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A Scholarly Analysis of the ENT Manifestations of Celiac Disease

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ABSTRACT:

Background: Gluten consumption in genetically predisposed individuals causes celiac disease (CD), a chronic immune-mediated enteropathy of the small intestine. 1 It is an autoimmune condition,It is not an allergy or sensitivity, which distinguishes it from gluten intolerance. According to international surveys, the worldwide prevalence of celiac disease is 1.4%. 2 Although the gastrointestinal symptoms of CD, including diarrhoea, stomach pain, bloating, and vomiting, are well-known, many patients also experience extraintestinal symptoms, such as arthritis and dermatitis herpetiformis.

Aim's &Objectives: Celiac disease is a prevalent multisystemic autoimmune illness. It is now widely acknowledged that the disease may appear with extraintestinal signs, which complicate its diagnosis. The purpose of this study was to evaluate the extraintestinal ENT manifestations of celiac disease, as well as its pathophysiology and therapy, in order to demonstrate that some patients with celiac disease may initially present to an otolaryngologist. Increasing understanding of celiac disease otolaryngologists may assist in the accurate diagnosis and therapy approach.

Methods & Materials: A literature review was undertaken utilising the PubMed database to discover original publications published between 2000 and 2020 regarding celiac disease and ENT symptoms. coeliac disease AND ENT manifestations OR hearing loss OR epistaxis OR nasal septal perforation OR obstructive sleep apnoea OR vertigo OR tonsillitis OR sinusitis) Only English-language articles were reviewed. In total, 17 papers satisfied the inclusion criteria. Sensorineural hearing loss, obstructive sleep apnea, nasal septal perforation, epistaxis, and vertigo with nystagmus are extraintestinal ENT signs of celiac disease.

Results: It is believed that immunologically mediated pathways cause sensorineural hearing loss, obstructive sleep apnea, nasal septal perforation, vertigo, and nystagmus, whereas intestinal malabsorption causes epistaxis.

Conclusions: Celiac disease can generate extraintestinal ENT signs, which necessitates a high index of suspicion from the otolaryngologist in order to identify and manage

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appropriately. A gluten-free diet may provide adequate symptom relief for the majority of symptoms. Celiac disease-related sensorineural hearing loss appears gradual and permanent and may require periodic audiological monitoring.

Keywords: extraintestinal manifestations, sensorineural hearing loss, nasal septal perforation, vertigo, epistaxis, obstructive sleep apnea

INTRODUCTION:

Gluten consumption in genetically predisposed individuals causes celiac disease (CD), a chronic immune-mediated enteropathy of the small intestine. [1] It is an autoimmune condition,It is not an allergy or sensitivity, which distinguishes it from gluten intolerance. According to international surveys, the worldwide prevalence of celiac disease is 1.4%. [2] Although the gastrointestinal symptoms of CD, including diarrhoea, stomach pain, bloating, and vomiting, are well-known, many patients also experience extraintestinal symptoms, such as arthritis and dermatitis herpetiformis. [3] Less than fifty percent of patients exhibit the usual gastrointestinal symptoms, which makes identification difficult and may be a cause in as many as eight out of nine cases going untreated. 5 As a gluten-free diet (GFD) is therapeutic and research suggests it improves patients' quality of life and outcomes, obtaining a diagnosis is crucial. [6]

Therefore, some of the extraintestinal indications of Crohn's disease may be ENT diseases and, consequently, may initially present to the otolaryngologist. Consequently, it is essential that the otolaryngologist be aware of CD and keep the diagnosis in mind when encountering such patients. Such ENT extraintestinal manifestations have been documented but have not previously been addressed in the literature; therefore, the goal of this research is to determine precisely what the ENT extraintestinal manifestations of CD are and what therapy options are conceivable.

MATERIALS AND METHODS:

A comprehensive literature search was conducted using PubMed to find original articles (case–control studies, cohort studies, case series, case reports, and literature reviews) published between 2000 and 2020 about ENT symptoms of CD. ("coeliac disease" OR "celiac disease") AND ("ENT manifestations" OR "hearing loss" OR "epistaxis" OR "nasal septal perforation" OR "obstructive sleep apnoea" OR "vertigo" OR "tonsillitis" OR "sinusitis") Only English-language articles were included.

RESULTS:

The initial search generated fifty-two citations. Five articles that were not written in English were eliminated, leaving 47 citations. Five of these studies investigated non-ENT symptoms CD was therefore excluded. Twenty-five references that did not address extraintestinal signs

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of CD were removed. The 17 citations remaining after removing these 30 citations constitute the basis of this review summarises the situation.

Ten publications were case-control studies of sensorineural hearing loss (SNHL), and two were case-control studies of sleep-disordered breathing (SDB) and obstructive sleep apnea (OSA) (OSA). A case report and literature review on hemorrhagic episodes in CD comprised one article. One item was a case report on nasal septal perforation, while the other was on vertigo with nystagmus. Two publications investigated potential pathways underlying extraintestinal ENT symptoms.

DISCUSSION:

Hearing Loss

Leggio et al.7 initially identified a probable association between SNHL and CD in adults in 2007. This prospective case-control study compared 48 age-, gender-, and lifestyle-matched persons with type 2 diabetes. Adults with CD had a substantially greater frequency of mild to moderate SNHL compared to those without CD (P .01).

The lack of a significant difference between the prevalence of SNHL in GFD-treated and untreated CD patients suggests that the hearing impairment may be permanent.[7] In 2011, Hizli et al.8 compared 32 paediatric patients with CD to 32 age- and gender-matched controls without CD and observed a significantly greater prevalence (40.6%; P .0001) of mild low frequency (250 and 500 Hz) SNHL in those with CD.

