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Shprintzen–Goldberg syndrome (SGS): an extremely rare disorder

Raseena K.T[1], T.V Anupam Kumar[2], Jeeva P.P[3],Resmi Ramesh[4]
[1,4](Post graduate student, Department of Pediatricand Preventive Dentistry, Government Dental college, Kottayam, Kerala, India)
[2](Professor and Head of the Department, Department of Pediatric and Preventive Dentistry, Government Dental college, Kottayam, Kerala, India)
[3](Additional Professor, Department of Pediatricand Preventive Dentistry, Government Dental college, Kottayam, Kerala, India)

Abstract: *Shprintzen-Goldberg syndrome (SGS) or Marfanoid-craniosynostosis syndrome is a rare disorder of connective tissue characterized by the presence of craniofacial disorder, marfanoid features and cardiac anomalies. Delay in developmental milestones and intellectual diasability are also commonly seen. The syndrome was first described by Sugarman and Vogel in 1981 and since then fewer than fifty cases have been reported in the medical literature worldwide. The syndrome shows an autosomal dominant pattern of inheritance and is caused by the mutation in SKI gene which is important in cell growth and development. Presenting a case of five year old boy with a known history of Shprintzen-Goldberg syndrome having unusual finding like absence of uvula and other abnormal facial features. Giving the importance that there is little evidence about this syndrome in the medical literature, this case report serves to create awareness about this rare condition.*

Key words: *craniosynostosis, marfanoidfeatures,Shprintzen-Goldberg syndrome*

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I. Introduction

Shprintzen-Goldberg syndrome (SGS) is an extremely rare disorder of connective tissue that affects many parts of the body. It is also known as MarfanoidCraniosynostosis syndrome because of the presence of marfanoid features. The syndrome was first described by Sugarman and Vogel in 1981 and later, in 1982 Shprintzen and Goldberg established the syndrome as a separate clinical entity[1]. Since then, only few cases (fewer than fifty cases) have been described in the medical literature worldwide[2].

The main features of the syndrome include craniofacial, skeletal and cardiovascular abnormalities. Craniosynostosis is a common characteristic which causes a change in the normal symmetrical appearance of the facial or skull bones. Other craniofacial features include, frontal bossing, hypertelorism, downward slanting of palpebral fissures, low set ears, narrow high arched palate etc. Skeletal features like arachnodactyly, flat feet, pectus deformity, scoliosis, hypermobile joints, elongated fingers and limbs also commonly seen.Cardiovascular anomalies found in patients with SGS may include regurgitation or prolapse of the valves and aortic root enlargement and aneurysm. Patient may also present with cardiovascular features like valve regurgitation, aortic root dilation and aneurysm. Children with Shprintzen-Goldberg Syndrome often have delayed development and mild-to-moderate intellectual disability[2].

SGS results from a de novo mutation of SKI gene located on chromosome number 15 which is involved in the formation of connective tissue. Usually the inviduals don't have any sort of family history. Very rarely, germlinemosaicism (mutation only in any of the reproductive cells) pattern of inheritance can be seen.

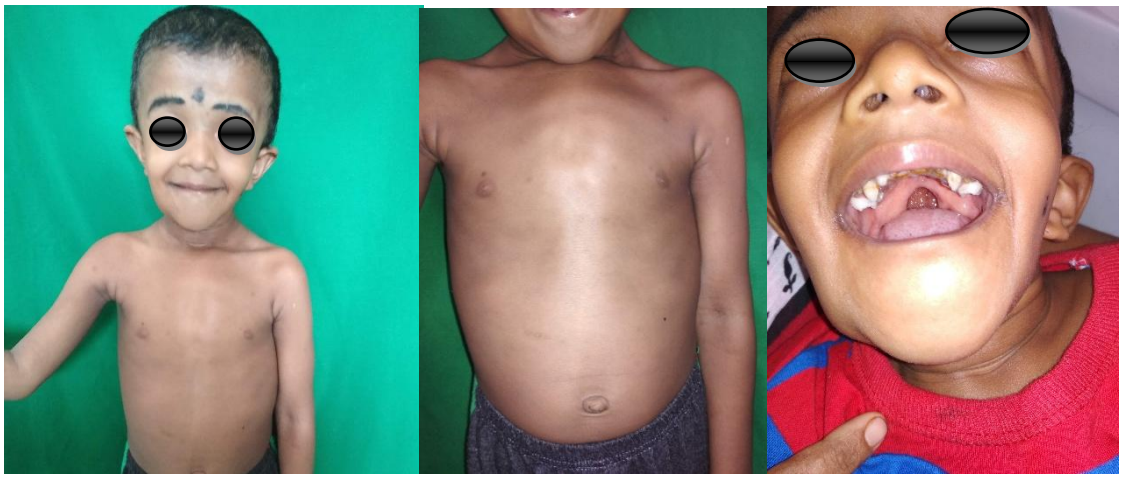
The exact prevalence of SGS is unknown, and it is difficult to determine the number of affected individuals, because some cases diagnosed as SGS could well be Marfan syndrome or Loeys-Dietz syndrome, which is the result of considerable phenotypic overlapping of SGS with both Marfan syndrome andLoeys-Dietz syndrome. Both males andfemales are affected[1].

