Review Article
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Difficulty of the patient in the permanence of the celiac disease treatment: a literary review

Abstract

Objective: Bibliographically analyze the challenges, importance and difficulties of adherence to treatment in individuals with celiac disease.

Bibliographic review: Celiac disease (CD) is an autoimmune disease due to intolerance to gluten, which makes it difficult for the body to absorb nutrients and water. CD has a prevalence of up to 1% of the world's population, of which approximately 300,000 Brazilians are carriers. The pathophysiology of CD occurs by an inflammatory activation that occurs mainly by immunological processes mediated by T cells, damaging the microvilli and leaving the intestine with a smooth appearance. Due to the inflammatory process, the classic picture of malabsorption generates symptoms that include diarrhea, steatorrhea and lack of appetite, as well as extra intestinal manifestations that include dermatitis, malnutrition, pubertal delay and others. Currently, it is understood that there are not many treatment options for CD, since the gluten-free diet is the only one that is effective for these patients. Therefore, adherence to such therapy is not so simple, since there are a number of social and economic difficulties that hinder this process.

Final considerations: Although CD has a simple therapeutic option, it involves several intercurrences which impair adherence to treatment and can cause consequences for celiac patients. That said, promoting access to information about CD is important not only for celiac patients, but also for the general population in order to facilitate better and simplified access to gluten-free products.

Keywords: celiac disease, treatment, pathophysiology, adherence

Volume 13 Issue 6 - 2022

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Received: November 29, 2022 | **Published:** December 30, 2022

Abbreviations: CD, Celiac disease; HLA, histocompatibility molecules; APCs, antigen presenting molecules; ACELBRA, according to the Brazilian celiac association of Brazil

Introduction

Celiac disease (CD) is an exaggerated, inflammatory and permanent immune response, it causes a disorder of the small intestine, in which the body responds to the ingestion of gluten, a protein found in wheat, oats and rye. Therefore, foods such as: pasta, cake, bread, pizza and a number of other foods cannot be part of the celiac individual's diet.[1]

CD can appear at any age, presenting itself in two different ways: Atypical form, also known as Non-Classical or Subclinical, characterized by a varied clinical picture, or even the absence of gastrointestinal symptoms; and Classic or Typical Form, which presents positive specific serology and biopsy compatible with classic signs and symptoms, such as malabsorption, chronic diarrhea, anorexia, abdominal distension, loss of muscle mass, weakness and irritability[2]

This pathology affects the villi of the small intestine, atrophying them, which impairs the absorption of nutrients by this organ, however the effects are not limited to the gastrointestinal tract and may present other manifestations and systemic involvement.[3,4]

Furthermore, it is extremely important to highlight that the diagnosis of this disease is late, since professionals are not very familiar with the clinical manifestations, in addition to having little resources for its discovery.[1,3]

However, the withdrawal of gluten from the diet is permanent, as this is the only therapy available in the current scenario. Therefore, adopting a gluten-free diet is an effective way to alleviate the symptoms of the disease and prevent possible complications.[4,5]

Thus, the difficulty of adherence and continuity of celiac disease treatment becomes notorious.[1,2] This fact will be due to the low diversity of appropriate foods, the high cost and the complexity to find products that do not have gluten in their formulation. In addition, there are other reasons such as: the lack of restaurants and public places with menus that are appropriate and accessible to this public, often forcing them to eat at home.[6,7]

Finally, a gluten-free diet is a psychological and social challenge, the lifestyle is completely changed, affecting the psychosocial well-being not only of patients, but also of family members.[7]

Therefore, the present study aims to discuss a bibliographical analysis on the challenges, importance and difficulties of adherence to treatment in individuals with celiac disease.

Material and methods

This is an exploratory narrative review, in which we sought to summarize the challenges, importance and difficulties of adherence to treatment in individuals with celiac disease. According to Vosgerau & Romanowski (2014), in narrative reviews bibliographic productions in certain areas are explored, with the aim of describing the state of the art of a specific topic, from a theoretical or contextual point of view. While the exploratory character allows the researcher to improve and understand the knowledge about the objective of his study, thus allowing his results to instigate new scientific elaborations and new approaches.

