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Case report Open Access Journal

A Rare Condition Presented with Small Hand: Silver Russell Syndrome [SRS] Case Report and Brief Literature Review

Mehmet Nuri Konya[1], **Muhsin Elmas**[2], **Recep Abdullah Erten**[1]

[1]*Orthopeadics and Traumatology Department, Afyon Kocatepe University, Turkey*

[2]*Medical Genetic Department, Afyon Kocatepe University, Turkey*

***Corresponding author:** Konya MN, Assistant Professor, Afyon Kocatepe University Tıp Fakultesi, C Blok Bashekimlik, Afyon, Turkey; Tel: 00905058296019; Email: nurikonya@hotmail.com

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Abstract

Unilateral small hand, are rare in literature. Genetic disorders such as Silver Russell syndrome [SRS] can cause this disorder that often results from the abnormal regulation of certain genes that control growth. Research has focused on genes located in particular regions of chromosome 7 and 11. In this study, we aimed to introduce a patient with small hand and review a brief literature about SRS disease.

Key words:

Small hand; Silver russell syndrome; Genetic disorder

Abbreviations:

SRS: Silver Russell Syndrome; FAS: Fetal Alcohol Syndrome; SGA: Small-for-Gestational-Age

Introduction

Silver-Russell syndrome [SRS] is a rare condition that etiology is not completely understood and characterized by phenotypic changes. The genetic causes of SRS are complex, often results from the abnormal regulation of certain genes that control growth. Research has focused on genes located in particular regions of chromosome 7 and chromosome 11. In the etiology, there can be deletion of the short arm of chromosome 18 and genetic disorders, such as Turner mosaicism [1,2]. Here, we aim to provide our patients admitted to our clinic with hand hypoplasia.

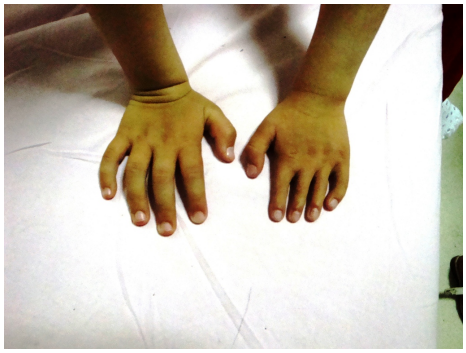

Figure 1: Bilateral short incurved 5th finger clinodactyly and unilateral hand hypoplasia

Case Presentation

A five years old girl admitted to hospital with the complaint of left small hand. She was born in vaginal birth and her birth weight was 2500 gr, length 46 cm and occipito frontal circumference (OFC) was 33cm. There was no relationship between parents. She has a total hipoplastic left hand with minimal loss of flexion in the 2, 3, 4 metacarpo phalangeal joints of the fingers and there was no movement in the interphalangeal joint. She was hospitalization because of bronchitis, hipoglisemic episodes identified. In the anamnesis there was intrauterine growth retardation [low birth weight<2800 grams], postnatal short stature [<3%], asymmetry in the extremities, triangle face type, prominent ear structure, frontal bossing, the occurrence of hypoglycaemic episodes, cafe au lait spots. In all of these findings we diagnose SRS in this patient and began genetic research for further diagnosis [3,4].

In her last visit In last visit her height was 104 cm (below 3%), Weight 16 kg (10-25%) and OFD 48 (below 3%).

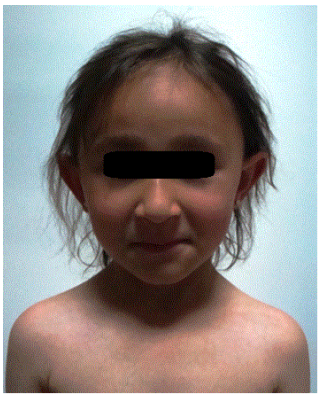

Figure 2: Relative Macrocephaly, Triangular Face, Frontal Bossing, Down Turning Corner Of The Mouth

Discussion

Silver Russell syndrome was first described in 1953 by Silver et al. and has clinically and genetically heterogeneous disease characteristics [5]. The exact incidence of SRS is unknown, but the condition is estimated to affect 1 in 75,000 to 100,000 people. Many children with SRS have a small, triangular face with distinctive facial features including a prominent forehead, a narrow chin, a small jaw, and down-turned corners of the mouth. Other features of this disorder can include an unusual curving of the fifth finger [clinodactyly], asymmetric or uneven growth of some parts of the body, and digestive system abnormalities.

