DNAI1 mutations explain only 2% of primary ciliary dykinesia

FAILLY, Mike, et al.

Abstract

BACKGROUND: Primary ciliary dyskinesia (PCD) is a rare recessive hereditary disorder characterized by dysmotility to immotility of ciliated and flagellated structures. Its main symptoms are respiratory, caused by defective ciliary beating in the epithelium of the upper airways (nose, bronchi and paranasal sinuses). Impairing the drainage of inhaled microorganisms and particles leads to recurrent infections and pulmonary complications. To date, 5 genes encoding 3 dynein protein arm subunits (DNAI1, DNAH5 and DNAH11), the kinase TXNDC3 and the X-linked RPGR have been found to be mutated in PCD.

OBJECTIVES: We proposed to determine the impact of the DNAI1 gene on a cohort of unrelated PCD patients (n = 104) recruited without any phenotypic preselection.

METHODS: We used denaturing high-performance liquid chromatography and sequencing to screen for mutations in the coding and splicing site sequences of the gene DNAI1.

RESULTS: Three mutations were identified: a novel missense variant (p.Glu174Lys) was found in 1 patient and 2 previously reported variants were identified (p.Trp568Ser in 1 patient and IVS1+2_3insT in 3 [...]

FAILLY, Mike, et al. DNAI1 mutations explain only 2% of primary ciliary dykinesia. Respiration, 2008, vol. 76, no. 2, p. 198-204

DOI : 10.1159/000128567
PMID : 18434704

Available at: http://archive-ouverte.unige.ch/unige:1068

Disclaimer: layout of this document may differ from the published version.
<table>
<thead>
<tr>
<th>Mutations status</th>
<th>Subject</th>
<th>Gender</th>
<th>KS*</th>
<th>Neonatal RD</th>
<th>Recurrent upper respiratory tract infections</th>
<th>Bronchiectasis</th>
<th>Broncho-pneumonia</th>
<th>Nasal polyps</th>
<th>Reduced mucociliary clearance</th>
<th>Absence Ciliary Movement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Homozygous</strong></td>
<td>8227</td>
<td>F</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Compound</strong></td>
<td>6181</td>
<td>F</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td><strong>Heterozygous</strong></td>
<td>6127</td>
<td>M</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>6177</td>
<td>M</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table E2: Clinical details of the 4 patients carrying *DNAI1* mutations

There was no known parental consanguinity in any of these families.

*When a *situs inversus* was observed, patients were referred as having Kartagener Syndrome.

Abbreviations: M: male, F: female, KS: Kartagener Syndrome, RD: respiratory distress, N/A: not available.