Global Advanced Research Journal of Medicine and Medical Sciences (ISSN: 2315-5159) Vol. 7(9) pp. 169-171, November, 2018
Available online http://garj.org/garjmms

Full Length Research Article

Growth hormone "GH "profile in Sanjad Sakati Syndrome

Nasir A Al-Jurayyan[1]*, Hala G Omer[2], Huda A Osman[3], Reem A Alkhalifah[4], Abdulmajeed A Alsubaihin[4], Hessah M Al-Otaibi[5] and Sharifah T. Allssa[5]

[1]Professor And Consultant Pediatric Endocrinologist, Endocrine Division, Department of Pediatrics, King Saud University, Riyadh, Saudi Arabia
[2]Fellow, Endocrine Division, Department of Pediatrics, King Saud University, Riyadh, Saudi Arabia
[3]Senior registrar, Endocrine Division, Department of Pediatrics, King Saud University, Riyadh, Saudi Arabia
[4]Assistant professor and consultant pediatric endocrinologist, endocrine division, department of pediatrics, King Saud University, Riyadh, Saudi Arabia.
[5]Consultant pediatric endocrinologist, endocrine division, Department of Pediatrics, King Saud University, Riyadh, Saudi Arabia

Accepted 19 November, 2018

Sanjad Sakati Syndrome (SSS) or congenital hypoparathyroidism growth retardation, and dysmorphism is rare autosomal recessive disease that typically present with intrauterine growth retardation (IUGR). Distinct dysmorphic feature early hypocalcaemia and developmental delay. This study was to assess growth hormone (GH) status in patients with Sanjad Sakati Syndrome. During the period March 2010 and July 2018, six Saudi children with clinical feature of SSS who were confirmed to have mutations in TBCE were investigated with physiological (sleep), and pharmacological (arginine, L dopa and clonoidine) growth hormone tests, at the endocrine services, King Khalid University Hospital (KKUH), Riyadh ,Saudi Arabia. Six patients with SSS were studied, four males and two females. Their ages ranged 6-16 years (mean 9.2 yrs). Five out of six patients (83.3%) had normal growth results. Our results indicate that the majority (83.3.%) of patients were not growth hormone deficiency (GH), However neuroendocrine assessment, Insulin like growth factor (IGF.1) growth hormone (GH) axis and neuro_radiological Imaging studies should be carried out to delineate the nature of disorder.

Keywords: Growth hormone, Neuro endocrine radiological imaging, Sanjad _Sakati_syndrome

INTRODUCTION

Sanjad Sakati Syndrome or hypoparathyroidism, retardation in growth, and dysmorphism (HRD) is a rare autosomal recessive genetic congenital disorder with equal distribution in both sexes. It is often severe and has fatal consequences. It was first described from Saudi Arabia but has been reported form other Arab centuries from Asia and Africa (Sanjad et al., 1991; Teebi, 1997). The condition is caused by mutations or deletions in the gene encoding tubulin –specific chaperone E (TBCE) gene, the locus for which is on chromosome 1q42-43 (Padidelia et al., 2009; Praven et al., 2002).

*Corresponding Author E-mail: njurayyan@gmail.com; Telephone No: 00966505400592

Table 1. Demographic Characteristics

Serial No	Age in year	Sex	GA	BW	IUGR	Clinical presentation			Consanguinity	TBCE Gene Mutation
						Hypoparathyridism	growth retardation	dysmorphi sm		
1	9	M	32	1530 g	+	+	+	+	+	+
2	6	M	38	1670 g	+	+	+	+	_	+
3	8	F	40	1430 g	+	+	+	+	+	+
4	16	M	40	1640 g	+	+	+	+	+	N.D
5	6	F	39	1948 g	+	+	+	+	_	+
6	10	M	38	2160 g	+	+	+	+	+	+

N.= number, M = male, F =female, GA = gestational age, BW = birth weight, g = gram

Table 2. Post- Provocative Tests results

Serial N.	Age year	sex	Growth hormone stimulation				Remarks
			Sleep (6) patients	Arginine (6) patients	L .dopa (4) patients	Clonidine (2) patients	
1	9	M	11.3	15.6	1.6	ND	
2	6	M	3.8	10.6	13.6	N	
3	8	F	17.7	3.8	10.7	ND	
4	16	M	1.1	11.1	ND	2.5	
5	5	F	3.7	4.5	ND	3.5	
6	10	M	16.5	12.6	5.6	ND	

Based on literature review, fostered by the clinical expiriance and to the best of our knowledge there were conflicted results of growth hormone secretion in such patients.

