MedCrave
Step into the World of Research

Journal of Pediatrics & Neonatal Care

Case Report

Open Access

CrossMark

Association of hypoparathyroidism-retardation-dysmorphism syndrome (HRD) with down syndrome

Abstract

Hypoparathyroidism-Retardation-Dysmorphism (HRD) syndrome, also known as Sanjad Sakati Syndrome (SSS), is a rare autosomal recessive genetic condition seen in offspring of consanguineous parents of Middle Eastern origin. HRD consists of hypoparathyroidism leading to hypocalcemia and hyperphosphatemia, growth retardation, and characteristic dysmorphic features. This case presents a Saudi baby girl who was born to a first-degree consanguineous parent who previously had an affected baby with HRD. The patient's facial features were suspicious of both HRD and Down syndrome. She was found to have complete atrioventricular septal defect on Echocardiogram which is the most common cardiac defect in Down syndrome. In addition, she developed hypocalcemia and hyperphosphatemia secondary to hypoparathyroidism. Surprisingly, Chromosomal analysis revealed Trisomy 21. The overall scenario of this case suggests a unique association of Hypoparathyroidism-Retardation-Dysmorphism syndrome (HRD) with Down syndrome.

Keywords: dysmorphism, hypoparathyroidism, hypocalcemia, sanjad sakati syndrome, growth retardation, down syndrome, newborn, Saudi

Volume 6 Issue 6 - 2017

Salma Alsinan R,[1] Kefah Alsenan A,[2] Mohammed Almahrous M[3]

[1]Pediatric Department, Maternity and Children Hospital-Dammam, Saudi Arabia

[2]Consultant Neonatologist, Maternity and Children Hospital-Dammam, Saudi Arabia

[3]Consultant Clinical and Molecular Microbiologist/Clinical and Research Scientist, Maternity and Children Hospital-Dammam, Saudi Arabia

Correspondence: Dr. Salma Raoof Alsinan, MBBS, Pediatrics Resident, Maternity and Children Hospital, Dammam, Saudi Arabia, Tel 967000000000, Email salma.alsinan@gmail.com

Received: February 07, 2017 | **Published:** May 26, 2017

Abbreviations: HRD, hypoparathyroidism-retardation-dysmorphism syndrome; SSS, sanjad sakati syndrome; DS, down syndrome

Introduction

Hypoparathyroidism-retardation-dysmorphism (HRD) syndrome, also known as Sanjad Sakati Syndrome (SSS), is characterized by hypoparathyroidism, hypocalcemia, hyperphosphatemia, severe intrauterine and postnatal growth retardation, mental retardation, seizures, craniofacial dysmorphic features, and susceptibility to chest infections.[1] This syndrome originating mainly from the Middle East and Arabian Gulf countries.[2–4] It is an autosomal recessive disorder first reported by Sanjad et al. in 1988,[2] and confirmed by a definitive report in 1991.[3] This syndrome is due to mutations of the tubulin-specific chaperone E (TBCE) gene at 1q42.3.[5] Down syndrome (DS) is caused by trisomy of all or part of human chromosome 21 (HSA21) and is the most common genetic cause of significant intellectual disability. In addition to intellectual disability, many other health problems, such as congenital heart disease, Alzheimer's disease, leukemia, hypotonia, motor disorders, and various physical anomalies occur at an elevated frequency in people with DS.[6] We report a case of unexpected association of Hypoparathyroidism-Retardation-Dysmorphism syndrome (HRD) with Down syndrome (trisomy 21). Interestingly, this is the first reported case of this association. Furthermore, it is the first reported case of down syndrome presenting with hypoparathyroidism and subsequent hypocalcemia.

Case presentation

A Saudi baby girl was born by spontaneous vaginal delivery at 40weeks of gestation to a 44-year-old gravida 6, para 6 mother who had uneventful pregnancy. Her Apgar score was seven and nine at one and five minutes, respectively. The baby was born to first-degree consanguineous parents. There was a family history of Hypoparathyroidism-Retardation-Dysmorphism syndrome (HRD) affecting the patient's brother. She was referred to our hospital at the age of 6hours for Endocrinology evaluation. Her birth weight was 2500g, length was 45cm, and the head circumference was 30cm. All growth parameters were below the 5th percentile. Her vital signs, including blood pressure, pulse rate, respiratory rate, body temperature, and O2 saturation on room air were 61/41(45)mmHg, 145/min, 40/min, 36.9°C and 96%, respectively. The patient was conscious, active, but hypotonic. She was not cyanosed nor on respiratory distress. There were dysmorphic features including: small deep-set eyes, upward-slanting palpebral fissures, beaked nose, thin lips with a long philtrum, micrognathia, small hands and feet, Single transverse palmar crease, and wide space between the first and second toes. Cardiovascular examination revealed a single first heart sound and a split-second heart sound, with a grade 3/6 ejection systolic murmur audible at the upper left sternal border. The rest of the physical examination was normal. Investigations showed hypocalcemia: 6.4mg/dl (N= 8.5-10), hyperphosphatemia: 7.9 mg/dl (N= 2.5-4.9), and low parathyroid hormone (PTH): 1.37 (N= 15-65). Alkaline phosphatase was 114 U/l(N=46-116), and Magnesium 2.1mg/dl (N= 1.8-2.4). Complete blood count (CBC) revealed leukocytosis of 25,000, neutrophilia, and shift to the left. Blood culture showed no growth. Chest X-ray, Skeletal survey, Cranial, renal and abdominal ultrasound were all normal. Echocardiogram showed: complete atrioventricular canal (balanced type), and moderate atrioventricular valve regurgitation. Karyotyping showed trisomy 21. In the 3rd day of life, the patient underwent septic workup and was started on Ampicillin and Gentamycin as she developed Tachypnea with respiratory rate of 73 breath/min, respiratory distress, and desaturation to 90% on room air. The patient then showed improvement in the 4thday. After echocardiogram, she was started on Captopril and on Furosemide 1mg/kg/dose twice per day. She was seen by Endocrinologist and advised to start her on calcium carbonate 50mg/kg/day divided every 8hours and alphacalcidol (one-alpha) 0.2microgram (2 drops) orally once daily. Throughout hospital stay, she showed low calcium level. Neither tetany nor seizures were developed. In the 8th day of life,

