A novel mutation at a splice acceptor site of WDR11 in a patient with combined pituitary hormone deficiency.

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WDR11 is involved in the development of olfactory neurons by interacting with EMX1.

**Clinical information**

- **Patient** 7 years old boy
- **Perinatal course** Birth at 37w3d weight 3460 g (+1.9 SD), Caesarean delivery
- **Maternal complications** PIH and GDM.

**[Clinical course]** He showed apparent growth failure from 1.5 y.o. Endocrine evaluation revealed severe GHD, GH supplementation therapy from 1.11 y.o. significantly improved his growth. At 7 years of age, he presented with micropenis.

**[Physical findings]** Height 111.1 cm (-1.7 SD) Weight 30.4 kg (+1.8 SD), Testicular volume 2.0 ml, Mild mental retardation

**[Brain MRI]** Pituitary malformation

**[Endocrine data]**

<table>
<thead>
<tr>
<th>Age</th>
<th>GH</th>
<th>IGF-1</th>
<th>LH</th>
<th>FSH</th>
<th>Testosterone</th>
<th>TSH</th>
<th>TRH</th>
<th>NTSH</th>
<th>Prolactin</th>
<th>ACTH</th>
<th>Cortisol</th>
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</thead>
<tbody>
<tr>
<td>1.5 y.o</td>
<td></td>
<td></td>
<td>1.42 ng/ml</td>
<td>0.62 ng/ml</td>
<td>&lt;4.0</td>
<td>0.2 mu/ml</td>
<td>2 mu/ml</td>
<td>27.8 ng/ml</td>
<td>4.9 ng/ml</td>
<td>28.7 pg/ml</td>
<td>20.8 μg/dl</td>
</tr>
<tr>
<td>7.0 y.o</td>
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**Molecular Analysis**

- The mutation was detected by systematic mutation screening of 29 known causative genes by next-generation sequencing.
- Pedigree analysis
- mRNA/cDNA analyses of the mutants/variants
- **In silico functional assessment** WDR11-repeat protein Structure Predictor
- WDR11 expression analysis in human tissues

**mRNA/cDNA analyses**

**Pedigree analysis**

**Discussion**

WDR11 mutations result in variable phenotypes of HH, not only IHH but also CPHD.