Larsen syndrome

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Abstract

Larsen syndrome is a rare inherited disorder characterized by congenital dislocation of multiple joints along with other anomalies of heart, face, hands and bones. In the present report, we describe a 10 year old girl who presented with mid facial hypoplasia with depressed nasal bridge, high arched palate, bilateral talipes equinovarus and high arched feet. On examination, she had short stature (HAZ -3.5 SD) with hyperextension of knee joint, fixed flexion of elbow joint.

Introduction

Larsen syndrome is a rare inherited defect of connective tissue formation that is transmitted in an autosomal dominant and recessive pattern. It is characterized by the association of multiple congenital joint dislocations, including hips, knees and elbows, frontal bossing, a depressed nasal bridge, hypertelorism and a flat face,[1] distinctive deformities of the hand especially blunt, square shaped thumbs, calcaneus, and spinal anomalies, which may lead to major spinal instability and spinal cord injury.[2,3]

Here we report a ten year old girl with typical facial feature of Larsen syndrome, bilateral club feet and multiple congenital joint dislocations.

Case Report

Our patient "J", a 10 year old girl, was admitted in the Department of Pediatrics with the complaints of not growing well since infancy and difficulty in walking. She was born to non-consanguineous parents in a clinic by Caesarean section at 37 weeks of gestation. Antenatal period was uneventful. There was no history of fever with rash or exposure to any teratogenic agent. According to her parents, she had hypermobile lower limbs and bilateral foot deformities since birth. Her milestones of development were within normal limits and intelligence was normal. Her vision and hearing were normal. There was no history of such type of problem in the family. On examination, she had mid facial hypoplasia with a depressed nasal bridge (Figure 1), high arched palate, bilateral elbow, hip, and knee dislocations, bilateral talipes equinovarus and high arched feet. Her hips and knees were hyperextended and was not passively manipulated to normal position. Her elbows had fixed flexion contracture. A skeletal survey revealed bilateral hip dislocations (Figure 2) and presence of a rudimentary cervical rib. Lateral cervical spine x-ray showed kyphosis and A/P view showed mild scoliosis. Photo of her Jaw revealed overcrowded dentition. From clinical history, examination and radiological findings, it was diagnosed as a case of Larsen syndrome.

Discussion

Larsen syndrome is a rare inherited defect of connective tissue formation characterized by multiple large joint dislocations and flattened facies. It was originally described by Loren J. Larsen, MD, in a journal article in 1950 and occurs in 1:100 000 live births.[2] In addition to sporadic cases, both autosomal dominant and autosomal recessive patterns of inheritance are recognized. When a mutation is present only in reproductive cells, it is known as germline mosaicism.[1]

Etiology of Larsen's syndrome is a generalized mesenchymal disorder that arises from a defective process of embryonal induction involving mesenchymal tissue. Mutations in the FLNB gene cause Larsen syndrome. The FLNB gene encodes for a protein called filamin B, expressed in the cell membrane of chondrocytes. This protein builds the cytoskeleton and Filamin B appears to be important for proliferation and differentiation of chondrocytes and for the ossification of cartilage. FLNB gene mutations that interferes with the proliferation or differentiation of chondrocytes, impairing ossification and leading to the signs and symptoms of Larsen syndrome.[4]