she developed sudden cardiac arrest and died after Cardiopulmonary Resuscitation.

Discussion

This case presents a patient who is an outcome of consanguineous marriage that was previously resulted in a baby born with HRD. The patient had dysmorphic features that are consistent with HRD syndrome (microcephaly, small deep-set eyes, beaked nose, thin lips with a long philtrum, micrognathia, and small hands and feet).[1] Upward slanted palpebral fissures, single transverse palmar creases, wide gap between the first and second toes, and hypotonia are strongly suggesting the possibility of Down syndrome.[7] Complete atrioventricular septal defect, which affects approximately 3% of all patients who have congenital heart disease, tends to be associated with down syndrome.[8] Neonatal hypoparathyroidism is relatively common, and occurring usually as a transient condition associated with well-defined risk factors such as prematurity, perinatal asphyxia, and maternal diabetes.[3] Hypoparathyroidism-retardation-dysmorphism (HRD) syndrome and Kenny-Caffey syndrome are both causing permanent hypoparathyroidism. Children with Kenny-Caffey syndrome have normal intelligence, thickening of the long bones, medullary stenosis (thin marrow cavities), postnatal growth retardation, and retinal calcifications, congenital cataracts.[9] DiGeorge syndrome is also one of the congenital hypoparathyroidism characterized by absence of thymus gland and cardiac anomalies including tetralogy of Fallot, pulmonary atresia, and ventricular septal defect.[10] Regarding our patient; The family history of HRD, craniofacial features, microcephaly, intrauterine growth retardation, and hypoparathyroidism strongly suggests HRD. Molecular genetic studies of the patient were scheduled to be carried out as a supported diagnostic procedure, but the sudden death of the baby prevented any further testing. Trisomy 21 in karyotyping result reveals this unique association of both HRD and DS.

Acknowledgments

None.

Conflicts of interest

Author declares there are no conflicts of interest.

Funding

None.

References

1. Alshoaiby AN, Rafiq M, Jan R, et al. Anesthetic management of a case of Sanjad-Sakati syndrome. *Saudi J Anaesth.* 2016;10(4):453−455.
2. Sanjad S, Sakati N, Abu-Osba Y. Congenital hypoparathyroidism with dysmorphic features: a new syndrome. *Pediatr Res*. 1988;23:271A.
3. Sanjad SA, Sakati NA, Abu-Osba YK, et al. A new syndrome of congenital hypoparathyroidism, seizure, growth failure and dysmorphic features. *Arch Dis Child* . 1991;66(2):193–196.
4. Naguib KK, Gouda SA, Elshafey A, et al. Sanjad-Sakati syndrome/ Kenny-Caffey syndrome type 1: a study of 21 cases in Kuwait. *East Mediterr Health J*. 2009;15(2):345–352.
5. Ratbi I, Lyahyai J, Kabiri M, et al. The Bedouin mutation c.155-166del of the TBCE gene in a patient with Sanjad-Sakati syndrome of Moroccan origin. *Ann Saudi Med* . 2015;35(2):170−172.
6. Patterson D. Molecular genetic analysis of Down syndrome. *Hum Genet*. 2009;126(1):195−214.
7. Kliegman R, Stanton B, Geme, et al. Nelson Textbook of Pediatrics (19th edn), Elsevier/Saunders, Philadelphia, USA. 2011. p.402.
8. Mahadevaiah G, Gupta M, Ashwath R. Down Syndrome with Complete Atrioventricular Septal Defect, Hypertrophic Cardiomyopathy, and Pulmonary Vein Stenosis. *Tex Heart Inst J* . 2015;42(5):458–461.
9. El Jabbour T, Aboursheid T, Keifo MB, et al. Kenny-Caffey syndrome type 1. *Avicenna J Med*. 2014;4(3):74−76.
10. Digilio M, Marino B, Capolino R, et al. Clinical manifestations of Deletion 22q11.2 syndrome (DiGeorge/Velo-Cardio-Facial syndrome). *Images Paediatr Cardiol* . 2005;7(2):23−34.