II. Case Report

A 5 year old boy was referred to the Department of Pediatric and Preventive Dentistry with a swelling over the right lower border of mandible. Extra oral examination revealed a well-defined, soft localised swelling over the right inferior border of mandible with localised rise in temperature. The swelling was tender on palpation. Intra oral examination showed grossly decayed mandibular right second molar. Multiple decayed teeth in the upper and lower arches were also noted.

General examination revealed generalised growth retardation, withheight 90 cm and weight 10kg (expected height and weight for the age is 115.5 cm and 19.9 kg respectively). This indicates that the child is having grade lll level protein energy malnutrition and grade lll stunting according to Waterlow classification of malnutrition based on height and weightfor age[3].He was born to a healthy mother and father of non-consanguineous marriage. Delivery was full term and C-section with birth weight2.8 kg. Prenatal history was uneventful.Past history revealed delayed milestones with global developmental delay. Patient had delayed motor and cognitive milestones with moderate intellectual disability. Child attained head control at the age of 1 year, sat with support at 2 years and started walking and spoke 3-4 words at 3 years of age.

Craniofacial examination revealed craniosynostosis, frontal bossing, exophthalmos, hypertelorism, downward slanting of palpebral fissures, depressed nasal bridge,low set ears, a narrow high arched palate, V-shaped maxilla, maxillary hypoplasia, posterior cleft palate and absence of uvula. The child had brachycephaic head and leptoprosopic facial form. Patient had pectuscarinatum (protrusion of sternum and ribs) (Figures 1a to 1c).Also patient had cardiac anomalies like mitral valve prolapse, aortic regurgitation and ventricular septal defect. Chest X-ray showed boot shaped heart (Figure 1d). Patient was diagnosed to have bilateral cryptorchidism andumbilical hernia. There was generalised muscular hypotonia.



Figures1a to 1c showing the extraoral and intraoral features

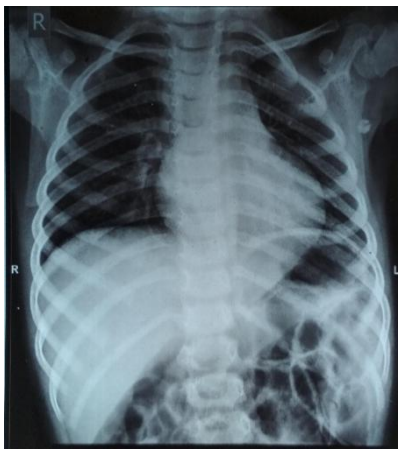


Figure 1d: Chest Xray showing boot shaped heart

Emergency treatment was done after getting clearance from the child's paediatrician. Under antiobiotic prophylaxis incision and drainage was done followed by extraction of mandibular right second molar. Extraction of the remaining grossly decayed teeth and restoration of all other carious teeth were planned. Parent counselling regarding the diet and importance of maintaining good oral hygiene was given. Patient was instructed to take low sugar diet to arrest the further progression of caries. Brushing techniques were demonstrated.

III. Discussion

SGS is a rare genetic disorder. The most characteristic feature iscraniosynostosis. The premature fusion of the cranial sutures prevents the normal growth of the cranial and facial bones which results in dolichocephalic head and facial dysmorphism. This feature of the index case is consistent with the previous cases reported worldwide[4,5,6].Marfanoid habitus is another feature which is not evident in the index case.

Frontal bossing, exophthalmos, hypertelorism, downward slanting palpebral fissures, depressed nasal bridge,low-set ears andmicrognathia are other craniofacial features which are manifested in this case also.Mental retardation, delayed developmental milestones are frequent findings. Features such as thin and sparse hair, Chiari malformation, bifid uvula, choanal atresia/stenosis, vocal cord paralysis, dental malocclusion, aortic root dilatation, mitral valve prolapse, inguinal hernia, hyperelastic skin, hypospadias and hypotonicity have also been described less frequently in the patients[7].

In contrast to the previously reported cases of SGS with bifid uvula, the present case exhibited absence of uvula. Other dental findings include posterior cleft palate, a high narrow arched palate, v shaped maxilla which are delineated in the literature[8,9].

SKI is the only gene known to be associated with SGS. The gene codes for a protein that inhibits signalling of transforming growth factor –β (TGF- β). Mutations in the SKI gene cause production of altered SKI proteins that result in uncontrolled signalling of TGF-β. This leads to abnormal clinical presentation of the syndrome.

