Background:

- Nutrition plays a pivotal role in long-term survival in Cystic Fibrosis (CF)\(^1\)
- Early insulin treatment for glucose intolerance promotes anabolism and stabilises lung function\(^2\)
- Variation in CFRD screening across centres (recommended age for start of CFRD screening varies between 10-12 years as per CF trust, CFF & ISPAD guidelines)\(^3,4\)

Aims:

- To assess if early screening of glycaemic status helps in early identification of glucose abnormalities in CF
- To assess correlation between OGTT and glycosylated haemoglobin (HbA1c)

Methodology:

- Retrospective data on OGTT, HbA1c and patient demographics were collected on all CF patients in a tertiary paediatric hospital (n=84, 35M)
- Patients were categorised as <10, 10 to <12 & ≥12 years
- Data analysed to assess the incidence of glucose intolerance and to compare OGTT & HbA1c

Results:

- 127 OGTT carried out in 35 CF patients with median age of 13 years (3 -17.3) and median follow up period of 4 years (0.8 -11.1)

OGTT: [Table 1]

- 11/84 (13%) were diagnosed with CFRD requiring various forms of insulin therapy including insulin pump
- OGTT undertaken in symptomatic children <10 years of age and identified one CFRD patient (aged 9.4 years)
- Five eligible patients (≥10 years of age) did not undergo OGTT

HbA1c: [Table 2]

- Total of 89 HbA1c analyses was undertaken along with simultaneous OGTT
- HbA1c was ≤42mmol/mol in patients with IGT and >42mmol/mol in patients with postprandial hyperglycaemia.

**Table 1: Age groups and OGTT results**

<table>
<thead>
<tr>
<th>Age groups in years</th>
<th>Age in years (median range)</th>
<th>OGTT</th>
<th>Patients diagnosed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Normal</td>
</tr>
<tr>
<td>&lt;10</td>
<td>6.7 (3- 9.8)</td>
<td>24</td>
<td>23</td>
</tr>
<tr>
<td>10 - &lt;12</td>
<td>10.9 (10-1 1.7)</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>≥12</td>
<td>13.8 (12- 17.3)</td>
<td>87</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td>127</td>
<td>103</td>
<td>24</td>
</tr>
</tbody>
</table>

**Table 2: Comparison between OGTT & HbA1c**

<table>
<thead>
<tr>
<th>OGTT</th>
<th>HbA1c (mmol/mol)</th>
<th>≤42</th>
<th>&gt;42</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td></td>
<td>63</td>
<td>6</td>
<td>69</td>
</tr>
<tr>
<td>Abnormal</td>
<td></td>
<td>12</td>
<td>8 (F-1, PP-7)</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>75</td>
<td>14</td>
<td>89</td>
</tr>
</tbody>
</table>

Fasting Hyperglycaemia (F) = Plasma glucose (PG) >7.0mmol/l, Postprandial Hyperglycaemia (PP) = PG ≥11.1mmol/l, Impaired Glucose tolerance (IGT) = post prandial PG 7.8-11.0 mmol/l. ** same patient had 2 abnormal OGTT.

Conclusions:

- Application of CFF/ISPAD guideline (CFRD screening ≥10 years of age) promotes early diagnosis and management of CFRD
- OGTT may not be routinely needed in children <10 years of age unless there are strong clinical indications
- There is no correlation between HbA1c and OGTT in the diagnosis of CFRD

References: