

# The applicability of the NH-Clinical scoring system on diagnosis of Iranian children with SRS

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## Introduction and objectives

- Silver Russell Syndrome is a rare heterogeneous genetic disorder, which is mostly known because of its prenatal and postnatal growth retardation.
- The most common clinical features are characteristic triangular face with prominent forehead, postnatal growth failure, body asymmetry and feeding difficulties. The clinical guidelines for diagnosis of Russell silver syndrome has been made based on such clinical features. The Netchine-Harbisson clinical scoring system (NH-CSS), which proposed by Azzi, et al in 2015, is the only scoring system for clinical diagnosis of SRS.
- Recently according to development of molecular techniques, evaluating loss of methylation on 11p15 chromosome and maternal uniparental disomy for chromosome 7 are most common molecular changes which can be assessed in such patients. Clinical NH-CSS criteria can be the most important step for diagnosis of SRS before molecular evaluating.

## Methods

- In this study, children who were presented with doubtful clinical features of SRS and growth retardation (ages 2-18years old) were referred to pediatric endocrinology department for further evaluations. Patients were confirmed for diagnosis of Russell silver syndrome clinically according to Netchine-Harbisson clinical scoring system (Table.1). According to this criteria, diagnosis has been made if a children scores at least 4 of 6 clinical criteria's including . The patients with clinical diagnosis of SRS in NH-CSS criteria, were referred for MLPA molecular testing for hypo/loss of methylation on 11p15 chromosome.

## Results

- In this study, Among more than 200 children who were referred to our department during one years, clinical scoring NH-CSS criteria was diagnostic in 16 patients (the mean age of 4.5 years old who were mostly boys), who had molecularly evaluated. According to the MLPA results, 5 patients were positive for hypo methylation on 11p15 chromosome (31.25%) that was consistent with other studies(30% to 60%).

## Conclusion

- Russell silver syndrome is a rare genetic syndrome which is not widely studied in Iran. The NH-CSS clinical criteria can be a useful guideline for differentiate SRS from other reasons of growth retardation in a simple and practical way.

- (Pictures are used with permission of patients family)

## References

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Table 1 | Netchine-Harbisson clinical scoring system

Clinical criteria	Definition
SGA (birth weight and/or birth length)	≤-2SDS for gestational age
Postnatal growth failure	Height at 24 ± 1 months ≤-2 SDS or height ≤-2 SDS below mid-parental target height
Relative macrocephaly at birth	Head circumference at birth ≥1.5 SDS above birth weight and/or length SDS
Protruding forehead*	Forehead projecting beyond the facial plane on a side view as a toddler (1-3 years)
Body asymmetry	LLD of ≥0.5 cm or arm asymmetry or LLD <0.5 cm with at least two other asymmetrical body parts (one non-face)
Feeding difficulties and/or low BMI	BMI ≤-2 SDS at 24 months or current use of a feeding tube or cyproheptadine for appetite stimulation

Clinical diagnosis is considered if a patient scores at least four of six from these criteria. If all molecular tests are normal and differential diagnoses have been ruled out, patients scoring at least four of six criteria, including both prominent forehead and relative macrocephaly should be diagnosed as clinical Silver-Russell syndrome. \*Protruding forehead is equivalent to 'prominent forehead' (REF. 164). LLD, leg length discrepancy; SDS, SD score; SGA, small for gestational age.

