This advice is in line with recommendations from the European Diabetes Policy Group (1998), who advise monitoring CVP if cardiac disease is present and advocate more cautious fluid replacement in the elderly.\(^2\) And the 2004 ADA position statement suggests: ‘in patients with renal or cardiac compromise, frequent assessment of cardiac, renal and mental status must be performed during fluid resuscitation to avoid iatrogenic fluid overload’.\(^3\)

With regard to potassium replacement, it is well known that plasma potassium concentrations are a poor guide to total body potassium and that plasma potassium will fall with insulin therapy.\(^4\)

\[\text{T.M. Wallace} \]
\[\text{D.R. Matthews} \]
\[\text{Oxford Centre for Diabetes, Endocrinology and Metabolism} \]

**References**


doi:10.1093/qjmed/hci048

**Recent advances in the monitoring and management of diabetic ketoacidosis**

Sir,

In their helpful review on diabetic ketoacidosis (DKA), we are pleased that Wallace and Matthews\(^1\) encourage determination of capillary blood ketone concentrations using portable meters. They state that no randomized controlled trial has investigated the use of routine ketone monitoring in DKA. Bedside monitoring of 3-hydroxybutyrate concentrations in DKA has been used in our unit for some time.\(^2\) Monitoring alone, however, unless accompanied by a change in management, is unlikely to alter outcome.

We performed a randomized controlled trial of an extended insulin regimen in DKA.\(^3\) After correction of hyperglycaemia, intravenous insulin (5 U/h) was continued along with dextrose, until 3-hydroxybutyrate concentration determined by a portable meter was normalized. Compared to a conventional regimen, in which insulin doses were reduced after achievement of normoglycaemia, the extended regimen resulted in more effective correction of ketosis and a trend towards more rapid resolution of acidosis. This extended insulin regimen supported by monitoring of capillary blood 3-hydroxybutyrate concentrations with a portable meter continues to be used routinely in our unit.

\[\text{T.M. Wallace} \]
\[\text{D.R. Matthews} \]
\[\text{Oxford Centre for Diabetes, Endocrinology and Metabolism} \]

**References**


doi:10.1093/qjmed/hci049

**Refeeding syndrome: life-threatening, underdiagnosed, but treatable**

Sir,

We report a successfully treated case of refeeding syndrome in a high-risk patient. A 73-year-old independent female presented with a 1-week history of diarrhoea and vomiting, lethargy, headache, dizziness and loss of appetite. She hardly ate for almost 10 days prior to admission. She had stable angina and temporal arteritis, diagnosed 4 weeks prior to this admission, for which she had been on a reducing dose of prednisolone 20 mg and azathioprine 50 mg daily. She was dehydrated on admission with a pulse of 110 bpm and a supine BP of 78/60 mmHg. Her routine blood tests including haematology, biochemistry and chest radiography and ECG were normal, except her urea and electrolytes (Table 1). Her ESR was 41 and CRP was 16.8 (normal <10 mg). She was resuscitated...
with intravenous fluids, potassium supplements, antibiotics and increasing doses of steroids. The diarrhoea and vomiting gradually settled, and she started to take a soft diet.

On day 4 of her hospital stay, she developed profound weakness, numbness and parathesiae involving both hands and feet. Based on the clinical history and biochemistry results (Table 1), a diagnosis of refeeding syndrome was made and the patient immediately started on intravenous calcium, phosphate, magnesium and potassium infusions. After correction of electrolytes, her symptoms disappeared and she was discharged home fully independent.

Refeeding syndrome is a well recognized but underdiagnosed and potentially fatal condition, which occurs in patients with starvation from any cause, anorexia nervosa, diarrhoea and vomiting, alcoholism and after operations. Malnourished elderly patients and patients with neurological dysphagia who are being fed through nasogastric and percutaneous endoscopic gastrostomy tubes, may also be at risk. The syndrome can occur with parenteral as well as enteral feeding and almost always develops during the early stages of refeeding.

Although one of the predominant features of refeeding syndrome is hypophosphataemia, other essential features include rapid falls in plasma levels of potassium, and magnesium, sodium and water retention. The clinical features are non-specific and may go unrecognised. Not all patients who are refed develop the refeeding syndrome, but awareness of the condition and close monitoring of these patients at risk is very important. Dieticians and nutrition nurses have an important role in its recognition, education and management.

<table>
<thead>
<tr>
<th>Electrolyte</th>
<th>Normal range</th>
<th>Day 1</th>
<th>Day 4</th>
<th>Day 6</th>
<th>Day 7</th>
<th>Day 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na (mmol/l)</td>
<td>136–146</td>
<td>125</td>
<td>133</td>
<td>138</td>
<td>136</td>
<td>134</td>
</tr>
<tr>
<td>K (mmol/l)</td>
<td>3.5–5.1</td>
<td>3.3</td>
<td>2.9</td>
<td>2.6</td>
<td>3.1</td>
<td>5.5</td>
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<tr>
<td>Urea (mmol/l)</td>
<td>2.9–7.9</td>
<td>10.7</td>
<td>4.9</td>
<td>2.0</td>
<td>1.3</td>
<td>3.6</td>
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<tr>
<td>Creatinine (µmol/l)</td>
<td>73–133</td>
<td>153</td>
<td>89</td>
<td>79</td>
<td>73</td>
<td>80</td>
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<tr>
<td>Albumin (g/l)</td>
<td>35–55</td>
<td>43</td>
<td>26</td>
<td>35</td>
<td>28</td>
<td>30</td>
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<tr>
<td>Corrected calcium (mmol/l)</td>
<td>2.12–2.63</td>
<td>2.30</td>
<td>1.82</td>
<td>1.69</td>
<td>1.68</td>
<td>2.31</td>
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<tr>
<td>Phosphate (mmol/l)</td>
<td>0.81–1.55</td>
<td>1.22</td>
<td>0.43</td>
<td>0.53</td>
<td>0.98</td>
<td>1.09</td>
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<tr>
<td>Magnesium (mmol/l)</td>
<td>0.6–1.2</td>
<td>–</td>
<td>0.4</td>
<td>0.5</td>
<td>1.1</td>
<td>1.12</td>
</tr>
</tbody>
</table>

The obesity epidemic

Sir,

Skidmore and Yarnell’s commentary on the prospects for preventing the obesity epidemic is rather disappointing, because, despite its nine pages, it virtually ignores what reason and common sense clearly suggest to be the most effective tool to combat that worryingly increasing epidemic, namely, a set of strict regulations on food

References