Richardson and Kirk (1990) found growth hormone deficiency in three children in their cohort of eight, while Sanjad et al (1991) reported normal growth hormone concentration in eight of eight tested subject.

In this study we assess growth hormone (GH) secretion in six patients with Sanjad Sakati Syndrome (SSS) or congenital hypoparathyroidism growth retardation, and dysmorphism.

MATERIALS AND METHODS

During the period March 2010 and July 2018, six Saudi patients were tested to know growth hormone status due to sever growth retardation. Growth velocities of these children were subnormal (more than 3SD below the mean).

They were diagnosed with Sanjad-Sakati-syndrome (SSS) .They were four males, and two females. Their ages ranged from 6-16 years (mean 10 years).

After detailed history and physical examinations, an initial screening investigation, including Complete blood count, renal function, Bone profile and Thyroid function tests were performed.

After taking performed consents from the parents, all were subjected to growth hormone studies. One physiological test, namely night sampling at 60 and 90 mins after onset of sleep, and at 4 :0AM .while the patient was asleep were done .The following morning, two biochemical growth hormone provocation test utilizing (arginine ,L dopa and clonidine) were performed as suggested (Tillmann et al., 1996).

Radioimmunoassay was used for growth hormone measurement using pharmacies kits.

RESULTS

Patients were of Saudi origin, consanguinity was present in four, However homozygous mutation in tubulin co factor E (TBCE), which confirm the diagnosis. The demographic data were shown in table 1. Six patients were included. Four males and two females their ages ranged between 6 and 16 years (mean 9.2 years). They were found to have clinical features of SSS, with congenital hypoparathyroidism, sever growth retardation and variable dysmorphic features.

The patients were not anemic, mean hemoglobin was 11.2 g/dl (mean 10.4-14.1). Renal and bone profile were normal, on therapy (one alpha cholecalciferol, and calcium supplement). All patients were biochemically euthyriod. Peak plasma growth hormone concentration, post sleep ranged from 1.1 to 17.7 µg/l (mean 9.01). Table 2, which also showed the results of arginine (six patients) L-dopa (four patients) and clonidine (two patients). No single provocative test for growth hormone was diagnostic, However combining the result of one post sleep provocative test and two pharmacological test showed normal results in five of our patients.

DISCUSSIONS

Sanjad-Sakati-syndrome (SSS) is a rare autosomal recessive genetic congenital disorder with equal distribution in both sex, and the gene of the syndrome is on chromosome 1q42-43 and have sever and often fatal consequences. It is characteristic by congenital hypoparathyroidism, sever prenatal and postnatal growth retardation as well as mild to severe mental retardation, and dysmorphism. The common dysmorphic features of the syndrome are microcephaly with prominent forehead, deep set eyes, thin lips, depressed nasal bridge with peaking of the nose, large floppy ear lobe and small hands and feet. It is commonly described in the Middle East population of Arab origin (Sanjad et al., 1991; Teebi, 1997).

Sanjad et al (1991) reported a normal growth hormone secretion, in consist to our results. Richardson and Kirk (Richardson and Kirk,1990) found growth hormone deficiency (GHD) in the three children their cohort of eight. Two other patients of clinically diagnosed SSS have also been reputed with GHD (Marsden et al., 1994; Soliman et al., **1996**). Hershkovitz (2007) observed postnatal growth failure in children with SSS in infancy with delay and attenuated childhood growth. It was suggested that mutation in TBCE affected microtubule assembly and chondrocyte maturation, which could be the cause. Longitudinal bone growth as has been previously demonstrated in **chick** (Hunziker and Schenk,1989'; Farquharson et al**.,** 1999). It was also stated that GH secretion and the GH –IGF1 axis were ***important*** (Smith et al., 1993). Growth hormone stimulation test no longer routinely be used for the diagnosis of growth hormone deficiency (GHD) in children as these tests lack precision, accuracy and have little concordance with the disease. The tests are poor predictors of response and can have side effects (Gandrud and Wilson, 2004).

CONCLUSION

Our results indicate that the majority (83.3%) of patients were not growth hormone deficient (GHD).However appropriate neuro-endocrine evaluations, including the gonadotrophins is essential. Neuro-radiological imaging by Magnetic Resonance (MRI) should be performed to exclude any structural abnormalities.

ACKNOWLEDGEMENT

The authors would like to thank Mrs. Abdulrahman N Al Jurayyan for his help in preparing this manuscript, and extend their thanks and appreciation to the college of medicine research Centre, Deanship of scientific research, King Saud University, Riyadh, Saudi Arabia.

REFERENCES

Farquharson C, Lester D, Seawright E, Jefferies D, Houston B (1999)- Microtubules are potential regulators of growth-plate chondrocyte differentiation and hypertrophy, Bone. 25(4):405-412.

Gandrud LM , Wilson DM (2004).Is growth hormone stimulation testing in children still appropriate? ,Growth hormone and Igf Res. 14:185--194.

Hershkovitz E, Rozin I,Limony Y,Golan H, Hadad N, Gorodischer R, Levy R(2007). Hypoparathyroidism, Retardation, and Dysmorphism Syndrome: Impaired Early Growth and Increased Susceptibility to Severe Infections Due to Hyposplenism and Impaired Polymorphonuclear Cell Functions, Pediatric Res. 62:505-509.

Hunziker EB, Schenk RK (1989). Physiological mechanisms adopted by chondrocytes in regulating longitudinal bone growth in rats. J. physiol. 414: 55-71.

Marsden D, Nyhan W L, Sakat NA (1994). Syndrome of hypoparathyroidism, growth hormone deficiency, and multiple minor anomalies. 52: 334-338.

Padidela R, Kelberman D, Press M, *et al (*2009). Mutation in the TBCE gene is associated with hypoparathyroidism-retardation-dysmorphism syndrome featuring pituitary hormone deficiencies and hypoplasia of the anterior pituitary and the corpus callosum, J. Clin. Endocrinol. Metab. 94:2686-2691.

Parvari R, Hershkovitz E, Grossman N, et al (2002). Mutation of TBCE causes hypoparathyroidism-retardation-dysmorphism and autosomal recessive Kenny-Caffey syndrome. Nature Genet. 32:448–452.

Richardson RJ, Kirk JM (1990). Short stature, mental retardation syndrome, and hypoparathyroidism: a new syndrome Arch. Dis. Child. 65: 1113-1117.

Sanjad SA, Sakati NA, Abu-Osba YK, et al (1991).. A new syndrome of congenital hypoparathyroidism, severe growth failure, and dysmorphic features. Arch. Dis. Child. 66:193– 196.

Smith WJ, Nam TJ, Underwood LE, Busby WH, Celnicker A, Clemmons DR (1993). Use of insulin-like growth factor-binding protein-2 (IGFBP--2), IGFBP-3, and IGF-I for assessing growth hormone status in short children. *J. Clin. Endocrinal. Metab*. 77: 1294–1299.

Soliman AT, Darwish A, AL Salim J, A sfour M (1996). Defective growth hormone secretion and hypogonadism in the new syndrome of congenital hypoparathyroidism, growth failure and dysmorphic features, Indian J. Pediatrics. 63(5):679-682.

Teebi AS, Introduction In. Teebi AS Farag TI, eds (1997). Genetic disorders among arab populations, Oxford, Oxford University Press: pages 1-26

Tillmann V, Buckler JM, Kibirig MS, et al (1997). Biochemical tests in the diagnosis of childhood growth hormone deficiency J. clin. Endocrinal Metab. 82:531_535.