# 12Q14 DELETION

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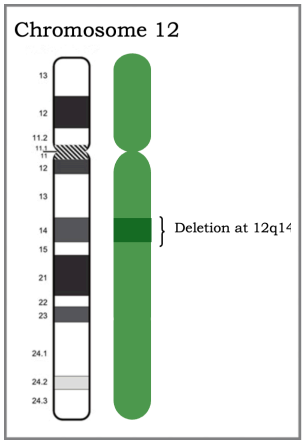


Deletions of the 12q14 region on the long arm of chromosome 12 cause a condition characterized by several features including low birth weight, failure to thrive, short stature, learning disabilities, and sometimes osteopoikilosis[1]. Osteopoikilosis is a bone disorder that causes areas of increased bone density around the joints. Upon X-ray examination, these dense portions of bone may look "spotted" and may be present throughout the body at various joints[1].

It is thought that deletion of the HMGA2 gene is responsible for the stature and growth patterns often seen in individuals and that the LEMD3 gene plays a role in development of osteopoikilosis[2]. HMGA2 is a transcriptional factor gene important for fetal growth, mainly as an appositive regulator for the insulin-like growth factor 2 (IGF2) gene[3]. All deletions of this area are interstitial and, in most cases, are less than 5 Mb. Osteopoikilosis is not observed in patients with small deletions that include the HMGA2 gene but lack the LEMD3 gene. Most individuals with 12q14 deletions mimic the physical presentation of another established condition: Silver-Russell syndrome[3].

A diagnosis of Silver-Russell syndrome requires 4 of the following 6 criteria to be met: low birth weight and/or length, postnatal growth failure, relative macrocephaly, prominent forehead, body asymmetry, and feeding difficulties and/or low body mass index[3]. While some individuals with 12q14 deletions may have many of these features and even meet a clinical diagnosis of Silver-Russell

syndrome, it is important to recognize that additional physical features may also be present.

Similar to Silver-Russell syndrome, individuals with 12q14 deletions frequently have a specific growth pattern. Both prenatal and postnatal growth restriction are common as well as feeding difficulties[2]. As a result of this, failure to thrive may be seen during the first year of life[4]. Other growth-related features such as relative macrocephaly or frontal bossing may also be seen[4].

12q14 deletions may also cause various developmental delays. Some children are found to have intellectual disabilities, while others may have some motor or speech delays[1]. Individual presentation may vary, with some children only having mild speech delays and others having more significant intellectual disabilities[1,4]. Many children, however, are able to attend typical schools without additional educational support in place[1].

Individuals with 12q14 deletions may also have several characteristic facial features. This can include triangular facies, wide forehead, deep set eyes, widely spaced eyes, epicanthus inversus, down slanting palpebral fissures, blue sclerae, micrognathia, synophrys, bushy eyebrows, or thin lips[4,5]. These patients do not have serious morphological defects of the brain or internal organs.

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