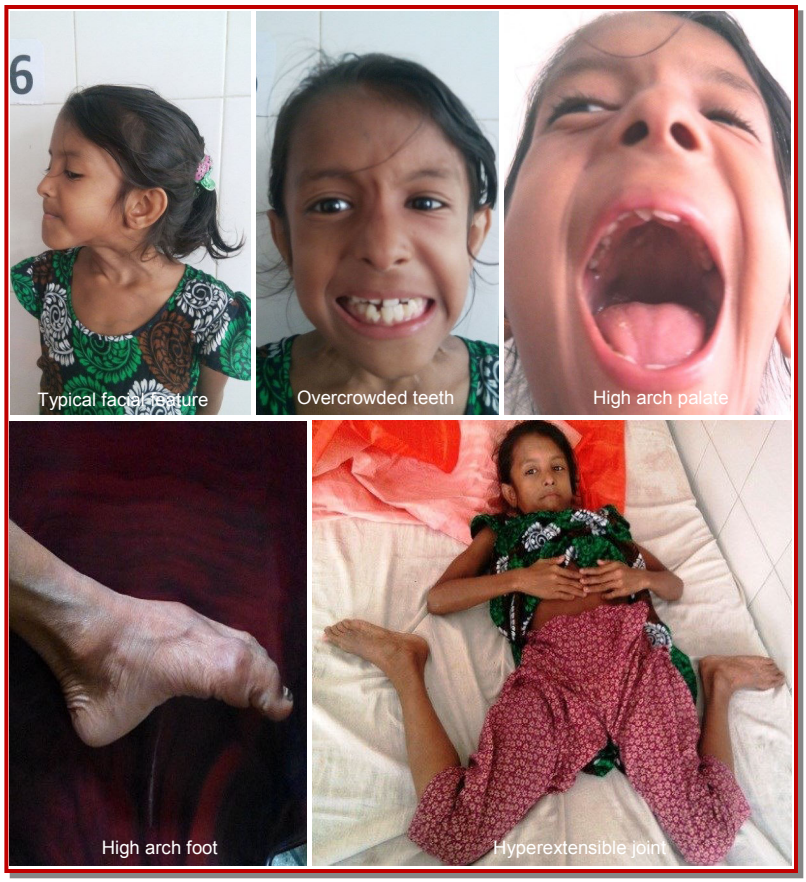

Figure 1: Features of the patient

Larsen syndrome is characterized by joint hypermobility and multiple joint dislocations, especially of knees and feet.[2] The characteristic facial features include midfacial hypoplasia with a depressed nasal bridge. Sometimes other birth defects such as structural heart defects, cleft palate, cataracts, extra bones of the wrist, and abnormalities of the vertebrae may be present.[4]

Percin et al. have reported a case of a fifteen year old Turkish girl with Larsen syndrome with maxillary prognathia, malocclusion, supernumary teeth, macroglossia and microdontia.[5] Sanjani et al. have reported an eight year old Chinese boy with Larsen syndrome who had advanced periodontitis.[6] Hypodontia with missing central and lateral mandibular incisors has not been reported. Mukund D. Rahalkar et al. have reported a case of extra carpal bones.[7]

Our patient exhibited the typical facial features associated with Larsen syndrome (i.e., a mid-face hypoplasia with a depressed nasal bridge), high arched palate, bilateral elbow, hip, and knee dislocations, and bilateral talipes equinovarus and high arched feet.

Cervical spine defects, including vertebral body hypoplasia, posterior element dysraphism, and segmentation defects, could result in severe cervical kyphosis or mid cervical instability with subsequent severe atrophy of the spinal cord, which is consistent with traumatic injury at some cervical levels.[3,8,9]

In our case also, kyphosis and mild scoliosis of cervical spine were present. Photo of her jaw showed overcrowded dentition. Prenatal diagnosis of Larsen syndrome is possible by ultrasound at 18-20 weeks of pregnancy which may show signs of Larsen syndrome including knee dislocations, hyperextension, club feet, fixed flexion of elbows, wrists, and fingers. Besides prenatal diagnosis genetic analysis confirm diagnosis by detection of FLNB gene mutations. Genetic mapping of our patient could not be done due to lack of logistic support.

Treatment will vary according to the symptoms of a particular child. Joint problems require long-term orthopedic care. Hearing should be evaluated on a

