A rare cause of growth delay- Jacobsen syndrome

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Introduction

Jacobsen syndrome is a rare genetic condition caused by partial deletion of the long arm of chromosome 11.

Characteristic clinical features that include:
- skull deformities (macrocrania, high prominent forehead, facial asymmetry, trigonocephaly)
- hypertelorism, ptosis, coloboma, epicanthal folds
- broad nasal bridge, short nose, anteverted nares
- V shaped mouth, long, flat philtrum, thin upper lip
- small, low set posteriorly ears
- thin fingers, syndactyly, hypoplastic hypotenar regions, abnormal palmar creases
- flat feet with large and long first toe, brachydactyly, syndactyly of the 2nd and 3rd toes, crowded toes

Patients may associate:
- pre- and postnatal growth retardation
- IGF1 and TSH deficiency
- abnormal platelet function: thrombocytopenia or pancytopenia
- multiple malformations: cardiac, renal, gastrointestinal, genital, central nervous and skeletal
- Immunological, ocular and hearing problems
- mild to severe mental retardation (97%)
- conduct problems, most frequently attention deficit/hyperactive disorder
- there is strong correlation between the neurocognitive deficiency and the size of deletion

Case report

4 year old boy addressed for short stature
- born at term (36W)
- low birth weight (1780g)
- delayed development
- height 86 cm (-3.95 SD)
- weight 9kg (-6SD)

Typical syndromic features:

Facial dysmorphism (figure 1)
- trigonocephaly
- craniosenosis
- ocular hypertelorism
- left palpebral ptosis
- strabismus
- bilateral epicanthus
- short nose
- micrognathia
- small, low set ears
- pectus excavatum
- lumbar scoliosis
- unique palmar crease (figure 2)
- multiple toe malformations
- cardiac malformations (ventricular septal defect)
- normal genitalia
- delayed bone age (figure3)
- small pituitary (figure 4)

Table 1

<table>
<thead>
<tr>
<th>Hormone</th>
<th>Value</th>
<th>Normal Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSH</td>
<td>3.30 ng/ml</td>
<td>0.33-6.7 ng/ml</td>
</tr>
<tr>
<td>T4</td>
<td>1.48 ng/dl</td>
<td>0.89-1.76 ng/dl</td>
</tr>
<tr>
<td>Cortisol</td>
<td>13.6 ug/dl</td>
<td>5-25 ug/dl</td>
</tr>
<tr>
<td>IGF</td>
<td>50.4 ng/ml</td>
<td>49-289 ng/ml</td>
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</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Normal Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>White globules</td>
<td>10000/mm³</td>
<td>6000-10000/mm³</td>
</tr>
<tr>
<td>Erythrocytes</td>
<td>5.710.000/mm³</td>
<td>4.000.000-4.900.000/mm³</td>
</tr>
<tr>
<td>Hb</td>
<td>12.9 g/dl</td>
<td>11-14 g/dl</td>
</tr>
<tr>
<td>Platelets</td>
<td>251.000</td>
<td>150-400.000</td>
</tr>
</tbody>
</table>

Discussions

- Genetic testing diagnosed Jacobsen syndrome and the deletion situs might explain patient’s particularities such as:
- Haematologically, he did not present pancytopenia or thrombocytopenia but a slight poliglobulia.
- His intellectual capacity was not severely affected with mild neuro cognitive deficiency and delayed language development.
- Low IGF1 levels reported in children with Jacobsen syndrome was also present in our patient, however in lower normal limit. Nevertheless, this prompted rGh treatment with good outcome.

Conclusion

- Jacobsen syndrome is a genetic disorder associated with dysmorphic features, multiple malformations and short stature.
- Having into consideration the rarity of the syndrome, there is a sparse number of cases treated with rGh with Jacobsen syndrome with good evolution.
- In our case, our patient’s evolution was marked by rapid growth and weight gain under treatment.
- Therefore, growth hormone treatment should be made individually, directed at understanding the risks and benefits unique to this polymorphic condition.

References: