Silver Russell syndrome

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Identity

Note
The Silver Russell syndrome is characterized by intrauterine and postnatal growth retardation, craniofacial abnormalities, body asymmetry and delayed bone maturation.

Inheritance
Most of patients with Silver Russell syndrome are sporadic, although autosomal recessive, autosomal dominant and X-linked dominant modes of inheritance have all been suggested.

Etiology
The Silver Russell syndrome is genetically heterogeneous. Maternal uniparental disomy of chromosome 7 is observed in 7-10% of patients (7p11.2-p13 and 7q31-qter regions). More than 35% of patients carry a hypomethylation of the telomeric imprinting centre region 1 (ICR1) in 11p15 including the H19 and IGF-II genes; single patients show a maternal duplication of 11p15. Rare chromosomal rearrangements were found in the Silver Russell like syndrome involving the short arm of chromosome 7, the short and long arm chromosome 17 and the long arm chromosome 1.

Clinics

Phenotype and clinics
Abnormalities
Growth: intrauterine growth retardation, short stature/dwarfism, poor postnatal growth below or lower than 2DS at diagnosis, delayed skeletal maturation during infancy.
Craniofacial: Preservation of occipito-frontal head circumference, triangular face with prominent forehead, low-set ears, downturned mouth (fig.1).
Skeletal findings: delayed closure of anterior fontanella, delayed bone maturation, non progressive skeletal asymmetry, clynodactyly of fifth finger, brachydactyly V fingers, syndactyly and camptodactyly.

Occasional abnormalities

Cardiovascular anomaly: atrial septal defect and pulmonary stenosis.

Performance: muscular hypotonia and hypotrophy, rare motor/neuropsychological delay, feeding difficulties, speech delay.

Gastrointestinal anomalies: gastroesophageal reflux disease and esophagitis.

Hypoglicemia

Genital abnormalities: hypospadia, criptorchidism and inguinal hernia.

Skin: café au lait spots.

Tumors: testicular cancer, hepatocellular carcinoma, craniopharyngioma and supratentorial juvenile pilocytic astrocytoma.

Differential Diagnosis

It is a clinical overlap with other syndromes associated with intrauterine growth retardation and craniofacial abnormalities (Table 1).

Evolution

Multidisciplinary management (pediatric, endocrinologic care etc.) is necessary. Growth hormone does not allow the target height to be reached.

Prognosis

Beyond short stature and slender build, long-term prognosis is good.

<table>
<thead>
<tr>
<th>Clinical features</th>
<th>Silver Russell</th>
<th>Mulberry nanism</th>
<th>Progeria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etiology</td>
<td>Sporadic UDP of chromosome 7 Hypomethylation of ICRI in 11p15</td>
<td>Autosomal recessive</td>
<td>Autosomal recessive</td>
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<tr>
<td>Intrauterine growth retardation</td>
<td>+</td>
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<td>+</td>
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<tr>
<td>Relative macrocephaly</td>
<td>+</td>
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<tr>
<td>Sparse/absent scalp hair</td>
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<tr>
<td>Skin pigmentation irregular</td>
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<tr>
<td>Café au lait spots</td>
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<tr>
<td>Triangular face</td>
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<tr>
<td>Prominent forehead</td>
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<tr>
<td>Low nasal bridge</td>
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<td>Microstoma</td>
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<tr>
<td>Downturned mouth</td>
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<tr>
<td>Tooth anomalies</td>
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<td>Ear anomalies</td>
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<td>Skelatal</td>
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<td>Syndactyly</td>
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<tr>
<td>Clynodactyly V</td>
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<tr>
<td>Cardiovascular anomalies</td>
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<td>Genital abnormalities</td>
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<td>Hepatomegaly</td>
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<tr>
<td>Feeding difficulties</td>
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<tr>
<td>Tumors</td>
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References


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