Case Report

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Paediatrics Section

Robinow Syndrome: A Rare Diagnosis

SHUBHANKAR MISHRA[1], SUNIL KUMAR AGARWALLA[2], SWAYANPRAVA PRADHAN[3]

ABSTRACT

Robinow syndrome is a rare entity characterized by short stature and abnormalities of the head, face and external genitalia. It is otherwise called 'fetal face syndrome' due to its resemblance with fetal face. We present an eight-year-old female child who came with mesomelic short stature, abnormal facial features, multiple sets of teeth (both deciduous and permanent), pectus excavatum, umbilical hernia, limb abnormalities like shortening of fore arm, simian crease, broad thumbs and other fingers, clinodactyly, abnormal carrying angle, absent labia minora, absent clitoris. Apart from physical appearance she was having diversification of recti and umbilical hernia. Due to the several physical presentation mild systemic involvement it was diagnosed as autosomal dominant robinow syndrome. She is now on follow up and planned for a cosmetic surgery to repair facial defects.

Keywords: Autosomal dominant, Dwarfism, ROR2

CASE REPORT

An eight-year-old female patient came with complaint of growth retardation from childhood. Previously the child was asymptomatic. Born from consanguineous marriage of 3rd degree the child had no history of any birth asphyxia, developmental delay. She had an elder healthy male sibling of 12 years chronological age. Family history didn't reveal any familial involvement. She was taking regular Indian diet and was immunized according to age. Physically she had abnormal facial profile consisting high forehead, bilateral proptosis, hypertelorism, telecanthus, low set ears, broad wide nasal bone, upturned nose with anteverted nares long philtrum and tented lips, hypertrophy of gum with two sets of teeth (both deciduous and permanent), absent uvula, deformed pinna [Table/Fig-1,2].

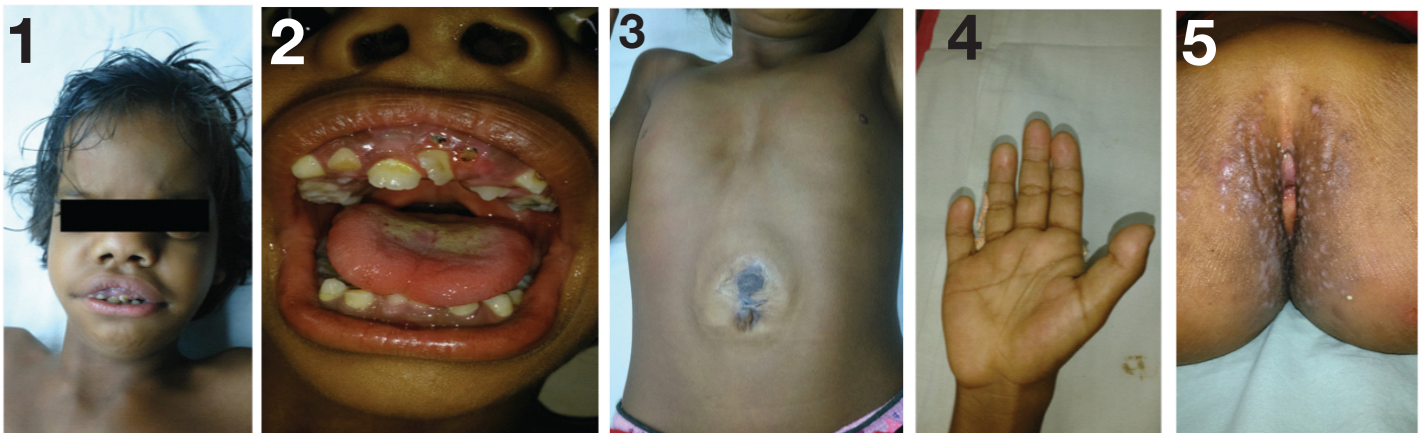
The thorax was deformed with diminished postero anterior diameter, pectus excavatum. Abdomen was scaphoid with diversification of recti, umbilical hernia, acute carrying angle. Limbs were shortened. Skeletal features revealed mesomelic shortening of fore arm, simian crease, broad thumbs and other fingers, clinodactyly in right hand with absence of middle phalange in right little finger [Table/Fig-3,4].

Lower limbs were also structurally deformed with broad toes. The third and fourth toes were shortened. The genitalia was dysmorphic with absent labia minora, absent clitoris [Table/Fig-5].

Vitals were stable and other systemic examinations were within normal range. Height was 112 cm (141 cm-normal in this age), arm span was 103 cm, HC 48 cm, Right arm and left arm span were 21 cm each, where as forearm span were 17 cm respectively. Blood picture, thyroid profile, renal profile was within normal range. Ultrasonography of abdomen revealed diversification of recti, umbilical hernia with normal texture of other intra peritoneal and retroperitoneal organs. Renal structural defects and hydronephrosis were excluded by USG. Cardiac diseases were ruled out by routine echocardiography and ECG. Radiography of chest, limbs showed no notable abnormalities except mesomelic limb shortening. The child was diagnosed to be a case of autosomal dominant variety of robinow syndrome basing on the galaxy of clinical pictures. Karyotyping was done to rule put other chromosomal abnormalities. Parents were counseled about the disease and its prognosis. She was referred to cosmetic surgeons and dentists to correct her facial dysmorphism. Genetic counseling was done.

