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Non-coeliac gluten sensitivity in children

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An increasing percentage of the population avoids eating gluten. But there is considerable discussion about whether a condition exists where you do not have coeliac disease but nevertheless suffer from gluten sensitivity.

Non-coeliac gluten sensitivity (NCGS) is defined as 'a syndrome characterized by intestinal and extra-intestinal symptoms related to the ingestion of gluten-containing food, in subjects that are not affected by coeliac disease or wheat allergy' (1). Symptoms can often resemble those of coeliac disease, but tests for coeliac disease are negative. In addition, there is a considerable symptom overlap between coeliac disease and non-coeliac gluten sensitivity. It seems that NCGS does not have a strong genetic disposition and it is not associated with severe malabsorption or malignancy (2). Prevalence studies of NCGS pose a challenge due to the absence of a specific diagnostic marker and a standardised diagnostic procedure. In one meta-analysis (3), 17 studies of NCGS were found in which there was a considerable variation in prevalence – from 0.5 % to 13 % – while prevalence in children at a specialist clinic was 5.2 % (4).

Unknown mechanisms

The mechanisms underlying gluten sensitivity are unknown. There is considerable discussion about whether it is actually gluten that causes the problems experienced by this group of patients (5). The term non-coeliac gluten sensitivity is also disputed because in all likelihood, gluten alone does not cause the development of symptoms (6). There are currently three main hypotheses related to what triggers the symptoms experienced by this group of patients: gluten, fructans in wheat and amylase-trypsin inhibitors (6). Gluten constitutes 80–90 % of the protein content of wheat, while amylase-trypsin inhibitors only amount to 2–4 %. Since gluten and amylase-trypsin inhibitors always appear together, a gluten-free diet will also be an amylase-trypsin-inhibitor-free diet. Fructans are a kind of oligosaccharide that is included in the term fermentable oligo-, di-, mono-saccharides and polyols, better known as FODMAP. Whether it is gluten alone or wheat in itself (both fructans and proteins) that create a reaction, is presently unknown. There is disagreement as to whether NCGS can be said to be a separate diagnosis or whether it comes under the umbrella term, irritable bowel syndrome (IBS), as the presenting symptoms seem to be

similar (6).

Diagnostic challenges

The absence of a specific diagnostic marker for NCGS and a standardised diagnostic procedure makes the diagnosis diffuse, covering patients with a number of symptoms. A standard diagnostic method is needed in order to identify and diagnose the correct group of patients (1). According to the paediatric handbook (7), NCGS is referred to as a condition in patients with clear symptoms of sensitivity to food containing gluten, with no result for IgA-anti-transglutaminase and/or IgG-anti-deamidated gliadin peptide (DGP). Histopathology does not reveal a 'flat' villous structure or signs of villous atrophy in the mucosa of the small intestine in the biopsy. These patients do not satisfy the diagnostic requirements for the diagnosis of coeliac disease, but they must be followed up.

Current guidelines for diagnosing non-coeliac gluten sensitivity recommend a double-blind placebo-controlled gluten challenge as a criterion for making a diagnosis (1). A gluten challenge should always be carried out after a period of gluten elimination where the patient follows a gluten-free diet. Patients who have a recurrence of symptoms during the gluten challenge period receive the NCGS diagnosis.

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First assessment and then diet

Based on current knowledge, there are no specific biochemical, immunological or histopathological markers associated with NCGS (8). Due to the lack of biomarkers, the current diagnosis is based on the exclusion of coeliac disease and wheat allergy as well as the impact of a gluten-free diet. Another challenge is that a large number of patients are self-diagnosed and have begun a gluten-free diet without clinical support or guidance. The patients themselves often suspect that they have the condition when they experience beneficial effects from a gluten-free diet. The guidelines of the European Society for the Study of Coeliac Diseases recommend comprehensive assessment, including a duodenal biopsy, in order to rule out coeliac disease and wheat allergy while the patient is on a diet containing gluten (8).

Patients in Norway with NCGS can apply to the Norwegian Labour and Welfare Administration (NAV) for a basic benefit (9). Patients are recommended to follow a gluten-free diet. At present, it is not known whether a strict gluten-free diet is necessary, whether the condition is chronic and whether other substances in addition to gluten should be avoided. It is important to prevent children from following unnecessary elimination diets over time. A comprehensive assessment is also important before considering the NCGS diagnosis in order to rule out coeliac disease and wheat allergy while the patient is on a diet containing gluten. On account of diagnostic challenges, the assessment should primarily be conducted by the specialist health service.

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