Lenz microphthalmic syndrome in an Indian patient

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A case of Lenz microphthalmia syndrome in a seven-month-old male child having features of unilateral anophthalmia, microcephaly, external ear and finger abnormalities, hydrocele and hypospadias is being reported. The unilateral involvement and anophthalmia is rare in Lenz syndrome. The manifestation of hydrocele in association with this syndrome has not been seen in earlier cases. This is the first documented case from India.

Key words: Anophthalmia, Lenz syndrome, microphthalmia, X-linked recessive

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Lenz microphthalmia syndrome was named in 1955 after Widukind Lenz,[1] a German medical geneticist. It is characterized by bilateral microphthalmia which is usually asymmetric but very rarely it may have unilateral manifestation and even anophthalmia.[2] Lenz microphthalmia syndrome is extremely rare with only few isolated cases being reported. Thus the incidence of this syndrome cannot be determined. It is associated with malformations of ears, teeth, fingers, skeleton and genitourinary systems. About 75% of the patients have microcephaly and mental retardation.[2] We hereby report an Indian patient with Lenz microphthalmia syndrome. To the best of our knowledge, this is the first case report from India.

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Case Report

A seven-month-old male child presented to us for asymmetry in the size of the eyes, left smaller than right [Fig. 1A]. He was born at full term to parents of a consanguineous marriage (first cousins) after an uneventful pregnancy and a normal vaginal delivery.

On ocular examination left eyelid appeared smaller and on retracting the eyelids the socket was found to be empty. Right eye was normal on examination. The systemic examination showed multiple congenital anomalies including microcephaly (head circumference was 34 cm, lesser than the third percentile for that age), external ear and finger abnormalities, hydrocele and hypospadiasis [Fig. 1B]. The infant had malformed left ear with hypoplasia of the antihelices, fusion of helix with the tragus and the opening of the external auditory canal could not be seen [Fig. 1C]. The left hand showed four normal digits and pre-axial duplication of thumb. The right hand was normal. Additionally, the child could not sit with support. The presence of kyphosis of the thoracic part of the vertebral column might have been responsible for his inability to sit. Dental abnormalities and mental retardation could not be ruled out.

Computed tomography scan of the orbit and brain showed absence of left eye in the bony socket with rudimentary optic nerve seen in the orbit and extending for a short distance into the cranium. There was hypoplasia of optic chiasma and aplasia of the entire visual pathway on the left side. The right side of

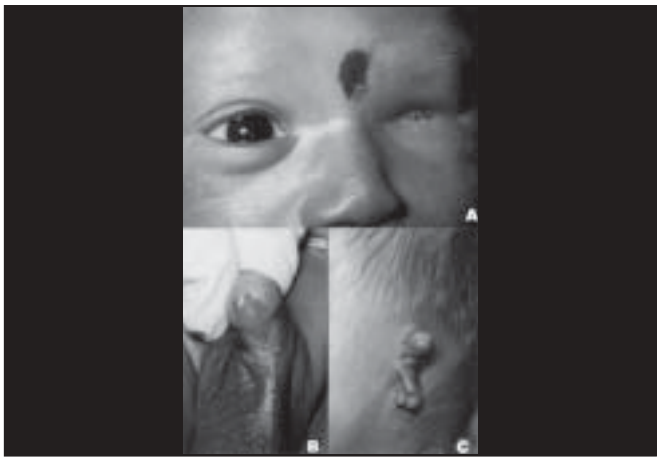

Figure 1: (A) Left anophthalmia with normal right eye; (B) Hypospadias and hydrocele; (C) Left ear abnormality

the optic nerve was normal. Echocardiography of heart and ultrasonography of the abdomen were normal. The case was lost to follow-up after the initial workup.

Discussion

The differential diagnosis of microphthalmia or anophthalmia along with digital, skeletal and other congenital anomalies includes trisomy 13, Goltz syndrome (focal dermal hypoplasia),[3] Waardenburg's recessive anophthalmia syndrome,[4] oculodento-osseous dysplasia,[5] Lenz microphthalmia syndrome.

Lenz microphthalmia syndrome is inherited as an X-linked recessive genetic trait and is fully expressed in males only. Two loci associated with this syndrome, MAA (microphthalmia with associated anomalies) and MAA2, are situated respectively at Xq27-q28 and Xp11.4-p21.2.[6] Females who are heterozygote may exhibit some of the symptoms associated with the disorder, such as microcephaly, short stature and/or malformations of the fingers and/or toes. Affected males very rarely reproduce.[2] Thus the affected males do not transmit the disease but only carrier females can transmit the disease. Unless the disease is known to occur in a family, carrier females with their subtle manifestations are rarely suspected and so genetic counselling is of little interest in Lenz microphthalmia syndrome. However, carrier females should be encouraged not to have a male child.

In rare cases, affected infants may exhibit unilateral involvement and/or complete absence of the eyes (anophthalmia).[6] Coloboma of the microphthalmic eyes is a universal finding and is present in almost 75% of the cases.[2,7] External ear abnormalities characteristically take the form of hypoplasia of the antihelices, thinning and protrusion of the ear lobes from the head.[2] Dental anomalies include crowded and widely spaced teeth or even missing teeth.[2]

Skeletal anomalies are usually prominent in the thoracic region and spine which include sloping shoulders, barrel-chest kyphoscoliosis or gibbus deformities.[2] Digital deformities like syndactyly (a failure of differentiation in which the fingers fail to separate into individual appendages), clindodactyly (curving of the fifth finger (the little finger) toward the fourth finger (the ring finger)), camptodactyly (congenital condition where the little finger, sometimes the ring finger, is held in a fixed flexed position) and duplication or hypoplasia of thumb are seen in 60% of the patients.[2]

Microcephaly is present in more than 80% of the patients, mental retardation in more than half of all cases whereas development delay is a universal finding varying from mild to very severe.[2] Urogenital anomalies include cryptorchidism, renal hypoplasia or even aplasia and hypospadias. To the best of our knowledge hydrocele has not been documented as a part of this syndrome. Other less common manifestations include cleft lip and palate abnormalities, hearing loss, congenital heart disease, webbed neck, sacral pits, spastic diplegia, abnormal dermatoglyphs and other very rare manifestations.

Other syndromes with microphthalmia or anophthalmia with skeletal and other congenital abnormalities include Goltz syndrome (focal dermal hypoplasia),[3] Waardenburg's recessive anophthalmia syndrome[4] and oculodento-osseous dysplasia.[5] Goltz syndrome, an X-linked dominant disease is characterized by linear regions of dermal atrophy, colobomatous microphthalmia and digital abnormalities like syndactyly or polydactyly. It is lethal in males.[3] Waardenburg's recessive anophthalmia syndrome, an autosomal recessive disorder, is characterized by anophthalmia or microphthalmia, acromelic limb malformations (typically oligodactyly, camptodactyly and fused fourth-fifth metacarpals), variable mental retardation and distinctive facial features.[4] Oculodento-osseous dysplasia, an autosomal dominant disorder, is characterized by thin nose, hypoplastic alae, dental hypoplasia, camptodactyly and syndactyly and microphthalmos.[5]

There are no specific management strategies for this syndrome; it has to be managed in accordance with the congenital anomalies present in the individual patient. This has to be managed by multiple specialties working in tandem. Orbital implants like that of polytetrafluoroethylene can be used to provide cosmesis.

In conclusion, in a case of microphthalmia or anophthalmia, other systemic abnormalities should be looked for in order to decipher a syndromic presentation.

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