



GOLDENHAR SYNDROME- A RARE CASE REPORT AND REVIEW OF LITERATURE

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<p>Article Info <i>Received 19/09/2016</i> <i>Revised 25/09/2016</i> <i>Accepted 30/09/2016</i></p> <p>Key words: Goldenhar syndrome, Mandibular hypoplasia, Priauricular tags, Limbal dermoid, Oculoauriculovertebral dysplasia, Hemifacial microsomia.</p>	<p>ABSTRACT A rare case of Goldenhar syndrome is being reported here in a 5 year old female child who presented to Ophthalmology department with preauricular tags and ocular limbal dermoid in left eye. Based on the clinical profile, clinical diagnosis of Goldenhar syndrome was made. There are only few cases of Goldenhar's syndrome reported in the literature. The case is being reported here for its rarity.</p>
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INTRODUCTION

Franceschetti-Goldenhar syndrome or Goldenhar syndrome is a rare congenital malformation which is also known by various names such as oculo-auriculovertebral (OAV), facioauriculovertebral syndrome (FAV) and first and second branchial arch syndrome. The syndrome was first described in 1952 by Swiss ophthalmologist, Maurice Goldenhar and in 1963, Gorlin named this as oculo auriculovertebral syndrome consisting of classical triad of preauricular appendages, ocular dermoids, and vertebral anomalies. Incidence of this syndrome reported in the literature is 1:3500 to 1:5600 with a male to female ratio of 3:2 [1]. It is a rare hereditary condition characterized by numerous anomalies affecting the first and second branchial arches of the first pharyngeal pouch, first branchial cleft and the primordia of the temporal bone

before the end of organogenetic period during 7th or 8th week of embryonic life [2]. Although most cases are sporadic, autosomal dominance inheritance has also been described. The etiology of Goldenhar syndrome is not well understood. Gorlin and Pindborg 1964 supported the role of abnormal embryological process affecting the mesoblasts involved in branchial and vertebral systems [3]. According to Baum and Feingold in 1973, Goldenhar's syndrome may be a sporadic event that occurs early in embryogenesis which is explained by reduced penetrance, somatic mosaicism or epigenetic changes [4]. However familial cases have been reported in literature in consanguineous marriages. Multiple chromosomal anomalies have been explained to this syndrome, the most significant of which are 3del (5p), del (6q), trisomy 7 & 9



mosaicism, trisomy 18, trisomy 22 and MSX homeobox genes is also linked to this syndrome. Poswillo in 1976 explained that maternal fetal hypoxia, hypertension and anticoagulants can cause hematoma formation in the region of the ear and jaw causing destruction of differentiating tissue leading to branchial arch dysplasia. This syndrome has also been observed in the children of diabetic mothers and those exposed to teratological agents like cocaine, retinoic acid, thalidomide and tamoxifen [5].

Majority of cases are unilateral (85%) as compared to both sides (10 % to 33%). Various associated abnormalities are:

Facies

Unilateral facial hypoplasia, prominent forehead with frontal bossing, zygomatic, maxillary and mandibular hypoplasia and micrognathia [6].

Eye

Epidermoid tumors occur in 35 % of all cases and can be dermoid (white solid masses) or lipo-dermoid (25%). These are usually unilateral (50%) but bilateral is seen in 25% cases. They appear as solid yellowish white ovoid masses, most often seen at the inferotemporal quadrant at the limbus. Other associated features may include unilateral or bilateral blepharophimosis, microphthalmia, colobomas of the upper eyelid, iris, chorioidea and retina, ocular motility disorders (esotropia or exotropia), cataract, antimongoloid obliquity of palpebral fissures, microcornea and congenital cystic eye [7].

Ear

Preauricular supernumerary skin tags, anotia or microtia, blind fistulas and sinuses, external ear malformations (dysplasias, aplasias, and canal atresias) middle and internal ear anomalies causing conductive and sensorineural hearing loss, aberrant facial nerves and sometimes patulous or absent eustachian tube are also seen [8].

Central nervous system

Mental retardation, unilateral aplasia of the trigeminal and the facial nerve nuclei, intracranial anomalies such as occipital and frontal encephaloceles, hydrocephaly, holoprosencephaly, lipoma of corpus callosum, dermoid cyst, teratoma, Arnold- Chiari malformation, arachnoid cyst, and hypoplasia of the corpus callosum [9].

Trachea and Lung

Tracheo-esophageal fistula, incomplete lobulation to hypoplasia to agenesis of the lungs.

Heart

Congenital heart disease in form of ventricular septal defects and tetralogy of Fallot with or without right

aortic arch are very commonly seen. Others like transposition of the great vessels, PDA with pulmonary stenosis, tubular hypoplasia of the aortic arch associated with mild coarctation of the aorta along with cardiomegaly and dextrocardia can also be observed [10].

Skeletal abnormalities

Cranium bifidum, microcephaly, dolichocephaly, plagiocephaly, cervical vertebra fusions (60%), platybasia and occipitalization of the atlas (30%), spina bifida, hemi or hypoplastic vertebrae, scoliosis, and anomalous ribs (agenesis, bifidity, fusion, supernumerary), hypoplasia or aplasia of radius and/or thumb are also common seen [11].

