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Dapagliflozin and renal function

Letter related to:


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Dear Sir

We read with interest the recently published review published by Mende entitled ‘Diabetes and kidney disease: the role of Sodium-Glucose Cotransporter-2 (SGLT-2) and SGLT-2 inhibitors in modifying disease outcomes [1]. Of interest, there are isolated incidents of a deterioration in renal function associated with the use of SGLT-2 inhibitors in clinical trials [2, 3]. We agree with Mende and other publications [4] providing experimental evidence to support that SGLT-2 inhibitors are nephroprotective rather than nephrotoxic.

We have examined changes in renal function in our routine real-world clinic practice database before and during treatment with dapagliflozin. Dapagliflozin is recommended by NICE as monotherapy or in combination with other anti-diabetic medications including insulin in type 2 diabetes [5]. In our practice, dapagliflozin was added to concomitant anti-diabetic medications including insulin and GLP-1 agonists. We undertook a prospective audit of patients who had been initiated on dapagliflozin and had undergone at least one follow-up visit. A paired t-test was performed to examine changes in serum creatinine and estimated glomerular filtration rate (eGFR) before and during treatment with dapagliflozin. We identified 148 patients (63% male) with a mean age of 57.8 ±9.0 years who had received a mean duration of treatment of 15.6 ±8.7 months with dapagliflozin. We observed no significant changes in pre and post treatment serum creatinine (76 ±18 vs 77 ±21μmol/L, P=0.509) and eGFR (92 ±23 vs 92 ±24 mL/min per 1.73 m², P=0.983). A modest but significant reduction in systolic blood pressure (139 ±19 vs 134 ±19mmHg, P=0.002) and diastolic blood pressure (79 ±10 vs 77 ±8mmHg, P=0.025) was observed. Significant reduction in HbA1c, body weight and doby mass index (BMI) were also observed as shown in Table 1. In those individuals with a follow-up of less than 6
months (n=23), eGFR decreased from 87 ±20 to 80 ±20 mL/min per 1.73 m², P=0.02).

In conclusion, no significant change in renal function was observed in our cohort (n=148), who had been treated with dapagliflozin for a mean duration of 15.6 months. Our finding supported the idea that SGLT2 inhibitors are not nephrotoxic. Larger studies with long-term follow-up are warranted to confirm the nephroprotective effect of SGLT2 inhibitors.

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References


Table 1  Mean change in renal function, blood pressure, HbA1c and body weight in patients receiving dapagliflozin

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Baseline</th>
<th>Follow-up</th>
<th>Mean difference 95%CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creatinine (μmol/L)</td>
<td>76 ±18</td>
<td>77 ±21</td>
<td>1 (-2, 4)</td>
<td>0.509</td>
</tr>
<tr>
<td>eGFR (mL/min per 1.73m²)</td>
<td>92 ±23</td>
<td>92 ±24</td>
<td>0 (-3, 3)</td>
<td>0.983</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>105 ±18</td>
<td>102 ±18</td>
<td>-3 (-4, -2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>36 ±6</td>
<td>35 ±6</td>
<td>-1 (-1.4, -0.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>SBP (mmHg)</td>
<td>139 ±19</td>
<td>134 ±19</td>
<td>-5 (-8, -2)</td>
<td>0.002</td>
</tr>
<tr>
<td>DBP (mmHg)</td>
<td>79 ±10</td>
<td>77 ±8</td>
<td>-2 (-4, 0.2)</td>
<td>0.025</td>
</tr>
<tr>
<td>HbA1c (mmol/mol)</td>
<td>82 ±18</td>
<td>69 ±13</td>
<td>-13 (-16, -10)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Unless indicated otherwise, data are given as the mean ± SD.

eGFR: estimated glomerular filtration rate; BMI: body mass index; SBP: systolic blood pressure; DBP: diastolic blood pressure; CI: confidence interval.