

Non-Coeliac Gluten Sensitivity: An Insight

Navneet Singh Deora*

Ingredients Innovation and Research, Jubilant Foodworks limited, India

***Corresponding Author:** Navneet Singh Deora, Ingredients Innovation and Research, Jubilant Foodworks limited, India.

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Abstract

Non-coeliac gluten sensitivity (NCGS) is a part of disorders related to gluten (including the celiac disease (CD) as well as wheat allergy). It is also closely related to the irritable bowel syndrome. Although being an emerging disorder, this term is poorly defined. It is known by a wide range of gastrointestinal and extra-intestinal symptoms. This mini review aims to define the existing understanding about the NCGS, its diagnosis, its symptoms and prevalence.

Keywords: *Coeliac Disease; Gluten; Gluten-Free Diet; Irritable Bowel Syndrome; Non-Coeliac Gluten Sensitivity; Wheat Allergy*

Introduction

Gluten is the main storage protein complex in cereals such as wheat, barley, rye and spelt constituting of major protein as gliadin and glutenin [1,2]. These proteins are incompletely digested by gastric, pancreatic, and brush border peptidase which causes the formation of larger peptide [3]. These protein have resistance to gastric and intestinal digestion and cause in the increase in the intestinal permeability. These pass through the intestinal epithelial barrier and enter the lamina propria by way of a transcellular or paracellular route [4,5].

The gluten ingestion can prompt reactions generally categorized as “gluten-related disorders”. The disorders normally includes autoimmune pathogenesis, including coeliac disease (CD); disorders characterized by allergic mechanisms, which include wheat allergy (WA). Non-coeliac gluten sensitivity (NCGS) is part of gluten orders whose causes are neither autoimmune nor allergic in nature [8]. This mini review article particularly focuses on the Non-Coeliac gluten Sensitivity.

What is Non-coeliac gluten-sensitivity?

Non-coeliac gluten sensitivity (NCGS) is also understood as gluten sensitivity (GS), non-coeliac gluten intolerance (NCGI) and noncoeliac wheat sensitivity (NCWS). However this term has not been defined for decades considering the fact that there is no official definition of the NCGS [6,7]. In few studies this terms is loosely defined as a reaction to gluten which does not involve the allergic and autoimmune mechanisms [9]. It is still not clear that or verified that the NCGS is triggered by solely by gluten ingestion considering the fact that the other components of wheat and other gluten-containing grains being possibly responsible [10].

NCGS patients are traditionally does not the proven evidence of CD or WA but can develop symptoms including the GI and irritable bowel syndrome or extra-intestinal [11,12]. These symptoms seems to improve or disappear altogether when gluten containing foods are withdrawn from the regular diet. However there is always a possibility of introduction of the disease once it is reintroduced [9].

Symptoms of NCGS

The initiation of NCGS symptom can be from several hours to days once gluten in ingested [9,12]. The majority of patients with NCGS will already have been suffering from these symptoms for months or even years by the time a diagnosis is reached [12]. Symptoms of

NCGS includes array of GI symptoms. These symptoms includes abdominal discomfort and pain, bloating, aerophagia, flatulence, bowel habit abnormalities (either constipation or diarrhoea), dissatisfaction with stool consistency and gastroesophageal reflux. NCGS can also include the extra-intestinal symptoms. These may also include symptoms like headaches, nausea, “foggy”.

Diagnosis

The diagnosis of NCGS is primarily based on the association between gluten ingestion as the adverse symptoms development after CD as well as WA has been ruled out and the patient in on the gluten free diet. One of the characteristics feature of CD is the that the person suffers from the lesions in the duodenal mucosa. NCGS patients do not suffer from the lesions in the duodenal mucosa that is typically found in the CD patients. The recurrence of symptoms after the reintroduction of gluten to the diet has been proposed as a final step in the diagnostic process of NCGS. It is also to be noted that there are no specific biomarkers for NCGS that can identify this condition. In the diagnostic process, CD should be eliminated by means of negative serology (IgA anti-tTG and anti-EMA). A duodenal biopsy is also strongly recommended due to the possibility of seronegative or “silent” CD. Patients presenting borderline serology should undergo HLA typing to determine the need for biopsy.

At present, NCGS is seen as a diagnosis of exclusion [13]. The suspected overlap between inflammatory/irritable bowel syndrome gluten sensitivity raises the need for even more stringent diagnostic criteria [7]. Excluding gluten from the diet causes significant improvement, which includes the disappearance of both GI and extra-intestinal symptoms; reintroducing gluten causes the recurrence of symptoms [7]. The improvement or cessation of symptoms, along with their reappearance, attributable to the absence or presence of dietary gluten, suggests the presence of NCGS [12].

Prevalence

Currently available literature suggest that prevalence of NCGS is around 0.6 and 6% as per different cited literature [8]. Also it could be further as higher as 25 - 30% among irritable bowel syndrome patients [14-19]. The clinical studies suggest that significant cases of this disorder is identified in the elderly as compared to Infants or middle age [7,12]. NCGS also seems to be more common in females than in males as with CD.

Conclusion

Inspite of recent advances, Non-coeliac gluten sensitivity is poorly characterized clinical entity considering the fact that its definition across different publication still varies and its needs more clarity.

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