This research took place through a bibliographic survey from the Scielo, PubMed and LILACS databases, where the following terms were inserted to guide the research: "celiac disease", "treatment", "pathophysiology" and "adherence".

The inclusion criteria for the selected studies included: articles published between 2018 and November 2022, written in Portuguese,

English and Spanish, with full text, free access and addressing the theme proposed in this study.

Regarding the exclusion criteria, we took into account: studies that did not meet the inclusion criteria and studies that were repeated in the databases used, being selected only once, excluding duplicates. With this, 47 articles were raised. Of this total, after reading the titles and abstracts, 25 articles were selected that were closest to the proposed theme.

It should also be noted that this article did not require approval by the research ethics committee (CEP), due to the fact that it is a review study (Resolution No. 510 of April 2016 of the Local Committee).

Results and discussion

Definition and epidemiology

Celiac disease (CD) is an autoimmune disease due to intolerance to gluten, which makes it difficult for the body to absorb nutrients from food, vitamins, mineral salts and water. This intolerance ends up causing a disorder in the small intestine mediated by immunological hypersensitivity to gluten peptides.[7,8]

Gluten, one of the main menus of the population, is a protein composed in the masses of cereals present in barley, wheat and rye. When the patient has CD with a reaction to this protein, the villi present in the intestine undergo atrophy, reducing the absorption of nutrients and generating poor food absorption.[4,9]

Celiac disease (CD) has gone from a rare pathology to one of greater recurrence since 1980, since then attacking between 0.5 and 1% of the world's population.[3] A study in Brasília presented a prevalence of 0.3% of the Brazilian population. As the data are still little known, it is estimated that 300,000 Brazilians are carriers of the disease, with the southeast region having the highest incidence.[2,4]

CD can appear between the period of childhood or adult life with a peak incidence in weaning from gluten at 2years of life and between the second or third decade of life for females.[10] Such pathology presents mortality about twice as high as others present in the general population and when it is related to other complications such as lymphoma, small bowel cancer, allergies, diabetes mellitus, immune deficiency, among others.[5,12]

Pathophysiology

The human intestine is composed of villi, structures that increase the area of absorption of water and nutrients.[11] When the patient has CD, gluten activates inflammatory processes that damage these microvilli, changing the appearance of the intestine, leaving it flat. Inflammatory activation occurs due to genetic and biochemical factors, but mainly due to immunological processes that interstitial T cells initiate when encountering gluten peptides.[13]

The main gluten protein structures that will trigger CD are the α,β and ω gliadins together with some fragments resulting from peptic digestion. These will be digested when crossing the intestinal epithelium and binding to histocompatibility molecules (HLA), mainly HLA-DQ2 and HLA-DQ8. Therefore, today, CD can be evaluated using highly accurate serological tests, in addition to the typical clinical manifestations.[14,15]

After gliadins bind to HLA, they will then be presented to antigen presenting molecules (APCs) developing an immune response to gluten in the lamina propria of intestinal tissue. CD4+ T cells recognize these peptides and activate the inflammation cascade with cytokines and inflammatory mediators that will promote tissue damage.[10,13]

Clinical picture and diagnosis

The clinical picture of CD includes symptoms such as abdominal pain, weight loss, steatorrhea and diarrhea due to atrophy of intestinal microvilli.[2] But in addition, she may have symptoms similar to the diagnosis of Irritable Bowel Syndrome such as heartburn, constipation and emesis. It may also present a decrease in electrolytes and vitamins, deficiency of important nutrients such as iron, vitamin B12 and zinc in the patient, anemia, compromised growth and dermatitis.[16]

Extra intestinal manifestations include dermatitis herpetiformis, osteoporosis, short stature due to malnutrition, pubertal delay, treatment-refractory iron deficiency anemia, neurological diseases or behavioral changes, arthritis and liver diseases.15 Patients may or may not have gastrointestinal manifestations, or such manifestations are discreet and, when evaluating the patient, one can infer the hypothesis of CD when supplanting the clinic of extra intestinal manifestations.

CD diagnostic confirmation should be guided by three axes: detailed anamnesis added to the physical examination of the patient; histopathological analysis of the small intestine, through biopsy, and investigation of serum markers. Thus, for the diagnosis, one can assess the appearance of signs and symptoms typical of CD, such as hypoplasia of tooth enamel, in addition to histological changes and positive serological tests. In the histopathological examination, preferably of the duodeno-jejunal junction, the microscopy will show atrophied or absent villi, increased crypt length and the number of intraepithelial lymphocytes confirm the diagnosis of the pathology.