[8] P .05 indicated that patients with CD had a significantly worse capacity for speech discrimination compared to healthy controls. 8 Importantly, none of the children recruited for this study reported any clinically apparent hearing impairment, showing that hearing loss may occur gradually.

The findings of Hizli et al8 are supported by a 2012 study by Solmaz et al9, which drew the same conclusions when comparing 25 paediatric patients with CD to 25 children without CD, finding that the patients with CD had significantly worse hearing at all frequencies (P .05) and diminished speech discrimination abilities (P .05). A second case-control study10 again discovered a significant connection between CD and SNHL at 250 Hz, but also indicated a decrease in the amplitude of otoacoustic emissions (OAE) at 1000 Hz. As OAE is a more objective measure of hearing loss than pure tone audiometry, this may constitute greater proof that CD negatively affects cochlear functionality. 10

A 2015 case–control study by S ahin et al, with a large sample size (110 paediatric patients with CD and 41 age- and sex-matched controls), found that bone conduction thresholds are significantly lower at all frequencies in patients with CD (P .05) and that these thresholds worsen with disease duration (P .05).

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11 Interestingly, the pure tone average was below 20 dB, indicating that the hearing loss was preclinical only at that time11; yet, it may be expected to be predictive of progressive hearing loss in later life, consistent with the findings of Leggio et al.[7]

It is hypothesised that the pathogenic mechanism underlying SNHL and CD involves immune-mediated neurological injury, including autoantibodies, autoreactive T cells, and immune complex deposition.

12 Malnutrition may also be a factor, as iron deficiency anaemia may cause ischemic cochlear damage.12 An additional mechanism may be related to people with CD having autoantibodies that neutralise osteoprotegerin (OPG), a crucial protein in bone remodelling and axonal myelination.13 Animal studies demonstrate that the absence of OPG leads to sensorineural and conductive hearing loss.[13] Another article hypothesised that CD-related hearing loss may be caused by the inhibitory interaction of gliadin peptide (found in gluten) with the human GRINA protein, which hinders the normal activity of glutamate receptor ion channels and so alters normal cell communication. 14 This process may also be responsible for extraintestinal symptoms of Crohn's disease, such as depression, ataxia, reproductive problems, and skin rash.

Nasal Septal Perforation and Epistaxis

Perforation of the nasal septum has also been connected to celiac disease. A case study28 described a patient with a big, enlarging septal perforation and occasional abdominal pain. With the initiation of a GFD, epistaxis completely declined in frequency. The patient was tested for reasons of septal perforation and treated with glucocorticoids without success when the tests were negative.[20-22] Histology revealed a thick ring of superficial fibrinoid necrosis and partially or completely occluded blood arteries, indicating an ischemic origin. Coincidentally, she was diagnosed with CD at the same time and began a GFD as a result. This resulted in the halt of development and bleeding of the septal perforation, with no further complications during the subsequent five years of follow-up. This is strong indication that the GFD improved the activity of the septal perforation, as no earlier therapies had made a difference. This is a significant learning point for otolaryngologists since, despite the well-known association between autoimmune illness and nasal septal perforation,[19] CD is not included in the first screening investigations. Therefore, it may be beneficial to include a celiac test in the screening investigations if other investigations are negative, as a gluten-free diet (GFD) can be a simple and successful method for symptom resolution.[23-25]

Vertigo and Nystagmus

A case study described how an 11-year-old child presented with vertigo and nystagmus due to a CD diagnosis. [26] The youngster was assessed upon initial presentation and the following findings were made other normal neurological findings include a normal cerebellar assessment, normal eye motility, and normal imaging. Her nausea was indicative of a

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peripheral rather than a central disorder. During this time, she was diagnosed with CD, and her vertigo symptoms subsided with the GFD, only to return during a period of dietary disobedience and resolve once more with careful dietary compliance. The postulated explanation is immunogenic neurological injury; however, 4 Ear, Nose & Throat Journal found no recovery in nystagmus symptoms after two years of GFD, indicating that some damage must be permanent. Important lesson point for otolaryngologists is to consider a celiac screen in patients with vertigo without a clear underlying reason and to understand that this might lead to significant symptom relief, but that a delay in diagnosis may result in lasting neurological damage.

CONCLUSIONS:

Celiac disease is a multisystemic autoimmune condition with extraintestinal signs that may serve as the disease's initial presentation. Extraintestinal ENT symptoms may cause a patient with CD to present to an otolaryngologist as the initial manifestation of their condition. Based on the information from the present body of literature, one of the implications is that children with CD may have subtly progressive SNHL, which may emerge as mild to moderate hearing loss in adulthood.

The otolaryngologist should be aware that children with CD may require audiological screening and monitoring, which may enable early detection of hearing loss and provision of appropriate patient assistance. In addition, GFD ameliorates SDB and OSA symptoms in children with CD. This is a consideration for the otolaryngologist, as a trial with rigorous GFD may be the initial mode of treatment for these youngsters, as opposed to surgery. It is also remarkable that CD may cause such a wide range of symptoms, from nasal septal perforation to vertigo, with the takeaway messages being to consider a CD diagnosis in individuals whose symptoms cannot be explained by other diagnoses and that a GFD may cure their problems. Lastly, malabsorption caused by CD can result in coagulopathy and bleeding diathesis, which can manifest as epistaxis.

Consequently, it is probable that the youngsters in the research lacked actual clinical symptoms. Therefore, it is uncertain if A GFD does indeed result in enhanced sleep quality. The case reports on nasal septal perforation and vertigo are persuasive, but without additional information it is difficult to draw conclusions. It is evident that CD can generate a variety of extraintestinal symptoms, and that recognising and diagnosing these individuals as well as initiating GFD may be the key to improving patient care.

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