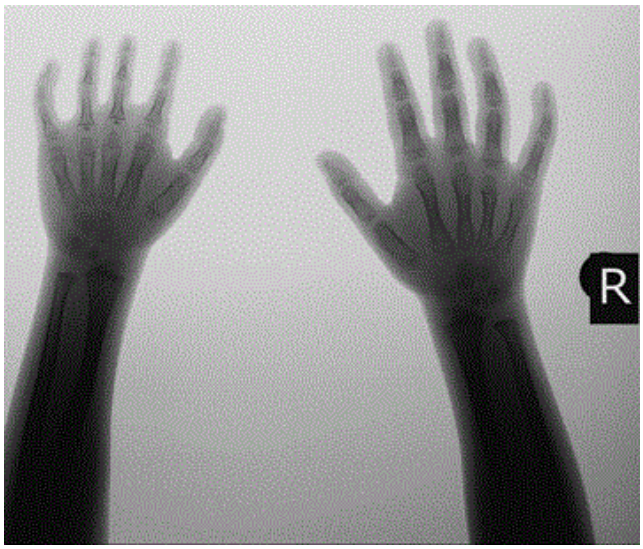

Figure 3: Bilateral 5th finger clinodactly and delayed bone ossification and unilateral hand bone hypoplasia

Major findings of SRS reported in Table 1 and our patients findings reported in Table 2. SRS is also associated with an increased risk of delayed development and learning disabilities [4-6].

1) Intra-uterine growth retardation (lower birth weight from 2800gra) was born 2500 g
2) Postnatal short stature (104cm <3P BELOW)
3)Normal head circumference (48cm between 3-10p)
4) Limb (the most common) or body asymmetry
5) Syndrome-specific characteristic facial appearance (triangular face, prominent ear structure, frontal bossing and clinodactyly)
6) Monitoring of hypoglycemic episodes
7) Cafe cafe au lait like staining in the body (in the waist and back side)

Table 1: According to gene review Major findings of the SRS

According to the algorithm of SRS should be monitored in patients first genetic diagnosis of 11p15 ICR1 hypomethylation is recommended and then evaluate maternal chromosome 7 UPD [4-7]. In genetically analyses we research methylation of 11p and we found normally. According to Gene review loss of methylation of 11p 15.5 is found 35%-50% in SRS patient [7].

Frequently Clinical Finding In SRS	Our Case
Low Birth Weight	+
Postnatally growth deficiency	+
Relatively macrocephaly	+
Triangular face	+
Frontal bossing	+
Five finger clinodactly	+
Ear anomalies	-
Asymmetric limb	+
Down corner mouth	+
Endocrine disorders	+

Table 2: Comparison of Our patients' and Frequently clinical finding of SRS

Ounap et al. [8] identified two daughters likewise one of our patient with small and asymmetric hand and face. Her hands were small with mild brachydactyly and clinodactyly of the fifth finger. Mild camptodactyly of toes was also noticed. There was mild asymmetry of the hands likewise our patient.

Netchine et all reported 58 patients with SRS syndrome in a study related small-for-gestational-age [SGA] patients [9] and 11p15 epimutation of the ICR1 telomeric domain was a frequent [63.8%] and specific cause of RSS.

Eggermann [9] reported that SRS is the unique growth retardation disorder because it is the first human disorder associated with epigenetic mutations that affect two different chromosomes.

Clinodactyly is a frequent finding in SRS and persists in the older age group. Regrettably, it is, in some cases, a difficult radiographic diagnosis to make and is relatively nonspecific. The more specific radiographic findings-hypoplasia of the fifth middle and distal phalanges-are also persistent. These findings are easily compared to standards [5]. Shortening of the fifth middle phalanx is the most common hand anomaly [10] and is found in a wide variety of conditions other than SRS. If the bone age is delayed by more than 2 SD, the findings of clinodactyly, fifth middle and distal phalangeal hypoplasia, ivory epiphyses, and a second metacarpal pseudo epiphyses should be suggestive of SRS. Ivory epiphyses and pseudo epiphyses may be general skeletal indicators of retarded maturation [10]

Clinodactly is a major, pivot a kind of finding SRS syndrome. In addition short fifth finger also is a finding SRS. Distal phalanx shortening of fifth finger is a less common isolated anomaly. Thomas E. Herman at al. issued about hand radiography in SRS. They analysed 15 patients left hand radiography with a clinically diagnosed SRS syndrome. They find most frequently findings in SRS. Clinodactyly, hypoplastic 5th finger middle and distal phalanx and delayed bone age. [10] In our case has got three frequent finding.

In differential diagnosis we must think some syndrome. Firstly we have to go through that short stature syndrome and we must think unilateral, disproportionate limb hypoplasia and characteristic facial appearance. For example the 3-M syndrome is characterized [11-14] by prenatal- and postnatal growth retardation, peculiar facial features (relatively large head, frontal bossing, pointed and prominent chin, fleshy and upturned nose, full lips and eyebrows, and a hypoplastic midface), and radiologic abnormalities [15]. 3-M syndromes intelligences is normal. Final height is 5 to 6 SD below the mean. Characteristic radiologic findings are slender long bones, thin ribs and tall vertebral bodies that become foreshortened over time, spina bifida occulta, small pelvis, small iliac wings, and retarded bone age. Mutation of CUL7 is causative. Inheritance is autosomal recessive.

We also considered Bloom syndrome [OMIM 210900] showed no teleangiectatic erythematous lesions on the face or other regions, no microcephaly, chromatid exchange rate was found to be normal. We excluded Mulibrey nanism [OMIM 253250] [16] based on the normal cardiac and ophthalmologic.

Other syndrome we must think foetal alcohol syndrome [FAS] [17,18] usually have intrauterine growth retardation, microcephaly, failure to thrive, and often triangular faces. For most children with foetal alcohol syndrome in utero exposure to ethanol can be documented and facial findings [short palpebral fissures, flat philtrum, and thin upper lip] are often distinctive.

The third syndrome in differential diagnosis IMAGe syndrome is [19-21] characterized by intrauterine growth retardation, metaphyseal dysplasia, adrenal hypoplasia congenita, and genital abnormalities including cryptorchidism and micropenis. Head circumference is normal. IMAGe syndrome is caused by maternal transmission of a pathogenic variant in CDKN1C.

Clinical features seen in this syndrome [4]; low birth weight [63-94%], postnatal growth retardation [63-99%], relative macrocephaly [64-92%], triangular faces [76-97%], frontal bossing [68-88%], 5th fingers clinodactyly [68-82%], ear abnormalities [53-78%], body asymmetry [51-77%], a down-facing corner of the mouth [46-55%] was reported 3,10. Such patients may be carrying many of the typical phenotypic features of SRS, in patients with mild phenotypic manifestations [2]. The phenotypic characteristics in childhood more dominant than adults [2,3]. Except asymmetry in our patients, the syndrome was present all of the other frequently seen symptoms. Asymmetry, although it is a frequent finding in syndrome expression in literature, it is not necessary for a definitive diagnosis. In addition, the syndrome may be associated with blue sclera, long eyelashes, thin lips, undescended testes, cafe au lait spots with feeding difficulties were present in our patient [10].

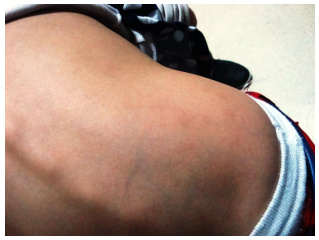

Figure 4: Café au lait spots or skin pigmentary changes

As a result of this study, Small hand is a rare condition and may be a component of a genetic disease. Silver russell syndrome is one of the most common reasons of extremity asymmetry and should be thought in such patient.

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