Coeliac disease is associated with numerous neurological manifestations including cerebellar ataxia, myelopathy, myopathy, and peripheral neuropathy. This report describes four patients who presented subacutely with presyncope and postural nausea. All four patients had biopsy proven coeliac disease with dysautonomia present on autonomic evaluation. These four patients comprised 2.4% of patients referred for autonomic testing in one year. Thus the frequency of coeliac disease is similar to that reported in idiopathic peripheral neuropathy.

Coeliac disease (gluten sensitive enteropathy) is the commonest manifestation of gluten sensitivity, however, diverse manifestations may accompany the disorder.\(^1\)\(^2\) Several recent reports have drawn attention to the association between gluten sensitivity and elevated antigliadin antibodies and neurological disorders. Neurological manifestations associated with gluten sensitivity include cerebellar ataxia, myelopathy, myopathy, and peripheral neuropathy.\(^1\)\(^2\) Although the prevalence of antigliadin antibodies in patients with idiopathic peripheral neuropathy may be as high as 40%,\(^1\) a recent study suggested that the prevalence of biopsy proven coeliac disease in a referral population of idiopathic peripheral neuropathy patients is approximately 2.5%.\(^2\)

Dysautonomia is seen in disorders of the central and peripheral nervous systems. In many patients, however, no underlying cause is found.\(^7\) In one series, patients with known coeliac disease had subclinical abnormalities of autonomic function when tested but no autonomic symptoms other than the gastrointestinal symptoms characteristic of coeliac disease.\(^7\) We report four patients with biopsy proven coeliac disease and symptomatic, laboratory confirmed dysautonomia from a group of 164 patients referred for autonomic testing.

**PATIENTS AND METHODS**

We retrospectively reviewed the history, physical examination, and autonomic testing of all patients referred to the Autonomic Function Laboratory for suspected autonomic dysfunction during a one year period. Four patients were identified among 164 to have coeliac disease and autonomic dysfunction. The patients’ details are summarised in table 1. Other identifiable causes of dysautonomia were excluded.

**DISCUSSION**

We report four patients with antigliadin antibodies, coeliac enteropathy, and dysautonomia. Although the association between neurological disease and gluten sensitivity has been reported frequently,\(^1\) given the high percentage of antigliadin antibodies in the general population (6–12%) the aetiological significance of this association is uncertain in most patients.\(^9\) Still less is known about the potential mechanisms whereby gluten sensitivity might result in neurotoxicity. Nutritional factors and other disorders, such as diabetes and Sjögren’s syndrome, that are associated with coeliac disease and may cause neurological illness were excluded in our patients. It is speculated that in genetically predisposed individuals antigliadin antibodies or other associated antibodies may cause nerve injury.\(^7\)\(^10\) Although antigliadin antibodies have been associated with ataxia and...
peripheral neuropathy, the relation between these antibodies and dysautonomia is not established. In a single report of patients with coeliac disease and oesophageal dysmotility, subclinical abnormalities of cardiovascular reflexes were present in 19% (5/27) of patients.

In our patients, nausea, which was postural in nature, was the primary symptom for referral. Other reported autonomic symptoms included lightheadedness, palpitations, fatigue, presyncope, and syncope. Autonomic test results revealed abnormalities in sympathetic and parasympathetic nervous system functions. These symptoms and test findings are not unique to coeliac disease patients and can be seen in other patients with dysautonomia. Our patients did not improve on a gluten restricted diet, an experience reported by other investigators.

There are several possible explanations for this. Firstly, the patients were not closely monitored, and all admitted to dietary indiscretion. The two patients with repeated antibody testing had titres that, although reduced, remained elevated, suggestive of continued dietary intake of gluten. Secondly, it is possible that structural nerve damage, once present, is not responsive to dietary measures.

Patients with gluten sensitivity and symptomatic dysautonomia have not been previously described. At our laboratory, 2.4% of 164 patients referred for autonomic evaluation had idiopathic dysautonomia and biopsy proven coeliac disease, a frequency similar to that reported in patients with idiopathic

### Table 1

<table>
<thead>
<tr>
<th>Patient</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age/Sex</td>
<td>38/M</td>
<td>78/F</td>
<td>54/F</td>
<td>63/F</td>
</tr>
<tr>
<td>Symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Postural nausea; lightheadedness; syncope</td>
<td>Postural nausea; lightheadedness; syncope</td>
<td>Postural nausea; lightheadedness; syncope</td>
<td>Postural nausea; lightheadedness; syncope</td>
</tr>
<tr>
<td>Baseline heart rate (beats per minute)</td>
<td>75</td>
<td>65</td>
<td>72</td>
<td>85</td>
</tr>
<tr>
<td>Baseline blood pressure (mm Hg)</td>
<td>121/64</td>
<td>142/74</td>
<td>128/66</td>
<td>180/92</td>
</tr>
<tr>
<td>Heart rate variation with respiration (average max-min)</td>
<td>23 (&gt;-12 nl)</td>
<td>10 (&gt;-7 nl)</td>
<td>11 (&gt;-9 nl)</td>
<td>6* (&gt;-7 nl)</td>
</tr>
<tr>
<td>Heart rate response to Valsalva manoeuvre</td>
<td>1.33* (&gt;-1.5 nl)</td>
<td>1.44 (&gt;-1.39 nl)</td>
<td>1.19* (&gt;-1.47 nl)</td>
<td>1.07* (&gt;-1.39 nl)</td>
</tr>
<tr>
<td>Highest heart rate response to tilt</td>
<td>112*</td>
<td>86</td>
<td>104*</td>
<td>108</td>
</tr>
<tr>
<td>Lowest blood pressure response to tilt</td>
<td>112/60</td>
<td>105/52*</td>
<td>122/72</td>
<td>114/62*</td>
</tr>
<tr>
<td>Highest heart rate response to five minute stand</td>
<td>106</td>
<td>84</td>
<td>116</td>
<td>110</td>
</tr>
<tr>
<td>Lowest blood pressure response to five minute stand</td>
<td>116/68</td>
<td>115/68*</td>
<td>132/70</td>
<td>128/64*</td>
</tr>
</tbody>
</table>

*Abnormal response.

Figure 1: The response of each patient to a Valsalva manoeuvre is shown. In each graph, the beat to beat blood pressure is shown on the top and the expiratory pressure on the bottom. All patients had reduced pulse pressure during phase II, and no late phase II recovery of blood pressure. Patient 2 showed an abnormal phase I of the Valsalva. Only patient 4 showed a phase IV overshoot.
peripheral neuropathy.2 If corroborated by additional studies, this report could suggest that screening for coeliac disease should be considered in selected patients with autonomic neuropathy of uncertain aetiology. A prospective study evaluating patients presenting with idiopathic dysautonomia for coeliac disease is warranted.

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