feature associated with 9p duplication syndrome.



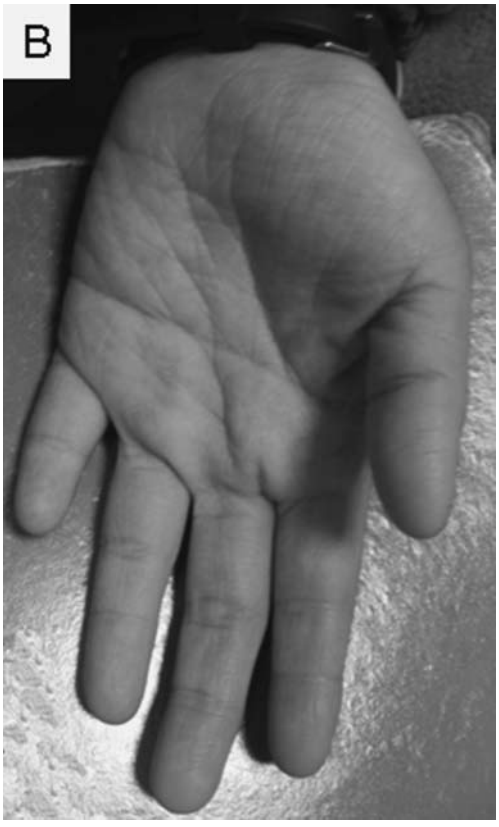


Figure 2: (A) Craniofacial appearance, and (B) brachymesophalangy of the fifth finger and simian crease of the proband.

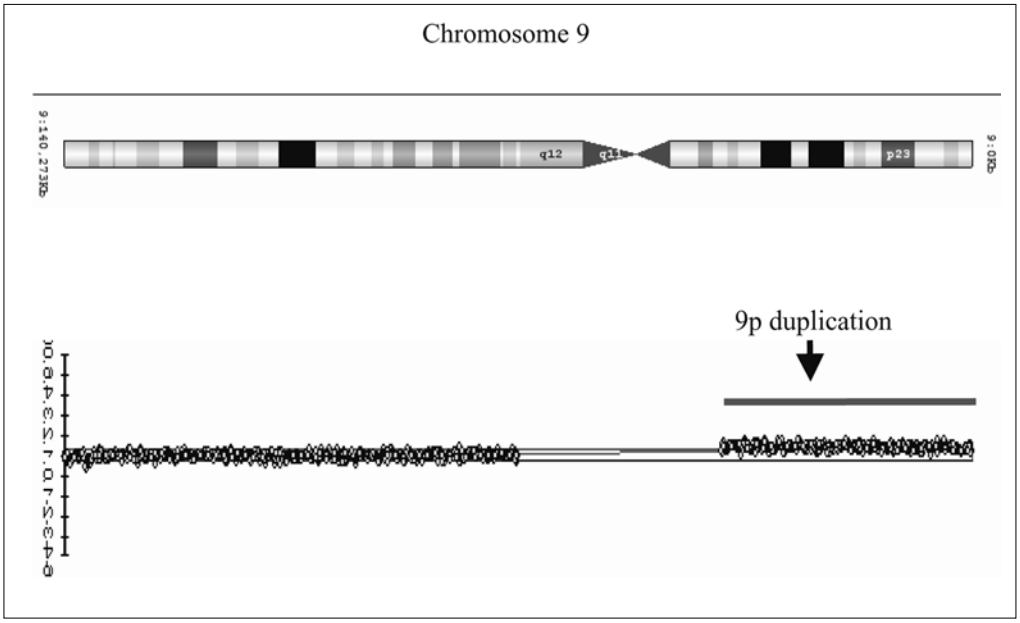


Figure 3: Oligonucleotide-based array comparative genomic hybridization shows a 38.61-Mb duplication of 9p24.3→p13.1.

ACKNOWLEDGEMENTS

This work was supported by research grants NSC-97-2314-B-195-006-MY3 and NSC-99-2628-B-195-001-MY3 from the National Science Council, and MMH-E-100-04 from Mackay Memorial Hospital, Taipei, Taiwan.

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