Treatment

Currently, it is understood that there are not many treatment options for CD, since the gluten-free diet is the only one that is effective for these patients. Based on this assumption, the Codex Alimentarius estimates that for a diet to be considered gluten-free it is necessary to have a concentration of less than 20ppm.

In this way, gluten can be replaced by other foods such as corn and rice flour, cassava derivatives (sweet starch, cassava flour, tapioca and sour starch) and soy flour. Furthermore, oats can also be added to the menu, as long as they are not contaminated with gluten. However, they should be introduced with caution because, despite being accepted by most patients with CD, some may develop an immune response to avenin.

In view of this, it is clear that, despite seeming to be a simple therapeutic route, the restrictions induced by it make it challenging, making adherence difficult. Thus, items such as the consumers' mistaken knowledge about the diet, the correct reading of food labels and the understanding of food handlers for the proper preparation of special menus in order to avoid intercurrences in the health of consumers are important obstacles to the success of the treatment.

Therefore, the importance of individualizing treatment, monitoring and encouraging access to information about CD becomes evident, not only for people with the disease, but also for the general population. Thus, the patient should be warned about the need to adhere to this lifestyle, making it clear about their deficiencies and aggravations that may arise, but always showing that the benefits outweigh the harms of the treatment.

Adherence to treatment

According to the Brazilian Celiac Association of Brazil (ACELBRA), of the 91.4% of celiacs analyzed, only 69.4% adhered to a gluten-free diet. Based on this condition, as previously mentioned, adherence to such therapy is not as simple as it seems,

given that there are a number of social and economic difficulties that hinder this process. Given this, consumer knowledge about the diet is an important obstacle to be faced in correctly adhering to treatment. This is because many patients are unaware of the best way to identify gluten-free foods, which makes them more exposed involuntarily and even voluntarily when they put themselves at risk because they are not motivated to find products free of this protein.

Furthermore, financial difficulty is also a reason for diet transgression. This fact will be due to the lack of clarification of the celiac in relation to the disease and food preparation, in addition to the lack of skill in preparing gluten-free meals and the difficulty in acquiring gluten-free industrialized products.

It is also worth mentioning that the poor supply of information to establishment owners about CD and its diet therapy makes celiac patients more susceptible to ingesting products contaminated with gluten. Thus, the lack of menus that include these restrictions and the frequent cross-contamination of food can result in several accidents that are harmful to the health of the consumer, in addition to causing social embarrassment to the consumer.

Conclusion

Therefore, this bibliographic review aimed to elucidate the pathophysiology and epidemiology of celiac disease, applying it to specific situations that result in the difficulty of its treatment and its consequences for CD patients, ranging from the diagnosis of the pathology to its possible individual treatments in a clear and succinct way. Finally, it is concluded that, although CD has a simple therapeutic option, it involves several intercurrences which impair adherence to treatment and can cause consequences for celiac patients. That said, promoting access to information about CD is important not only for celiac patients, but also for the general population in order to facilitate better and simplified access to gluten-free products.

Acknowledgments

None.

Conflicts of interest

We declare there is no conflict of interest.

Funding

None.