Kidney & Gastrointestinal anomalies

Absent kidney, absent or double ureter, anomalous blood supply to the kidney, crossed renal ectopia, hydronephrosis or hydroureter and imperforate anus with or without rectovaginal fistula can be seen.

Oral manifestations

Cleft lip and palate, a highly arched palate, unilateral tongue hypoplasia, gingival hypertrophy, supernumerary teeth, enamel and dentin malformations, delayed tooth development, agenesis of salivary glands or salivary fistula [12].

CASE REPORT

A 5 years old girl, born of non-consanguineous parents, presented to Ophthalmology department with preauricular tags and yellowish lesion in left eye (Fig.1&2). Ophthalmological examination revealed left ocular dermoid measuring 1 mm × 3 mm at inferotemporal limbal area at 5 O'clock position in the left eye while fundus examination didn't reveal any abnormality. Child underwent complete ENT examination including hearing assessment and there were no signs of hearing impairment or any other abnormality like cleft lip or palate. Paediatric consultation was done to assess the mental development of child which was found normal and according to her age. Neurological and cardiovascular examination was within normal limits. Dental examination didn't reveal any abnormality. There was no relevant family history and no history of maternal drug intake during pregnancy. The child was full-term normal vaginal delivery with no perinatal complications. Child underwent a minor surgical procedure for excision of preauricular tags on the left side of his face. X-ray examination of the skull and vertebral column did not show any abnormality. However, orthopantomographic examination showed mild hypoplasia of the mandible. Based on the clinical signs and associated abnormalities, clinical diagnosis of Goldenhar syndrome was made.

DISCUSSION

Goldenhar syndrome is rare developmental disorders of poorly understood etiology. Although



described as a triad of preauricular appendages, ocular dermoids, and vertebral anomalies in the literature, various totalis [13]. Abe et al. described a case of Goldenhar syndrome associated with cardiac abnormalities such as single ventricle, atresia of pulmonary artery and patent ductus arteriosus [14]. Mahore et al. reported a case of Goldenhar syndrome with normal cardiovascular system but crossed ectopic kidneys in association with other clinical features [15]. No cardiovascular malformation was seen in our patient. Goldenhar syndrome has been seen in association with cranial anomalies. Kumar *et al.* reported polydactyly and hydrocephalus as rare associations with Goldenhar syndrome [16].

Differential diagnosis of Goldenhar syndrome is usually difficult because of the wide range of clinical signs and associated abnormalities. A multidisciplinary approach is needed including variety of specialists for the management of various associated deformities and psychosocial development of the child. Timing of the primary and secondary reconstructions plays an important role in the complex treatment. Primary reconstruction typically consists of a cleft repair, corrections of colobomas and ear deformities, and extirpation of the dermoids and preauricular tags [17]. The clinician should be able to differentiate the syndrome from other entities occurring as a result of first and second branchial arch aberrations during embryonic development like Treacher-Collins syndrome, Wildervanck syndrome (syndromacervicooculoacusticum), Variant of hemifacial microsomia, Mandibulo facial dysostosis, Townes-Brocks syndrome, VATER syndrome (vertebral anomalies, ventricular septal defect, anal atresia, T-E fistula with esophageal atresia, and radial and renal dysplasia),

other associated abnormalities may be seen. Gorgu et al. in 1998 reported Goldenhar syndrome with situs inversus CHARGE association (coloboma, heart disease, atresia choanae, retarded growth and development, genital anomalies, and ear anomalies and/or hearing loss) and various first arch syndromes [18].

Various diagnostic modalities such as ultrasonography, computed tomography and radiographic analysis may be done as a part of evaluation protocol to rule out the syndrome. Ultrasonography is done during pregnancy to rule out hypoplasia of mandible, cardiovascular malformation and cleft of lip and/or palate. Radiographic analysis may be carried out to rule out any skeletal abnormality. The effect of Goldenhar syndrome is more evident as the child grows, because of delays in the growth and development of the affected areas. At birth, main concerns are the patency and adequacy of the airway, swallowing and feeding and the presence of other malformations that may have serious systemic implications. Airway problems can be tackled by infant positioning, nasopharyngeal airway placement, distraction osteogenesis to advance the mandible, or tracheotomy if needed as a last resort. Feeding difficulties are dealt with nasogastric feeds or the placement of a gastrostomy tube depending on the case. Posnick states that the most favourable functional outcomes are obtained when surgery is carried out with coordinated orthodontic therapy at or close to skeletal maturity (5). Prognosis of the disease is good in uncomplicated cases without any systemic complications. Successful treatment requires a multidisciplinary approach involving otolaryngologists, ophthalmologist, pediatrician, dermatologist and orthopedician.

Fig 1. Showing ocular limbal dermoid.



Fig 2. Showing supernumerary preauricular tags



CONCLUSION

Goldenhar syndrome is a rare entity characterized by classical triad of preauricular appendages, ocular dermoids and vertebral anomalies. However there are many other associated abnormalities as mentioned in the literature. A multidisciplinary approach is needed including variety of specialists for early diagnosis and management of various associated deformities. The complex treatment is focused not only on correction of

deformities but also on the prevention and treatment of the psychosocial aspects of the malformation on the child with co-operation of parents along with treating physician.

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CONFLICT OF INTEREST

No financial interest or any conflict of interest.



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