DELETIONS 3Q26.33

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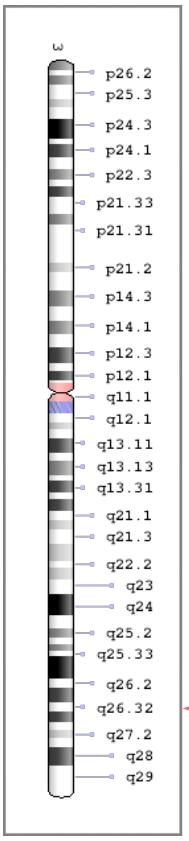

The chromosomal segment 3q26.33 contains the SOX2 gene. This gene creates a transcription factor that is very active during early development and plays an important role in the generation of neurons and the maintenance of stem cell pluripotency[1]. Mutations in this gene, as well as deletions including this area of the long arm of chromosome 3, lead to a specific clinical syndrome.

Patients with this deletion can have a wide range of clinical features including, but not limited to, eye abnormalities, intellectual and developmental delays, defects of the cardio-vascular and gastro-intestinal systems, abnormalities of genital organs, postnatal growth retardation, and dysmorphic facial features. It's important to note that a wide range of severity for each of these features exist. For some individuals, they are incredibly prominent and severe, while for others, they are fairly limited or almost nonexistent.

The most frequent eye abnormalities seen in those with 3q26.33 deletions are anophthalmia or microphthalmia. In an analysis of 51 known patients with this deletion, 41 individuals were identified as having these defects. Other eye abnormalities that have been identified include iris coloboma and cataracts[1].

Intellectual and developmental delays are also frequently seen in patients. These delays can range from mild to incredibly severe or profound[1]. For example, some individuals cannot sit by themselves until the age of 2 while others follow a more typical developmental milestone timeline[2]. Some individuals (66%) may also present with

abnormal brain MRIs. While a normal or abnormal MRI does not guarantee anything, individuals who have abnormal brain MRIs have been shown to be more likely to develop seizures[3].

Patients with 3q26.33 deletions may also present with genital abnormalities or pubertal delay. Ambiguous genitalia[4], hypogenitalism, hypogonadism, or hypospadias have been identified in male patients. For females, pubertal delay is frequently noted as well[2]. Genital abnormalities were noted in 16 out of 44 individuals with deletions in this area where all clinical details were reported (7 other persons with del 3q26.33 were only briefly noted in the ophthalmological literature).

Several other defects have been identified in 3q26.33 deletion patients. This includes congenital heart defects, such as ventricular septal defect and patent ductus arteriosus[1]. Significant gastro-intestinal abnormalities were found in 8 out of 44 patients reported in details: 5 of them had esophageal atresia or stenosis, and 3 had anal abnormalities. Several persons had cleft lip and/or palate and choanal atresia. Postnatal growth retardation seems to be relatively common[2].

For newly diagnosed individuals, it is recommended that patients get regular eye exams, a brain MRI, and endocrine and neurology examinations[3].

REFERENCES

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