Gluten and Rheumatoid Arthritis in Adults

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There is currently a growing anti-gluten trend which, except for individuals with coeliac disease and non-coeliac gluten sensitivity (NCGS) for whom its intake is contraindicated, results in gluten (the main protein in wheat and other cereals) being considered harmful to health and excluded from diets, largely due to information distributed through social networks. However, in many cases the recommendation to exclude gluten from the diet goes beyond personal choice and is promoted by health professionals. This choice and/or recommendation is especially important to individuals with chronic inflammatory diseases such as rheumatoid arthritis (RA), for which this exclusion is justified to reduce the symptoms of the disease.

gluten diet rheumatoid arthritis

1. Rheumatoid Arthritis

According to the Spanish Society of Rheumatology, the prevalence of rheumatoid arthritis (RA) in Spain is estimated at 0.5%, similar to other European countries, and three times more frequent in women [1]. It is estimated that RA affects around 5% of women over 55 years of age [2]. RA presents as a common form of arthritis that causes inflammation in the lining of the joints, resulting in warmth and redness, reduced range of motion, swelling, hypersensitivity and pain in the joints, and may cause damage to the cartilage, bones, tendons and ligaments of the joints [3]. Except for the spine (which is usually not directly affected by RA, except for the neck) and the distal phalanges, all other joints can be affected, and bilaterally.

The most common initial symptom is morning joint stiffness (especially in the joints of the hands and feet), which occurs after a night's rest and leads to significant difficulty in movement. It is therefore a chronic inflammatory disease, autoimmune in nature, characterized by symmetrical involvement of multiple joints and the presentation of various non-specific general symptoms and extra-articular manifestations (skin, blood vessels, heart, lungs, eyes, blood). Left to its natural course and the absence of adequate treatment, the disease can cause, in advanced stages, significant physical limitations as well as a marked impairment in quality of life [2].

Although the causes of RA are not fully understood, it is known that genetic factors (polygenic disease) and non-genetic components (infections, hormones, smoking, stress, obesity, diet) are involved in its origin [2]. In RA, it is known that the body's immune system (IS) plays an important role in inflammation with the IS itself attacking the joints, through the invasion of immune cells causing inflammation of the synovial tissue [3]. It can therefore be described as a systemic autoimmune disease, as the lesions it causes involve the body's connective tissue, a

tissue that is present in virtually all organic structures [2]. The production of various enzymes, antibodies, cytokines, etc. will attack all joint structures leading to their deformation.

Effective treatments exist for both symptom relief and to modify the course of the disease; pharmacological therapy usually involves a combination of drugs (analgesics, anti-inflammatory NSAIDs and corticosteroids and DMARDs) for prolonged periods of time [2]. As these drugs may affect the IS or have pronounced side effects, careful medical supervision during treatment is necessary. Algorithms to aid decision-making in health care, without being mandatory or replacing the clinical judgment of the professional involved, are outlined in the Clinical Practice Guideline for the Management of Patients with Rheumatoid Arthritis [4], where the SIGN levels of evidence and grades of recommendation are also very well reflected.

In addition to medication, and as part of non-pharmacological therapy, it is important that those affected take regular moderate physical exercise to prevent loss of joint mobility, reduce fatigue, strengthen muscles and bones, increase flexibility and improve overall well-being. The multidisciplinary approach required for RA includes, amongst others, dietary measures [1], which not only involves following a healthy diet but also the intake of certain nutrients as will be discussed later. Additional general recommendations for patients who do not yet have joint damage are similar to those given for the general population: not smoking, sleeping a minimum of 8 h, moderation in alcohol consumption and avoiding activities with intense or sustained physical exertion [2].

2. Arthritis and Diet

The role of diet in preventing and treating different types of arthritis is not yet known, although diet will clearly be a key factor to consider in patients, for example, who are overweight and/or those with low calcium intake and/or those with excessive protein intake, etc. Similarly, there are indications that certain dietary components may reduce inflammation, such as omega-3 acids, or limit the progression of osteoarthritis, such as diets high in vitamin D and C [3]. A Mediterranean diet and consumption of olive oil are of great interest due to their high antioxidant and anti-inflammatory capacities [1]. However, in some instances the evidence is not clear, as reflected in the meta-analysis by Genel et al. [5]; the authors analyzed the impact of anti-inflammatory dietary interventions, based on the principles of a Mediterranean diet, concluding that although the anti-inflammatory diet is associated with increased weight loss, decreased inflammatory biomarkers, improved joint pain and improved physical function, the evidence is really poor, recommending the need for high quality studies led by nutritionists.

