

## **Depressed mood associated with gluten sensitivity— resolution of symptoms with a gluten-free diet**

Most people associate gluten sensitivity with coeliac disease, a chronic enteropathy of the small intestine, with classical intestinal symptoms of chronic diarrhoea and abdominal pain, as well as weight loss and possible anaemia, osteoporosis and neurological disturbances.<sup>1,2</sup> However, a spectrum of gluten-related disorders exist and recently Dr Fasano and 14 other gastroenterologists, immunologists and neurologists developed a consensus on new nomenclature and classification of these disorders.<sup>2</sup>

The three main forms of gluten reactions are allergic (e.g. 'bakers asthma', food allergy and contact urticaria), autoimmune (e.g. coeliac disease, dermatitis herpetiformis and gluten ataxia), and possibly immune-mediated (e.g. gluten sensitivity).

Gluten sensitivity likely involves the innate immune system and symptoms may resemble those associated with coeliac disease, e.g. abdominal pain and diarrhoea, but with a prevalence of extraintestinal symptoms such as muscle cramps, leg numbness, bone or joint pain, weight loss, eczema/rashes, headaches, chronic fatigue, depression and other behavioural changes.<sup>2</sup>

Although specific neurological disorders have long been associated with gluten sensitivity disorders,<sup>3</sup> the effect of gluten on subjective mood states such as depression, anxiety and fatigue is less well established.<sup>4-7</sup>

The association of gluten sensitivity with depressed mood is supported by the following case of an 11-year-old girl who had been on a gluten-free diet since early childhood due to health issues associated with wheat consumption (e.g. constipation and mood swings).

At the age of 10 she travelled overseas and consumed wheat-containing foods daily for 1 week due to a lack of gluten-free options at her destination. One week after returning to New Zealand her overall mood plummeted and she mentioned almost on a daily bases wanting to kill herself, which had never been verbalised prior to this.

Her school teacher overheard her suicidal statements and approached her parents regarding his concern over her depressed condition. Her parents immediately placed her back onto a strictly gluten-free diet and within 1 week her overall mood had improved significantly and suicidal statements were no longer verbalised.

A Profile of Mood States (POMS) questionnaire was completed by the girl during this period. The POMS is a well validated questionnaire for subjective mood with normative data for young men and women.<sup>8</sup> It encompasses six subscales; tension, depression, anger, fatigue, confusion and vigour, from which a total mood disturbance score can be derived. Her total mood disturbance score was calculated before and after returning to a gluten-free diet, and showed a significant drop from a score of 154 to a score of 12.

Depression and anger were the largest scoring subgroup factors (with scores of 44 and 42, respectively) and may have contributed to her suicidal state of mind. These both dropped to a score of 9 following her return to a gluten-free diet. Fatigue, tension and confusion initially scored at 21–26 and dropped to scores of 5–9, and the vigour score rose concomitantly from 0 to 27, after commencing a gluten-free diet.

Corvaglia et al<sup>4</sup> reported several cases, previously unresponsive to antidepressants, whereby depressive symptoms improved quickly with a gluten-free diet. Furthermore, research in Finland has shown that commencing a gluten-free diet can alleviate depressive and behavioural symptoms in adolescents with coeliac disease.<sup>5</sup>

Others have reported improvements in fatigue and anxiety, but not depression, following commencement of gluten free diets.<sup>6,7</sup> The lack of response of depression to a gluten-free diet in the latter studies was thought to be related to the reduction in quality of life of coeliac patients.<sup>6,7</sup>

The youth suicide rate in New Zealand is one of the highest among OECD countries (more than double the OECD average). As such, it is tempting to speculate that mood disorders due to gluten sensitivity in susceptible individuals may be contributing in some cases, and preliminary observations in support of this premise have been reported.<sup>9,10</sup>

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