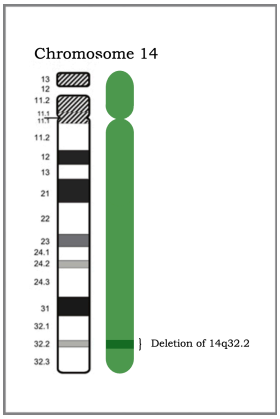
14q32.2 Deletion Syndrome

Most syndromes caused by autosomal deletions cause a complex of developmental delay and facial dysmorphism. In the context of the syndrome caused by deletion of the 14q32.2 segment is not an exception. Most individuals with deletions of this segment of chromosome 14 reveal intellectual or developmental delays, characteristic facial features, and immune system dysregulation[1].



These patients may present with severe developmental or intellectual delays. This may include speech or communication delays, as well as delays in gross and find motor skills[2]. For example, one 9-year-old child had the language ability equivalent to an 18-month-old while another 4-year-old child had the language ability equivalent to a 6-month-old[2]. While children with 14q32.2 deletions may eventually achieve motor milestones such as crawling or walking independently, other children may not. Some individuals may be incontinent and require assistance when using the bathroom[3].

In addition to developmental or intellectual delays, some individuals may present with autistic behaviors, such as hand flapping or other stereotypic behaviors, as well as aggression or sleep disorders[2,3].

Dysmorphic features of these patients may include thin/sparse eyebrows, small palpebral fissures, long/smooth philtrum, thin upper lip vermillion, hypertelorism, low-set ears, or broad nasal bridge and top[1,2].
However, although these findings are common, they are not the most important features of this deletion. The segment 14q32.2 includes the BCLL11B gene, which

seems to be the most important factor in determining clinical manifestations of this syndrome. This gene produces a transcription factor involved in T-cell development, neuronal development, and development of other organ systems[3]. It is already known that losing the function of this gene can result in severe combined immune deficiency and T-cell abnormalities[1]. The loss of this gene can cause immune deficiency syndrome and T-cell lymphopenia. There are even reports of lymphoblastic leukemia and thyroid cancer in patients with this deletion. However, it is possible for an individual to have abnormal laboratory values yet have no clinical symptoms[1].

Another remarkable feature of these patients is craniosynostosis (premature fusion of cranial bones)[1]. This deficit (while relatively rare in other chromosomal conditions) was found in 35-40% of reported patients. There is strong evidence that loss of the BCL11B gene is the main factor for development of craniosynostosis because this defect was found in several patients with point mutations in the BCL11B gene.

A significant portion of affected patients may also have defects of the heart, kidneys, or genital organs.

REFERENCES

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