DISCUSSION

Robinow syndrome is a very rare form of short stature. Two hundred cases are reported around the world [1]. It was first described by Meinhard Robinow in 1969. According to the first literature it is a rare genetic disorder having features like short stature, abnormalities in the head, face, external genitalia associated with



[Table/Fig-1]: Image showing abnormal facial profile consisting high forehead, low set ears, broad wide nasal bone, upturned nose with anteverted nares long philtrum and tented lips **[Table/Fig-2]:** Intra oral image showing tented lips, hypertrophy of gum with two sets of teeth (both deciduous and permanent), absent uvula **[Table/Fig-3]:** Image showing scaphoid abdomen with diversification of recti, umbilical hernia **[Table/Fig-4]:** Image showing broad thumbs and other fingers, clinodactyly in right hand with absence of middle phalange in right little finger **[Table/Fig-5]:** Image showing dysmorphic genitalia with absent labia minora, absent clitoris

vertebral segmentation defects [2]. This anomaly is very rarely reported. Incidence is 1 in 500,000. There is no sex differentiation in incidence [3]. It is also called as "fetal facies" syndrome as the facial profile and appearance of these patients resemble with an Eight-week-old fetus.

It is classified into two types based on inheritance and clinical signs have been described. The milder autosomal dominant form, and a severe autosomal recessive form. The recessive form is due to homozygous or compound heterozygous mutations in the ROR2 gene on chromosome 9q22. The other form is autosomal dominant Robinow syndrome by heterozygous mutation in same ROR2 gene on chromosome 9q22 and the WNT5A gene on chromosome 3p [4]. The exact association is still not revealed. Recessive form consists of multiple morphological dysmorphism like facial abnormalities, limb and thorax malformation, rib and vertebral abnormality, mesomelic short stature, malformation of genitalia [5]. Vertebral segmentation defects are common but more severe in the recessive form: (75% of cases). Rib fusions appear to be present almost exclusively in the autosomal recessive form. Umbilical hernia and supernumerary teeth are two specific features of dominant form (seen in our indexed case) [6]. Features common in both the dominant and recessive forms are the characteristic facial features, gum hypertrophy, orodental abnormalities, and hypoplastic genitalia. There is midfacial hypoplasia, short upturned nose, broad and prominent forehead, hypertelorism, inverted "V" shaped upper lip (tented lip). Teeth are crowded with hypertrophied gum. The teeth are both deciduous and permanent teeth forming two sets of dentine. Ears are low set with deformed pinna. Usually gum hypertrophy is present from birth. Micropenis is common in Robinow syndrome. In females, the clitoris is reduced in size with underdeveloped labia minora and in some cases vaginal atresia also seen [2,5,6].

In a study by Mazzeu et al., about detailed clinical features of recessive and dominant Robinow syndrome, respectively. Facial abnormalities are most common dysmorphism consisting 75% of all features. Hemivertebrae and scoliosis were the distinctive and cardinal features of recessive form, but in less seen with the dominant form. Umbilical hernia, supernumerary teeth wide retromolar ridge, alveolar ridge deformation, malocclusion, gingival enlargement, dental crowding, and hypodontia were found mostly in patients with the dominant form [6]. In another study the orofacial features were used to differentiate the two phenotypes. Recessive variant has more severe craniofacial abnormality. In the contrast intraoral features are more in dominant forms [7]. Systemic involvements are also observed in both variety. Endocrine dysfunction and empty sella can be observed as a feature of Robinow syndrome [8]. Congenital heart disease with right atrial isomerism, atrial and ventricular septal defects, double outlet right ventricle, pulmonary stenosis and atresia may coexist with the syndrome [6]. The presence of CHD is a major marker of prognosis. Abnormality of KUB, hydronephrosis, cystic dysplasia of the kidney, frequent ear infection, hearing loss, hypotonia, developmental problems, respiratory problems, eating difficulties, light sensitivity, and esophageal reflux are also reported [3].

Prognosis of Robinow syndrome is generally good, due to rare involvement of CNS. Management of the skeletal deformities includes bracing or surgical correction of scoliosis. Recombinant human growth hormone is known to increase the growth rate of children with the coexisting growth hormone deficiency. There are also reports of treatment with human chorionic gonadotrophin to increase the penile length and testicular volume [5]. Prenatal diagnosis is possible now-a-days by ROR2 gene sequencing in suspected short statured mothers [9]. Knowledge of the molecular basis of the disorder and its existence will provide accurate counseling and prenatal diagnosis to the families.

CONCLUSION

Robinow syndrome is a very rare disease. In Indian literature it is very rarely published. The knowledge of this disease, availability of genetic testing will help early diagnosis and prenatal genetic counseling. As the disorder has less involvement of nervous system they have longer life span with comparison to other syndromic associations. Cosmetic surgery and dental procedures can provide a normal life to these patients.

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PARTICULARS OF CONTRIBUTORS:
1. Junior Resident, Department of Paediatrics, MKCG Medical College, Berhampur, Odisha, India.
2. Associate Professor, Department of Paediatrics, MKCG Medical College, Berhampur, Odisha, India.
3. Senior Resident, Department of Paediatrics, MKCG Medical College, Berhampur, Odisha, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Shubhankar Mishra,
Room No-96, PG-2 Hostel, Mkcgmch, Berhampur, Odisha-760004, India.
E-mail: dr.subham.scb@gmail.com

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