Dyggve-Melchior-Clausen Disease

Alternative Names
DMC

WHO International Classification of Diseases
Congenital malformations, deformations and chromosomal abnormalities

OMIM Number
223800

Mode of Inheritance
Autosomal recessive

Gene Map Locus
18q12-q21.1

Description
Dyggve-Melchior-Clausen (DMC) syndrome is an autosomal recessive disorder characterized by the association of a spondylo-epi-metaphyseal dysplasia and mental retardation. The main features are short trunk dwarfism, microcephaly, and psychomotor retardation with specific radiological appearances most likely reflecting abnormalities of the growth plates including platyspondyly (flattened vertebral bodies) with notched end plates, metaphyseal irregularities, laterally displaced capital femoral epiphyses, and small iliac wings with lacy iliac crests. DMC is progressive and clinical features are reminiscent of a storage disorder, in particular Morquio disease (MPS IV), but the absence of corneal clouding, deafness, valvular disease or mucopolysacchariduria in DMC serves to differentiate the two conditions.

Molecular Genetics
The Dyggve-Melchior-Clausen disease gene has been recently mapped to a short interval on chromosome 18q21.1. At present, Dyggve-Melchior-Clausen disease is known to results from mutations in the Dymeclin (DMC) gene. The DMC gene transcript is widely distributed, but appears abundant in chondrocytes and fetal brain. The predicted protein product of the DMC gene yields little insight into its likely function, showing no significant homology to any known protein family. However, the carboxy terminal end comprises a cluster of dileucine motifs, highly conserved across species.

Epidemiology in the Arab World

Egypt
Hosny and Fabry (1998) reported a case of Dyggve-Melchior-Clausen syndrome with short trunk dwarfism and mental retardation. Hosny and Fabry (1998) performed a Chiari pelvic osteotomy to halt hip subluxation on both sides. Ten years later, the patient was evaluated and the progressive lateral migration of the femoral head seemed to have been unaffected by this type of osteotomy.

Lebanon
In 1974, Afifi et al. described a Lebanese family with Dyggve-Melchior-Clausen syndrome with concentrically laminated membranous inclusions in myofibers. Naffah and Taleb (1974) described two more cases in a family from Lebanon with Dyggve-Melchior-Clausen syndrome with hypoplasia of the odontoid apophysis and spinal compression. Naffah (1976) described two further cases with Dyggve-Melchior-Clausen syndrome in first cousins who are members of the same family. In addition to the characteristic abnormalities involving the vertebral bodies, iliac crests, and femoral epiphyses, the two male children had rhizomelic shortness of the upper limbs. On the contrary to the previously described cases, the two patients of Naffah (1976) showed moderate mental retardation. Brothers of the two cases were all healthy and their parents were second cousins. Naffah (1976) noted that the DMC gene may have a relatively high frequency in Lebanon. He also indicated that there was no
known genealogical linkage between all the families with DMC and probably no hidden linkage of 5 or more generations back, since one of the families was of Kurdish origin, while the others were native to different parts of Lebanon and belonged to different religious communities. Bonafede and Beighton (1978) described three adult siblings, born to consanguineous parents, with mental deficiency and dwarfism due to the Dyggve-Melchior-Clausen syndrome.

Morocco
Sbihi et al. (1980) reported a patient with Dyggve-Melchior-Clausen dysplasia from Morocco. No further information could be obtained. Schorr et al. (1977) described six siblings from a Moroccan Jew family with Dyggve-Melchior-Clausen syndrome. Schorr et al. (1977) drew attention to characteristic double humped end plates with central constriction of the vertebral bodies which is present at age 4 years and becomes more distinct in late childhood. In adult patients, the vertebral bodies become more rectangular (lace-like appearance) as the appositional bone which appears during adolescence becomes fused.

Palestine
Schorr et al. (1977) described two siblings from an Arab consanguineous family from Gaza with Dyggve-Melchior-Clausen syndrome. Schorr et al. (1977) drew attention to characteristic double humped end plates with central constriction of the vertebral bodies which is present at age 4 years and becomes more distinct in late childhood. In adult patients, the vertebral bodies become more rectangular (lace-like appearance) as the appositional bone which appears during adolescence becomes fused.

References

Contributors
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