Chapter 19
Oculocerebrocutaneous Syndrome (Delleman-Oorthuys Syndrome)

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Contents

Introduction

Oculocerebrocutaneous syndrome or Delleman-Oorthuys syndrome (OMIM 164180) is a sporadic disorder, characterized by orbital cysts, microphthalmia, hamartoma, and focal cutaneous hypoplasia, which occurs predominantly in males [1]. Most skin appendages are located in the face, especially around the orbit, and only rarely extend to the trunk [2, 3]. Delleman and Oorthuys first described this syndrome in 1981, who reported on two cases with this syndrome [4]. Since then, about 40 cases have been reported, and no patient with an abnormal karyotype has been described. Although the etiology of OCCS is still unknown, in a last publication, it is hypothesized to result from postzygotic mosaic variants in an X-linked gene [3].

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Clinical Characteristics

This sporadic syndrome is characterized by orbital cysts, anophthalmia, microphthalmia, eyelid coloboma (seldom), hamartoma (seldom), periorbital or postauricular appendages, and the most common focal cutaneous hypoplasia or aplasia (pink-colored or flesh-colored). Other symptoms are skull defects, rib dysplasia (seldom), intracranial cysts, corpus callosum agenesis, malformations of the ventricular system, polymicrogyria, psychomotor/developmental retardation, and seizures [1, 4–7].

Scholz et al. [8] described a full-term, 22-h-old newborn with atrophic lesions on his scalp and torso and left orbital mass and tag-like lesions on his face. Magnetic resonance imaging of the brain demonstrated absence of the left globe without an orbital cyst. The mid-hindbrain malformation appears pathognomonic for the oculocerebrocutaneous syndrome. The eye and skin features show considerable overlap with several other syndromes, such as encephalocraniocutaneous lipomatosis, oculo-auriculo-vertebral spectrum, and focal dermal hypoplasia, none of which has a comparable pattern of brain malformations [2, 9, 10]. Arora et al. [11] described a case of a 1-month-old male with an orbital cyst in the left eye since birth and skin and neurological anomalies, e.g., lateral ventricular dilatation with corpus callosum agenesis. Ortiz-Basso et al. [12] presented a case with coloboma of the lower lid. According to Hunter [13], a major criterion is microphthalmia with cyst, and a minor criterion is an arachnoid cyst. Over 85% of cases were reported to have ocular cysts, skin appendages, and focal dermal hypoplasia. Moog and Dobyns [3] in a recent review of OCCS syndrome presented 40 patients and stated ocular defects, such as orbital cyst, eyelid coloboma, and anophthalmia/microphthalmia with or without cyst to be present in all of the cases. In the same publication, the most probable pathogenesis is a neurocristopathy that interferes with craniofacial morphogenesis [3]. Jamjoom et al. [14] described a 4-day-old newborn with congenital glaucoma in the left eye and microphthalmia in the right eye.

A subtle distinction between Gorlin-Goltz syndrome and Delleman syndrome could be made based on the location of the cysts and skin appendages—in Gorlin syndrome, the skin appendages appear in the periorbital and perianal regions (see Chap. 29), whereas in Delleman syndrome, they occur in periauricular areas [15, 16]. Delleman syndrome shows overlapping clinical features with Goldenhar syndrome, which is characterized by epibulbar dermoids, preauricular appendages, micrognathia, and vertebral and other anomalies [17]. The differential diagnosis of OCCS includes brain malformation such as Aicardi syndrome (OMIM 304050; agyria, pachygyria, focal cortex dysplasia, double cortex syndrome, which occurs only in females), orbital cysts (mainly midline cysts), microphthalmia with linear skin defects (see Chap. 18), encephalocraniocutaneous lipomatosis (see Chap. 16), intracranial cysts, and cleft of lip and palate.

Diagnostic Criteria

Moog and Dobyns [3] differentiate between major and minor diagnostic criteria:

The major criteria include congenital orbital cyst or microphthalmia with cyst, crescent-shaped skin defect above or behind the ear, pedunculated skin appendage, finger-like and moving, or proven striated muscle hamartoma, novel mid-hindbrain malformation consisting of giant, dysplastic tectum rotated upward, and absent or severely malformed vermis.

The minor criteria include isolated microphthalmia/anophthalmia, any other colobomatous defect, ocular or eyelid, pedunculated skin appendage, possible SMH, subcortical or periventricular nodular heterotopia, corpus callosum agenesia, and hydrocephalus.

The diagnosis is based on the clinical, ophthalmological, and radiological (brain CT/MRI) symptoms.

Therapy

The management is symptomatic or supportive, organized by a multidisciplinary team. Anticonvulsants are used if seizures occur. Supportive options include management of the orbital cyst and cleft lip or palate, as well as insertion of a shunt in case of hydrocephalus. Long-term follow-up of neurologic status is necessary, and the prognosis depends on type, severity, and progression of these symptoms.

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