Paulikset al.[10] reported a SGS patient with complex congenital heart disease having tetralogy of fallot and subvalvular aortic stenosis. Elmistekawyet al.[11] described the first double-valve surgery in a patient having severe mitral and tricuspid regurgitation with SGS. Pavone et al.[12] conducted a 12 years of followup in a 16 year old boy and reported dental malformations along with the various clinical features of SGS. The orthopanoramic X-ray taken at the age of 10 years showed intricate dental anomalies like hypodontia, abnormalities of root anatomy and pulp canal shape and impacted teeth.

Even though SGS has typical clinical findings, there can be a considerable phenotypic overlapping of SGS with Marfan syndrome (MFS) or Loeys-Dietz syndrome (LDS). Compared with MFS and SGS, cardiovascular manifestations are more severe with Loeys-Dietz syndrome. SGS patients are more likely to suffer from intellectual disability, mild to moderate developmental delay and hypotonia as compared to other two conditions[1,2]. Skeletal anomalies are more common in SGS than LDS and MF. Other craniofacial syndromes like frontometaphyseal dysplasia, congenitalcontracturalarachnodactyly, Idaho syndrome,Melnick-Needles syndrome, and Antley-Bixler syndrome should also be considered in the differential diagnosis[7].

Cardiac complications are the most common immediate cause of death, so early diagnosis of these defects by echocardiography and consultation with a cardiologist is needed. The regular Ophthalmological consultation should be done to prevent retinal detachment and other complications. Craniofacial problems including cleft palate and other skeletal anomalies need surgical intervention. Orthopaedic devices may be recommended for scoliosis or other skeletal abnormalities[1]. To alleviate joint contractures, physiotherapy should be given[1]. For patients with developmental delay or intellectual disability, special education should be provided.

IV. Conclusion

Shprintzen-Goldberg syndrome is an extremely rare multisystem disorder. Due to the presence of developmental delay and cardiovascular anomalies, patients need a lifelong systematic multidisciplinary approach for the timely management of such cases. The multidisciplinary team involving a physician, cardiologist, pediatrician, otorhinolaryngologist, clinical geneticist, ophthalmologist, surgeon, speech and language pathologist, physiotherapist, radiologist and a pediatric dentist area must for proper management of such cases. A combined approach can help the child in improving overall quality of life.

References

[1]. Sankalp Y, Gautam R. Shprintzen-Goldberg syndrome: a rare disorder. The Pan African Medical Journal. 2016;23.
[2]. Bari A, Sadaqat N, Nawaz N, Bano I. Shprintzen-Goldberg Syndrome: A Rare Disorder. Journal of the College of Physicians and Surgeons--Pakistan: JCPSP. 2019 Jun;29(6):S41-2.
[3]. Ingle SY, Shah P, Karande P. A rare case of Shprintzen Goldberg syndrome. JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS. 2016 Mar 3;5(18):914-6.
[4]. Waterlow JC. Classification and definition of protein-calorie malnutrition. British medical journal. 1972 Sep 2;3(5826):566.
[5]. Topouzelis N, Markovitsi E, Antoniades K. Shprintzen-Goldberg syndrome: case report. The Cleft palate-craniofacial journal. 2003 Jul;40(4):433-6.
[6]. Shah B, Sahu S, Kalakoti P, Yadav S, Syed MA, Bhattad VB, Shaikh M. Shprintzen-Goldberg syndrome presenting as umbilical hernia in an Indian child. The Australasian medical journal. 2014;7(2):51.
[7]. Yalçıntepe S, Yüreğir ÖÖ, Bozdoğan ST, Aslan H. Shprintzen-Goldberg Syndrome: Case Report. Meandros Medical and Dental Journal. 2018 Aug 1;19(2):175.
[8]. Stoll C. Shprintzen-Goldberg marfanoid syndrome: A case followed up for 24 years. Clinical dysmorphology. 2002 Jan 1;11(1):1-7.
[9]. Topouzelis N, Markovitsi E, Antoniades K. Shprintzen-Goldberg syndrome: case report. The Cleft palate-craniofacial journal. 2003 Jul;40(4):433-6.

[10]. Pauliks LB, Chan KC, Lorts A, Elias ER, Cayre RO, Valdes-Cruz LM. Shprintzen-Goldberg Syndrome With Tetralogy of Fallot and Subvalvar Aortic Stenosis. Journal of ultrasound in medicine. 2005 May;24(5):703-6.
[11]. Elmistekawy E, Hudson CC, Williams A, Mesana T. Double-valve surgery in Shprintzen-Goldberg syndrome. Asian Cardiovascular and Thoracic Annals. 2014 Sep;22(7):842-5.
[12]. Pavone P, Sessa G. A patient with Shprintzen-Goldberg syndrome. Clinical follow-up for twelve years. Journal of Pediatric Sciences. 2012;4(4):1-6.

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