References

1. De Leo L, Bramuzzo M, Ziberna F, et al. Diagnostic accuracy and applicability of intestinal auto–antibodies in the wide clinical spectrum of coeliac disease. *EBioMedicine*. 2020;51:102567.
2. Kivelä L, Kurppa K. Screening for coeliac disease in children. *Acta Paediatrica*. 2018;107(11):1879–1887.
3. Zis P, Hadjivassiliou M. Treatment of neurological manifestations of gluten sensitivity and coeliac disease. *Curr Treat Options Neurol*. 2019;21(3):10.
4. Serpa ABDMM, Oliveira BLP, Marcolino EC, et al. Celiac Disease: A Bibliographical Review. Revista Higei@–Revista Científica de Saúde. 2020;2(4).
5. dos Santos AS, Ribeiro CDSG. Percepções de doentes celíacos sobre as consequências clínicas e sociais de um possível diagnóstico tardio na doença celíaca. DEMETRA: Alimentação, Nutrição & Saúde. 14;33310.
6. Barros, Vasconcellos de BI. Comparison of trans fat notification on industrialized food labels sold in Brazil in 2010 and 2013. Brazil: Universidade Federal de Santa Catarina; 2020.
7. Vilarinho MD, da Cunha Soares T, da Conceição Rocha G, et al. Terapia Nutricional na Doença Celíaca: Fatores Associados a Adesão de Crianças e Adolescentes. *Revista Eletrônica Acervo Saúde*. 2019;(31):e1168–e1168.
8. Queiroz MR, Simioni PU, Ugrinovich LA. Celiac Disease Immunological and Genetic Basis Of Gluten Intolerance. *Ciência & Inovação*. 2020;5(1).
9. Rocha Y, de Oliveira TC, Bezerra KCB, et al. Clinical repercussions of celiac disease on the quality of life of pediatric patients. *Revista Arquivos Científicos (IMMES)*. 2021;4(1):20–26.
10. Trajano MCA. Relationship between Molar Incisor Hypomineralization and Celiac Disease: Literature Review. Brazil: Faculdade Sete Lagoas; 2021.
11. Almeida L, Freire F, Cardoso L, et al. Doença celíaca e o modismo das dietas isentas de glúten. Brazil: Universidade Salvador; 2022.
12. Pereira ACD. Pathophysiology and diagnosis of celiac disease. 2020. Monograph (Graduation in Biomedicine). Brazil: Faculty of Education and Health Sciences, University Center of Brasília; 2020.
13. Oxentenko AS, Rubio–Tapia A. Celiac disease. *In Mayo Clinic Proceedings*. 2019;94(12):2556–2571.
14. Carvalho LO, Duarte FR, Menezes AH, et al. Metodologia científica: teoria e aplicação na educação a distância. Brazil: Fundação Universidade Federal do Vale do São Francisco. 2019;1(1):1–84.
15. Albuquerque IL. Clinical, Laboratory and Histological Manifestations of Celiac Disease. *Journal of Pathology of Tocantins*. 2020;7(1):94–97.
16. Vasconcelos ST, Pinheiro LS, Alves MGP, et al. Abordagem geral da Doença Celíaca: uma revisão narrativa. *Revista Eletrônica Acervo Médico*. 2021;1(1):e9081–e9081.
17. Sharma N, Bhatia S, Chunduri V, et al. Pathogenesis of celiac disease and other gluten related disorders in wheat and strategies for mitigating them. *Front Nutr*. 2020;7:6.
18. Jedwab CF, Roston BCD, Toge AB, et al. The role of probiotics in the immune response and fecal microbiota of children with celiac disease: a systematic review. *Rev Paul Pediatric*. 2022.
19. Amparo GKS, da Maia Lima CF, Nihei JS, et al. The Celiac Disease Impact Towards The Adults' Life Quality. *Revista de Pesquisa Cuidado é Fundamental Online*. 2019;11(3):809–815.
20. Rosario PW. Doença celíaca como diagnóstico diferencial do hiperparatireoidismo normocalcêmico. *J Bras Patol Med Lab*. 2020;56:1–3.
21. Galleazzi D, de Mello ES. Availability of gluten–free foods in supermarkets in the city of Chapecó– SC. Brazil: Federal Institute of Santa Catarina; 2021.
22. Sampaio MCO, Cavalcante JLP. Evaluation of the gluten–free diet consumed by celiacs in the municipality of Sobral, Ceará, Brazil. *Multithemes*. 2022;26(64):63–78.
23. Nogueira PDF, Pereira EAA. Availability and Accessibility of Food For Celiac Patients.
24. Rocha Y, de Oliveira TC, Bezerra KCB, et al. Clinical repercussions of celiac disease on the quality of life of pediatric patients. *Revista Arquivos Científicos (IMMES)*. 2021;4(1):20–26.
25. de Farias JTF, Neta MLP, de Araújo JMD, et al. Ultilização da Farinha de Sorgo: uma Alternativa para Portadores de Doença Celíaca. *International Journal of Nutrology*. 2018;11(S 01):Trab779.