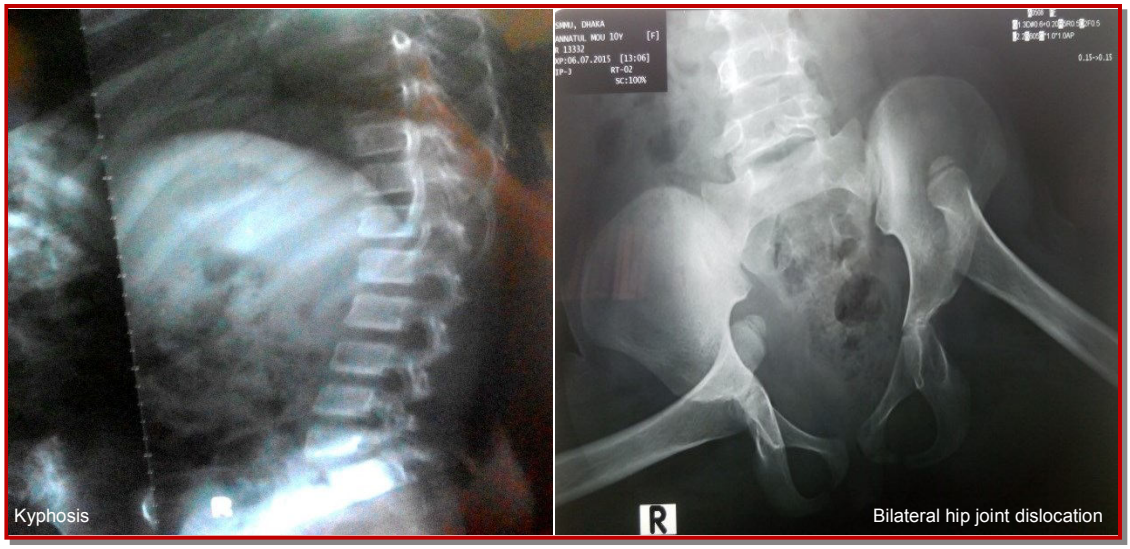

Figure 2: X-Ray findings

periodic basis, especially in children, because of the potential for conductive hearing loss. Ophthalmologic examinations are recommended periodically to screen for cataracts. The condition does not affect intelligence and children can expect to have normal school experiences, with the exception of physical education.[4] Reconstructive surgery is a viable option for restoration of knee stability and function. The spinal status of these children must be monitored throughout their life. An open reduction of a congenital dislocation of the knee is likely to be the second most important operative procedure, after cervical spine stabilization. The best results are obtained for this reduction when the knees are reduced by two years of age.[10-12] We managed the patient with counseling, dietary management and finally referred her to Orthopedic Department for reconstructive surgery.

Conclusion

Difficult skeletal problem associated with Larsen syndrome, often require open reduction of hip and knee joints to obtain proper alignment and kinetics of limbs and thereby proper growth. This is, however, possible only when such cases are diagnosed early.

Ethical Issue

Written and signed informed consent from the guardian was taken for publishing this case report.

References

1. Latta RJ, Graham CB, Aase J, Scham SM, Smith DW. Larsen's syndrome: A skeletal dysplasia with multiple joint dislocations and unusual facies. J Pediatr. 1971; 78: 291-98.
2. Larsen LJ, Schottstaedt ER, Bost FC. Multiple congenital dislocations associated with characteristic facial abnormality. J Pediatr. 1950; 37: 574-81.
3. Bowen JR, Ortega K, Ray S, MacEwen GD. Spinal deformities in Larsen's syndrome. Clin Orthop. 1985; 197: 159-63.
4. Mitra N, Kannan N, Kumar VS, Kavita G. Larsen syndrome: A case report. J Nepal Paediatr Soc. 2012; 32: 85-87.
5. Perçin EF, Gedik R, Develioğlu H, Kunt T. Larsen's syndrome with dental anomalies: Report of a case. ASDC J Dent Child. 2002; 69: 172-74.
6. Sajnani AK, Cynthia KY, Nigel MK. Larsen syndrome: A review of the literature and case report. Spec Care Dentist. 2010; 30: 255–60.
7. Rahalkar MD, Rahalkar AM, Patwardhan SA. Images- Extra (too many) carpal bones in Larsen's syndrome. Indian J Radiol Imaging. 2009; 19: 158-59.
8. Al Kaissi A, Altenhuber J, Grill F, Klaushofer K. Significant traumatic atrophy of the spinal cord in connection with severe cervical vertebral body hypoplasia in a boy with Larsen syndrome: A case report and review of the literature. Cases J. 2009; 17; 2: 6729.
9. Micheli LJ, Hall JE, Watts HG. Spinal Instability in Larsen's syndrome: Report of three cases. J Bone Joint Surg Am. 1976; 58: 562-65.
10. Bensahel H, Dal Monte A, Hjelmstedt A, Bjerkreim I, Wientroub S, Matasovic T, et al. Congenital dislocation of the knee. J Pediatr Orthop. 1989; 9: 174-77.
11. Babat LB, Ehrlich MG. A paradigm for the age-related treatment of knee dislocations in Larsen's syndrome. J Pediatr Orthop. 2000; 20: 396-401.
12. Johnston CE II. Congenital deformities of the knee. In: Insall and Scott Surgery of the knee. Scott WN (ed). Philadelphia, Churchill Livingstone, 2006, p 1191.