Food allergies can also trigger symptoms of arthritis [3]. Since an allergy is an adverse reaction of the immune system to the ingestion of a food (by contact with the allergens, proteins, contained in food), this would increase general inflammation and be detrimental to arthritis. This may explain a trend in naturopathy courses and by some authors [3][6] to promote vegan diets, which recommend the elimination of foods considered in these forums as pro-inflammatory (aubergines, tomatoes, potatoes, peppers), and recommending a healthy diet based on fruits, vegetables, whole grains, nuts and seeds, with a higher intake of broccoli, Brussels sprouts, cabbage, garlic, turmeric, sour cherries and vitamin C, foods that help fight inflammation and joint pain. While it is generally recommended to eliminate refined grains, which are associated with higher levels of inflammatory markers in the

blood, and replace them with whole grains (both in their direct consumption and derivatives), research has not confirmed any connection between whole grains and inflammation; however, there are many other good reasons for their consumption. Although some RA patients may show some improvement with the elimination of some foods, there is not enough evidence to recommend specific diets [7].

3. Arthritis and Gluten

Books such as “No grain, no pain” [8] or “Grain Brain: The surprising Truth about Wheat, Carbs, and Sugar—Your Brain’s Silent Killer” [9], in which the authors, who are not nutritionists, claim that cereals should be totally excluded from the diet have been published. Their dissemination through social networks has generated in some sectors an aversion to the intake of carbohydrates, the main nutrient in most cereals, leading to ketogenic diets amongst others to entirely remove cereals. It is worth noting the risk involved in this type of diet without consulting a specialist, as few carbohydrates are consumed, which, nutritionally speaking, is a mistake. Cereals also provide proteins, a low percentage of lipids, vitamins, and minerals.

The increase in cases of food intolerances, one of them being gluten [10], has made this protein fashionable, or rather being non-gluten fashionable. Going from a term only known to coeliacs to whose removal is indicated even in foods that are naturally gluten-free; from being an unknown term to being the hypothetical cause of a multitude of inflammatory processes and other pathologies, thus becoming the new villain of the diet. So much so, that nowadays it is not only people with coeliac disease who buy gluten-free foods, but also the whole family and consumers who have not been diagnosed or have an intolerance but have opted to consume gluten-free products, leading to a growing demand for foods made with gluten-free flours.

Could the food industry be exploiting and taking advantage of this *gluten-phobia*? The number of available gluten-free foods have increased enormously: in the USA, sales of gluten-free products have increased almost sixfold in a decade as substitutes are significantly more expensive [11]. In the UK, 60% of adults have bought a gluten-free product and 10% of households have a member who thinks that gluten is bad for their health [12]. From a need for coeliacs, it has become a consumer trend. As López Iturriaga pointed out in 2013 [11]: “Poor gluten. Without eating or drinking it, […] today many feel it as a threat to their health […] when in reality it is only harmful for those with allergies and coeliac disease”. Levinovitz, in his book “*The gluten lie and other food myths*” [13] talks about the nocebo effect for gluten.

Some dietary portals state that gluten should be avoided to improve arthritis [14] as a gluten-free diet could reduce the accumulation of joint fluid. Another example would be the claim that gluten causes inflammation in the joints of people with RA and worsens symptoms, recommending the selection of gluten-free foods [15]. Although some studies correlate gluten elimination with a reduction in antibody titre [16], which may be expected, no difference in cartilage destruction rates is observed, which would indicate that gluten elimination has no effect. However, social networks only show the first part of the results [17] and, although they reference the article (as proof of their claim), who follows up and reads the original article? Similarly, although reference is made to the fact that a decrease in intestinal permeability is beneficial for RA patients and that wheat increases intestinal permeability, due to its

component in gliadins [18] and lectins [19], the studies are laboratory models and not clinical trials in humans, which means that these results cannot be extrapolated to real patients. This cannot be surmised upon reading of the article on social networks, leaving amateur readers with a notion of the harm caused by wheat, in arthritis patients. This growing anti-gluten trend is not only found in the general public (who may be more likely to follow fashionable trends), but also professionals in the nutrition sector (via recommendations) and by many people who practice naturopathy (whether they are health professionals or not).

