

Goldenhar Syndrome in an Infant of Diabetic Mother

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Received: Jan 12, 2009; Final Revision: May 25, 2009; Accepted: Jul 06, 2009

Abstract

Background: Goldenhar syndrome (oculoauriculovertebral dysplasia) is a rare congenital anomaly with unknown etiology and consists of non accidental association of hemifacial microsomia, auricular anomalies, epibulbar dermoid and vertebral anomalies. Although some malformations are more frequent in infants of diabetic mothers, developmental defects of first and second branchial arch is not a common finding in these patients.

Case Presentation: We report a female case of Goldenhar syndrome in a newborn infant of a diabetic mother (IDM). Follow up of this patient after 6 months showed normal neurodevelopment and no evidence of hearing loss. She had developed epibulbar dermoid tumor in her right eye.

Conclusion: It is necessary to evaluate IDM for presence of anomalies implying oculoauriculo-vertebral dysplasia.

Iranian Journal of Pediatrics, Volume 20 (Number 1), March 2010, Pages: 131-134

Key Words: Goldenhar Syndrome; Oculoauriculovertebral Syndrome; Gestational Diabetes; Congenital Defects

Introduction

Goldenhar syndrome, also known as oculoauriculo-vertebral spectrum (OAVS) is a developmental anomaly involving structures derived from first and second branchial arches^[1,2].

The frequency of OAVS ranges between one case per 3500 to 25000 births^[3,4].

Its occurrence is predominantly sporadic, with male to female ratio of 3:2^[5]. Autosomal

dominant, autosomal recessive and multifactorial modes of inheritance have been reported in 1-2% of cases^[3,5,6]. In patients with OAVS, there is a wide spectrum of abnormalities including preauricular tags and pits, malformations of ears, lateral cleft-like extension of the corner of the mouth, cleft lip and palate, facial muscle hypoplasia, hypoplasia of mandibular or maxillary bones, and facial nerve paralysis^[1,7,8]. Some authors also pointed out holoprocerephaly and disturbances of the

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central nervous system^[9]. Ocular changes include microphthalmia, epibulbar dermoids, lipodermoids and coloboma. Vertebral abnormalities such as scoliosis, hemivertebrae, and fusion of cervical vertebrae are also reported^[5]. Systemic features are cardiac and renal malformations^[3,10]. Congenital heart defects have been reported in 5-58 % of patients with OAVS. There are reports of congenital heart disease (CHD) in 32 % of patients which were atrial and ventricular septal defects in 32 % of cases^[10]. In another study there were 36.7 % cardiovascular defects, of which 45 % were conotruncal defects. The exact etiology of OAVS is not known. It may have a multifactorial etiology. Abnormal vascular supply, disrupted mesodermal migration or disturbance of neural crest cells may be the cause of the disease^[1,5].

Ingestion of drugs such as vitamin A, primidone, thalidomide, tomosifen, and cocaine by the pregnant mother has been associated with the development of this syndrome^[5,11]. Maternal rubella and influenza have also been suggested as etiologic factors⁵.

Here we report an infant of diabetic mother with Goldenhar syndrome.

Case Presentation

A 4100 g female newborn was born at 39 weeks gestational age to a 35 year-old gravida 3, para 2, abortion 1, mother by cesarean delivery.

She had bilateral preauricular appendices with sinus tract in right side (Fig 1), pseudomacrostromia (lateral cleft-like extension) of right corner of the mouth (Fig 2).

She had no facial asymmetry. Ocular examination was normal at birth. There was ventricular septal defect in echocardiography.

Radiological examination of vertebrae showed fusion of 6th and 7th cervical vertebrae. Renal and cranial ultrasonogram studies were normal. We diagnosed this macrosomic infant of diabetic mother as a case of Goldenhar syndrome. Otoacoustic emission test (OAE) at birth was normal.

The mother had a 10-year history of insulin dependent diabetes before conception. She had uneventful pregnancy without any diagnostic intervention or regular perinatal care. No HbA_{1c} was available. There was no parental consanguinity. First child of this family died with cyanotic congenital heart disease. Follow up



Fig. 1: Preauricular appendices with sinus tract in right side in patient with Goldenhar syndrome



Fig. 2: Pseudomacrostromia (lateral cleft-like extension) of right corner of the mouth in patient with Goldenhar syndrome

examination at 6 months of age showed normal neurodevelopment and no evidence of hearing loss. She had developed epibulbar dermoid tumor in her right eye. The patient was referred to ophthalmologist and ENT for surgical consultation.

Discussion

Most of reported cases are adolescents but we diagnosed Goldenhar syndrome in a newborn infant. Pseudomacrostromia is a specific but relatively rare manifestation of Goldenhar syndrome. Women with diabetes are at risk for the development of fetal anomalies. It is suggested that a disturbance of neural crest cells in IDM acts as the cause of malformations. The congenital anomaly most specific for IDM is caudal dysplasia (sacral agenesis) which occurs 200-400 times more often in women with diabetes than in pregnant women without diabetes. Although this lesion is most specific for diabetes, it is rare. Neural tube defects and congenital heart defects are far more common. Malformations of the central nervous system such as anencephaly, open myelomeningocele

and holoprosencephaly are increased tenfold, whereas cardiac anomalies such as transposition of great vessels and ventricular septal defects are increased fivefold^[4,12]. There are reports of uncommon anomalies in IDM such as a case with bifid tongue^[13].

Wang reported that IDM with preconception diabetes had a 1.5-fold increased risk for OAVS but this odd ratio did not reach statistical significance^[4]. They concluded that OAVS occurs with higher incidence in IDM than in general population.

The rate of malformation is related to glucose control during organogenesis. It is suggested that an increased supply of substrate in diabetic mothers leads to an oxidative stress on the developing fetus which in turn generates excess formation of free oxygen radicals that may be teratogenic^[12]. Tight metabolic control during organogenesis with close perinatal care reduces the rate of anomalies.

Conclusion

Maintenance of euglycemia prior to conception and throughout gestation is highly

recommended to reduce the incidence of maternal, fetal and neonatal complications.

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