

Derivatives and Its Formation from the Meiotic Segregation in the Carrier Parents with Reciprocal Translocation

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KEYWORDS Derivative. Proband. Parental Origin. Monosomy. Trisomy. Meiotic Segregation and Subtypes

ABSTRACT Chromosome derivatives are one of the outcomes in gametes, from the parents with reciprocal translocation. Individuals with derivatives have chromosomal imbalance, resulting in multiple congenital abnormalities and high mortality. The present investigation reports the observed derivatives in 19 probands; the sex ratio, parental origin and its association with meiotic segregation and the gain or loss in the chromosomes. From 1977 to 2007, 19 probands, who were referred for karyotyping and counseling to the Division of Human Genetics, St John's Medical College, Bengaluru, had cytogenetically confirmed derivatives. Their ages ranged from neonates to 14 years. 20 derivatives were observed in 13 males and 7 females; since one male showed 2 derivatives. The sex ratio was 1.7:1. 11 males and 7 females had 46 chromosomes and 1 male and 2 females had 47 chromosomes. 7 males and 2 females had derivatives of paternal origin and 5 males and 5 females had derivatives of maternal origin. 2:2 adjacent type 1 meiotic segregation was paternal in 9 and maternal in 7 probands. The subtype AB CB was paternal in 6 and maternal in 4; AD CD paternal in 4 and maternal in 2. The 3: 1 mode of maternal meiotic segregation in 3 showed AB CD CB or AD CD CB or AB AD CD sub types. The gain in partial trisomy was paternal in 9 and maternal in 15 and the loss in partial monosomy was paternal in 9 and maternal in 7. The article on the derivatives and its various aspects is reported for the first time in India.