Pancreatogenic diabetes is rare in children. It is also called type 3c diabetes mellitus (T3cDM). The underlying pathophysiology is destruction of islet cells by pancreatic inflammation. The prevalence is 5-10% of all cases of diabetes in the developed world. We present a case in a teenager, highlighting the challenges in making the correct diagnosis.

At presentation:

- Polyuria
- Polydipsia
- Abdominal pain
- Weight loss x several weeks
- 15 year old male
- Previously Healthy
- Family Hx of Type 1 & Type 2 diabetes in 3 generations
- Epigastric tenderness
- Mild Dehydration

Initial blood tests:

<table>
<thead>
<tr>
<th>Tests</th>
<th>Results</th>
<th>Normal range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random blood glucose (BG)</td>
<td>18.8 mmol/L</td>
<td>4–7</td>
</tr>
<tr>
<td>HbA1c</td>
<td>90 mmol/mol</td>
<td>20–42</td>
</tr>
<tr>
<td>Amylase</td>
<td>185 IU/L</td>
<td>25–125</td>
</tr>
<tr>
<td>Blood ketones</td>
<td>0.1 mmol/L</td>
<td>&lt;0.3</td>
</tr>
</tbody>
</table>

Further tests confirmed diabetes, but the type remained undetermined.

Oral glucose tolerance test:

<table>
<thead>
<tr>
<th>Test</th>
<th>0 hour</th>
<th>2 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood glucose</td>
<td>7.3 mmol/L</td>
<td>18.8 mmol/L</td>
</tr>
<tr>
<td>C-peptide</td>
<td>274 pmol/L</td>
<td>498 pmol/L</td>
</tr>
</tbody>
</table>

- Glutamic acid decarboxylase, Islet antigen 2, Islet cell antibodies were negative.
- Started on subcutaneous insulin (Glargine and NovoRapid®).
- Next generation sequencing for all known monogenic diabetes genes were negative.

Results:

Investigations confirmed diabetes secondary to chronic pancreatitis - also referred to as T3cDM.

Following endoscopic drainage of the pseudocyst his symptoms of GOO quickly resolved. His insulin requirement is slowly weaning.

Further tests looking at genetic causes for idiopathic pancreatitis (SPINK1 and PRSS1 genes) were negative.

Discussions:

T3cDM is a complex condition. It is often complicated by co-morbidities such as malabsorption and malnutrition. It is mis-diagnosed as T2DM in over 87% of patients, but requires insulin therapy more urgently than those with T2DM.

Making the diagnosis of T3cDM is important in order to appropriately manage both the exocrine and endocrine pancreatic insufficiency.

Take home messages:

- Early pancreatic imaging is recommended in suspected cases.
- Avoid alcohol and smoking.
- Consider oral pancreatic enzyme supplementation.

References: