

Delleman Oorthuys syndrome: 'Oculocerebrocutaneous syndrome'

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Delleman Oorthuys syndrome (oculocerebrocutaneous syndrome) is a rare, congenital sporadic disorder affecting the skin and central nervous system. We present the case of a one-month-old male who presented with an orbital cyst in the left eye since birth along with other manifestations of this syndrome. The manifestations of this syndrome resemble other developmental disorders like Goldenhar and Goltz syndrome. Conservative management of the orbital cyst in these cases have been described. The need to diagnose this rare congenital anomaly with cerebral malformations as a separate entity is crucial in the management of these children.

Key words: Cystic eye, Delleman syndrome, neurological symptoms.

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The syndrome of orbital cyst and anophthalmia or microphthalmia, periocular cystic appendages, skin tags, cerebral cysts with other cerebral anomalies and focal dermal hypoplasia was first described by Delleman *et al.* in 1981.^[1-4] This entity, known as oculocerebrocutaneous syndrome, is also named after those who identified it. Since it was first identified, several sporadic manifestations of this syndrome have been reported. A brief report of our case with characteristic manifestations and management is presented.

Case Report

A one-month-old infant of healthy parents with a 39-year-old father and 26-year-old mother presented to us with left-sided ocular swelling which was first noticed at birth and had increased to the presenting size in one month [Fig. 1]. The child had a normal birth history. There was no history of consanguinity in the parents. There was no history of seizures. The child had one elder healthy sibling, male, aged six years.

A large cystic swelling in the child's left orbit was positive for transillumination test. Skin over the swelling was hypoplastic with prominent veins. There was no other area of skin hypoplasia elsewhere in the body. Multiple cystic appendages were present in the periorbital region. No globe was appreciated on the left side. Examination of the right eye was normal. B-scan ultrasonography of the left orbit showed fluid-filled cystic areas with no evidence of globe.

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Systemic evaluation including neurological examination revealed no abnormality. Developmental milestones were normal for age.

On axial computed tomographic scan there was anophthalmia with a hypodense cystic area in the left orbit. This area had no intracranial communication [Fig. 2]. There was dilatation and separation of lateral ventricles with corpus callosum agenesis, with higher placed third ventricle with colpocephaly (focal ballooning of trigone and occipital horns of lateral ventricle). However there was no evidence of hydrocephalus [Fig. 3].

The patient underwent a simple cyst aspiration (with 20 mL of fluid drained). There was a recurrence of cystic swelling at one month follow-up, and repeat cyst aspiration was done with addition of ethanolamine oleate sclerotherapy (0.8 mL). Excision of periocular skin appendages was done simultaneously. This was followed by placement of a conformer in the empty socket. No recurrence of cyst was noticed in one year of follow-up [Fig. 4].

Discussion

Oculocerebrocutaneous syndrome (OCC), a rare genetic



Figure 1: Clinical photograph of patient at one-month with congenital cystic mass replacing the eyeball on left side with accessory periocular cystic appendages.

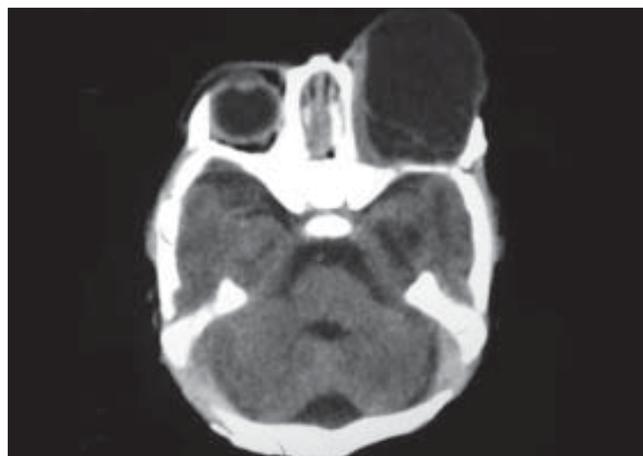


Figure 2: Axial CT scan of orbit showing hypodense cystic area on left side with anophthalmia

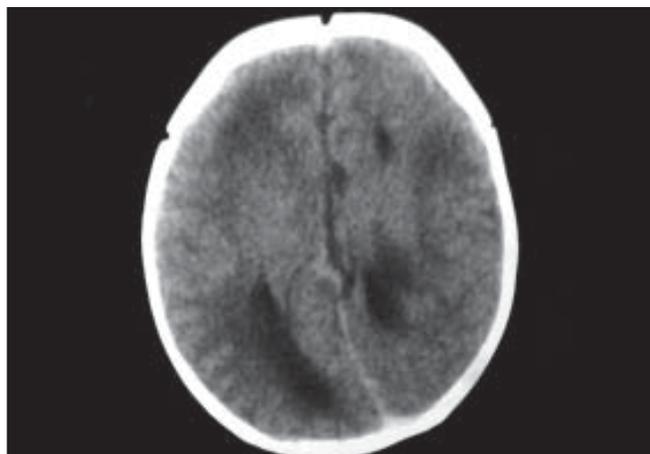


Figure 3: Axial CT scan of ventricles showing dilatation and separation of lateral ventricles with corpus callosum agenesis with colpocephaly



Figure 4: Clinical photograph of patient at one-year follow-up showing left eye with prosthesis

disorder is characterized primarily by an orbital cyst with periorbital skin appendages which may be associated with anophthalmia or microphthalmia, major cerebral malformation, and focal dermal hypoplasia or aplasia.^[1-4] The orbital cyst may sometimes be sufficiently large to obscure the microphthalmic eye.

Neurological abnormalities associated with OCC syndrome may include malformations of the ventricular system in the brain like colpocephaly, multiple fluid-filled cystic cavities within the cerebral and cerebellar cortex, agenesis of corpus callosum, and hydrocephalus.^[1-4] Affected infants and children may demonstrate psychomotor retardation, seizures, and developmental delay. In our case, the patient did not have a history of seizures, and developmental milestones were normal for age. However, in all these cases a long-term follow-up is important to evaluate the patient's neurological function over time.

The cutaneous features include underdevelopment or absence of skin in certain localized regions (focal hypoplasia or aplasia). Characteristic of this syndrome are pink-colored or flesh-colored outgrowths of skin (cutaneous tag) within certain facial areas, most commonly the periorbital area.

Lesions in the syndrome correspond to a disruption of embryonic development at a very early stage. Microphthalmos with cyst is related to incomplete closure of the embryonic fissure, normally occurring at five to six weeks,^[5] with cystic extension of neuroretinal tissue through the defect into the orbit.^[6] The distribution of accessory facial skin tags along the line of the fusion of facial buds suggests a similar problem with closure of these embryonic furrows.^[5] Likewise, the agenesis of corpus callosum may be considered as a failure of commissural fibers to link up in the midline.

Most of the cases reported were sporadic with no reports of affected siblings. The inheritance pattern of OCC is variable, but the most common hypothesis put forward for this syndrome is mosaicism.^[7] However, the continuity and symmetry of lesions makes this uncertain. It could also be the result of autosomal dominant inheritance with variable expression. Consanguinity of phenotypically normal parents in many reports (autosomal recessive inheritance) makes it more complex. In our case parents had non-consanguineous marriage, which suggests that a new mutation may be responsible.

Delleman Oorthuys syndrome shows overlapping clinical features with Goldenhar syndrome and Goltz syndrome. However, in the Goldenhar syndrome, the characteristic feature is of epibulbar dermoid and skin tags in the preauricular region with vertebral anomalies and absence of cerebral cyst. Goltz syndrome is an X-linked dominant syndrome, occurring only in females (as it is lethal in males), may have microphthalmos and coloboma and focal dermal hypoplasia but the other characteristic feature is of polysyndactyly and poor dentition.^[8]

Management of orbital cyst in previously reported cases was by aspiration of cyst followed by dissection and removal of cyst from surrounding periorbital structures.^[4] We used sclerosing agent ethanolamine oleate in our case. The use of the agent for orbitopalpebral cyst has been well documented^[9] but its use for orbital cysts in Delleman Oorthuys syndrome has not been previously reported. Surgical removal of the cyst involves prolonged anesthesia and extensive dissection. Owing to the cerebral malformations and seizures associated with this syndrome, prolonged anesthesia can be difficult.^[10] We, therefore, recommend the use of a sclerosing agent for conservative management of orbital cysts.

We also recommend a detailed neurological workup in these children; and if a cerebral or cerebellar manifestation such as hydrocephalus is present, it warrants urgent neurological opinion for surgery to prevent further neurological damage. Patients with congenital cystic eye with periorbital skin appendages with cerebral malformation should be assessed by the ophthalmologist, neurophysician and pediatrician in close coordination for proper management of these patients.

References

1. Delleman JW, Oorthuys JWE. Orbital cyst in addition to congenital cerebral and focal dermal malformations: A new entity? *Clin Genet* 198;19:191-8.
2. Delleman JW, Oorthuys JWE, Bleeker-Wagemakers EM, Ter Haar BGA, Ferguson JW. Orbital cyst in addition to congenital cerebral and focal dermal malformations: A new entity. *Clin Genet* 1984;25:470-2.
3. Ferguson JW, Hutchison HT, Rouse BM. Ocular, cerebral and cutaneous malformations: Confirmation of an association. *Clin*

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- Genet 1984;25:464-9.
4. Wilson RD, Traverse L, Hall JG, Flodmark CO, Rootman J. Oculocerebrocutaneous syndrome. *Am J Ophthalmol* 1985;99:142-8.
 5. Renard M, Fontaine M, Dhermy P, Caquet N. Microphthalmie bilaterale avec kystes orbitaires associee a des appendices faciaux surnumeraires. *Bull Mem Soc Fr Ophtalmol* 1964;77:297-316.
 6. Waring GO, Roth AM, Rodrigues MM. Clinicopathologic correlation of microphthalmos with cyst. *Am J Ophthalmol* 1976;82:714-21.
 7. Hall JG. Review and hypotheses: Somatic mosaicism-observations related to clinic genetics. *Am J Hum Genetics* 1988;43:355-63
 8. Goltz RW, Peterson WC, Grolin RJ, Ravits HG. Focal dermal hypoplasia. *Arch dermatol* 1962;86:708-17.
 9. Naik MN, Honavar SG, Murthy RK, Raizada K, Thomas R. Ethanolamine oleate sclerotherapy versus simple cyst aspiration in the management of orbitopalpebral cyst associated with congenital microphthalmos. *Ophthalm Plast Reconstr Surg* 2007;23:307-11
 10. Sadhasivam S, Subramaniam R. Delleman Syndrome: Anesthetic Implications. *Anesth Analg* 1998;87:553-5
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