References

1. González Cernadas, L.; Rodríguez-Romero, B.; Carballo-Costa, L. Importancia de los Aspectos Nutricionales en el Proceso Inflamatorio de Pacientes con Artritis Reumatoide; una Revisión. Nutr. Hosp. 2014, 29, 237–245. Available online: https://bit.ly/3Pm29mx (accessed on 9 December 2021).
2. Conartritis. Coordinadora Nacional de Artritis. Available online: https://bit.ly/31QTTYs (accessed on 9 December 2021).
3. Artritis Reumatoide. Arthritis Foundation. Available online: https://bit.ly/3jPoOuc (accessed on 29 October 2021).
4. GUIPCAR. Sociedad Española de Reumatología. Available online: https://www.ser.es/guipcar/ (accessed on 9 December 2021).
5. Genel, F.; Kale, M.; Pavlovic, N.; Flood, V.M.; Naylor, J.M.; Adie, S. Health effects of a low-inflammatory diet in adults with arthritis: A systematic review and meta-analysis. J. Nutr. Sci. 2020, 9, e37.
6. Leitzmann, C. Vegetarian diets: What are the advantages? Forum Nutr. 2005, 57, 147–156.
7. Vadell, A.K.E.; Bärebring, L.; Hulander, E.; Gjertsson, I.; Lindqvist, H.M.; Winkvist, A. Anti-inflammatory Diet in Rheumatoid Arthritis (ADIRA)—A randomized, controlled crossover trial indicating effects on disease activity. Am. J. Clin. Nutr. 2020, 111, 1203–1213.
8. Osborne, P. No Grain, No Pain. A 30-Day Diet for Eliminating the Root Cause of Chronic Pain; Atria Books: New York, NY, USA, 2016; 352p.
9. Perlmutter, D.; Loberg, K. Grain Brain: The Surprising Truth about Wheat, Carbs, and Sugar-Your Brain’s Silent Killers; Little, Brown Spark: New York, NY, USA; 384p.
10. Carrera, D. Aumento de las Intolerancias Alimentarias, Causas, Diagnóstico y Plan Nutricional. 2018. CEMD. Available online: https://bit.ly/3pR8RHT (accessed on 30 October 2021).
11. López Iturriaga, M. La Paranoia Antigluten. El Comidista. Available online: https://bit.ly/33fxnco (accessed on 26 March 2013).

12. La Injustificada Moda de la Dieta sin Gluten, BBC News. Available online: https://bbc.in/3IWweXR (accessed on 25 July 2015).
13. Levinovitz, A. La Mentira del Gluten y Otros Mitos de la Alimentación; Planeta: Madrid, Spain, 2016; 304p.
14. Farré, J. Alimentación en Artritis Reumatoide. Available online: https://www.centrojuliafarre.es/dietas/artritis-reumatoide/ (accessed on 30 October 2021).
15. Colon, R. 10 Alimentos-Para Evitar-Si Padeces Artritis. AARP. Available online: https://bit.ly/3pVUP7Q (accessed on 30 October 2021).
16. Hafstrom, I.; Ringertz, B.; Spångberg, A.; Von Zweigbergk, L.; Brannemark, S.; Nylander, I.; Rönnelid, J.; Laasonen, L.; Klareskog, L. A vegan diet free of gluten improves the signs and symptoms of rheumatoid arthritis: The effects on arthritis correlate with a reduction in antibodies to food antigens. Rheumatology 2001, 40, 1175–1179.
17. Siscar, J. Artritis Reumatoide: El Papel de la Dieta. Dietética sin Patrocinadores. Available online: https://bit.ly/3bqV6r1 (accessed on 13 December 2015).
18. Drago, S.; El Asmar, R.; Di Pierro, M.; Grazia Clemente, M.; Tripathi, A.; Sapone, A.; Thakar, M.; Iacono, G.; Carroccio, A.; D'Agate, C.; et al. Gliadin, zonulin and gut permeability: Effects on celiac and non-celiac intestinal mucosa and intestinal cell lines. Scand. J. Gastroenterol. 2006, 41, 408–419.
19. Pellegrina, C.D.; Perbellini, O.; Scupoli, M.T.; Tomelleri, C.; Zanetti, C.; Zoccatelli, G.; Fusi, M.; Peruffo, A.; Rizzi, C.; Chignola, R. Effects of wheat germ agglutinin on human gastrointestinal epithelium: Insights from an experimental model of immune/epithelial cell interaction. Toxicol. Appl. Pharmacol. 2009, 237, 146–153.