Cerebral venous sinus thrombosis in a tertiary care setting in India

Sir,

We read with interest the article on cerebral venous sinus thrombosis (CVST) in your journal.\(^1\) CVST is reported to be commoner in developing countries, and has been linked to pregnancy, multiparity and infection.\(^2,3\) Developments in imaging, immunology and genetics have provided valuable information about risk factors and clinical spectrum of CVST. We report our experience of CVST, highlighting its diverse clinical presentations and predisposing factors.

All our patients underwent detailed history and clinical examination, CT, MRI, MR venography (MRV) or digital subtraction angiography (DSA), and evaluation of prothrombotic conditions (protein C, protein S, antiphospholipid antibody and factor V Leiden mutation). They were treated with heparin followed by oral anticoagulant, and outcome was defined at 3 months as: poor (requiring assistance with daily activities), partial recovery (partially dependent) and complete recovery (independent).

We managed 33 patients with CVST, mean age 37.5 years (range 16–76); 23 were female and none had a similar past history or deep-vein thrombosis. One patient had recurrent abortion and two had a family history of stroke. The onset of disease was acute (<1 week) in 11, subacute (1–6 weeks) in 18 and chronic (>6 weeks) in four. Clinical syndromes were classified as: stroke in 14, encephalopathy in 11, headache in four and seizure in four (Table 1).

Of 21 patients undergoing CT scans, 14 had abnormal scans, with infarction or haemorrhage in 11, midline shift in two and empty delta sign in two. MRV was done in 30 patients and DSA in three, revealing involvement of the superior sagittal sinus in 23, the lateral sinus in 19, straight sinus in three, inferior sagittal sinus in one, and deep venous system in one. Seventeen patients had multiple sinus involvements. MRI showed evidence of infarction in 16, and of haemorrhage in six. The infarctions were frontal in eight, parietal in 12, occipital in five, and bilateral in two.

Predisposing factors could be identified in 16 patients, and included pregnancy and puerperium in six, infection in six, oral contraceptive in two, and dehydration and jaundice in one each. Elevated antiphospholipid antibody was present in 23%, protein C deficiency in 15%, protein S deficiency in 70% and factor V Leiden in none. All received heparin for 2 weeks followed by oral anticoagulation for 6–12 months. One patient was treated with local urokinase for progressive visual loss, following which her vision and headache improved.

### Table 1 Symptoms of cerebral venous sinus thrombosis

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Total (n = 33)</th>
<th>Headache (n = 4)</th>
<th>Seizure (n = 4)</th>
<th>Encephalopathy (n = 11)</th>
<th>Focal neurological deficit (n = 14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>30</td>
<td>4</td>
<td>4</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Vomiting</td>
<td>26</td>
<td>3</td>
<td>3</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Seizure</td>
<td>15</td>
<td>–</td>
<td>4</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Altered sensorium</td>
<td>23</td>
<td>–</td>
<td>1</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Coma</td>
<td>9</td>
<td>–</td>
<td>–</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Hemiplegia</td>
<td>14</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>14</td>
</tr>
<tr>
<td>Papilloedema</td>
<td>17</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
At 3 months, 26 patients had complete recovery, three partial recovery and four had a poor outcome. Outcome was related to age ($p<0.005$) and Glasgow Coma Scale score ($p=0.05$) but not to gender ($p=0.216$), number of sinuses involved ($p=0.676$), parenchymal abnormality in MRI ($p=0.519$), seizure ($p=0.626$) or duration of illness ($p=0.150$).

Most CVST studies from India are of puerperal CVST. The clinical spectrum of CVST in our study included the classical syndromes of headache, seizures, focal neurological deficit, and encephalopathy, comparable with reports from other centres. The higher frequency of procoagulant factors in our study highlights a need to identify these variables in a larger sample from India. The majority of our patients recovered completely. Ferro et al. reported complete recovery in 57.1% patients. The variables in our study that predicted a poor outcome were age >40 years and altered sensorium. Factors previously reported as predicting poor outcome include papilloedema, coma, age >33 years, diagnostic delay, haemorrhage and involvement of straight sinus.

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References

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