Prevalence of Chromosome Inversion (pericentric and paracentric) in Recurrent Abortions in patients referred to the Cytogenetic laboratory of Sarem Women’s Hospital

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ABSTRACT
Background & Aims: Recurrent abortion affects almost 15% of diagnosed pregnancies. The aim of this study is to present the role of chromosomal inversions in recurrent miscarriages in patients referred to the Cytogenetic laboratory of Sarem Hospital in Tehran. Chromosome inversions visible under the light microscope are a common class of human balanced structural rearrangements. The material between the two breakpoints reverses orientation, reinserts, and the breaks rejoin. One group of inversions is pericentric inversion of chromosome 9, which is usually regarded as a normal population variant.

Materials & Methods: We studied 2299 patients with recurrent abortions referred to Sarem Hospital during 1996 until 2014 for chromosome investigation. The samples were studied using high resolution GTG banding technique. For each patient, a minimum of 15 metaphases was examined by light microscopy.

Results: In total 49 patients showed inversions. Pericentric inversion around centromere of chromosome 9 was observed in 29 patients (1.26%) and pericentric inversion in heterochromatin region was found in chromosome 1 in one patient and chromosome Y in another patient, and one patient had pericentric inversion of chromosome 2. Chromosomal inversion involving other autosomal chromosomes included pericentric inversion of chromosomes 1, 5, 8, 11 and 12, and paracentric inversion of chromosomes 3, 6, 7, 8, and 12 (0.44%).

Conclusion: The chromosomal imbalance of gametes arisen during gametogenesis may produce spontaneous abortions and malformed offsprings. This suggests that such inversions should not be ignored and they can play an important role in reproduction failure. However, we have shown that the rate of pericentric inversion of chromosome 9 is similar to normal population (1-2%) and thus of no clinical significance.

Keywords: Chromosome Inversion, Recurrent Abortions, inv(9)


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