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HOT TOPICS IN PAIN AND HEADACHE (N ROSEN, SECTION EDITOR)

The Clinical Use of IgG Food Sensitivity Testing with Migraine Headache Patients: a Literature Review

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Abstract

Purpose of Review This literature review describes the relationship between IgG food sensitivities and their relation to migraine headaches.

Recent Findings IgG food sensitivities have been linked to various symptoms and disorders. While food sensitivities and intolerances are recognized within the clinical medicine community, diagnosing these sensitivities and intolerances can be challenging because symptoms are usually delayed hours to days and may not occur after every exposure to the allergen. Some reports indicate that foods such as chocolate, cheese, cow's milk, eggs, and red wine may be triggers for migraine headaches.

Summary The pathophysiology of migraine headaches is not well understood. Some evidence supports the use of IgG food sensitivity testing to determine food sensitivities and intolerances. IgG food sensitivity testing may prove to be a beneficial tool for healthcare practitioners, especially for patients experiencing migraine headache symptoms. Utilizing IgG food sensitivity testing to create customizable dietary recommendations for patients may allow healthcare providers to treat migraine headaches without the use of medications.

Keywords Food sensitivities · IgG · Migraine · Headaches

Introduction

Migraine headaches are debilitating and affect roughly 15% of the adults in the USA and have socioeconomic and personal implications [1]. It has been reported that women are affected by migraine headaches at a rate nearly three times those of men [2]. According to Mitchell et al., migraine headaches affect nearly 6–7% of men and 20% of women [2]. Food sensitivities have been linked to migraines for decades [3••, 4]. Estimates suggest that 60% of the population may have food allergies or sensitivities and not even know it [5••].

Food sensitivities and intolerances are well recognized within clinical medicine and have been linked to various symptoms and disorders including urticaria, angioedema, eczema, migraines, psoriasis, fatigue, rhinitis, irritable bowel syndrome, and inflammatory bowel disease [5••]. Food sensitivities are believed to be immunological mediated reactions to food that we ingest [6•, 7]. These hidden sensitivities and intolerances are often delayed and may take hours to days to manifest [5••, 8]. Complicating this time component is the fact that these sensitivities and intolerances may not always occur after consuming the food in question [5••].

It is estimated that nearly 30 million Americans suffer from migraine headaches and often times, proper treatment can be challenging, which is why additional diagnostic tools may prove beneficial for better treatment outcomes [6•]. Evidence suggests that IgG-based food sensitivities and intolerances are linked to migraine headaches [9]. Often times, patients report that their headaches occur and may be triggered by the consumption of various foods such as cheese, chocolate, citrus fruits, and red wine [10–12].

Discussion

In clinical practice, it can often be difficult to identify the underlying food intolerances in question and symptoms may vary patient-to-patient [5••]. The exact pathophysiology

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behind migraine headaches is unclear, as is the relationship between food sensitivities and the connection to varying symptoms [3••, 5••, 9]. Several hypotheses have been proposed, including the amine hypothesis and IgE-mediated allergy hypothesis, but previous studies have not been able to validate these hypotheses [13]. More recently, a proposed mechanism evaluating the link between IgG-mediated food allergies have been evaluated [14]. Though the exact pathophysiology has not been established, the IgG-mediated food allergy hypothesis believes that an increase in IgG antibodies and cytokines result in an inflammatory response which then is believed to play a role in migraine attacks [14]. Food sensitivities and intolerances can be treated by utilizing a food elimination diet followed by a re-challenge protocol [9]. Elimination diet protocols are often lengthy, imprecise, and inefficient [9]. Commercially available IgG blood tests are available, though some questions remain regarding the effectiveness of such tests [5••].

It is believed that the food we eat has both chemical and immunological mechanisms [9]. Growing evidence indicates a role between inflammation and migraine headaches [3••]. Traditionally, evidence supporting a link between food sensitivities has not been of the highest quality and usually involves the utilization of elimination diets often resulting in empirical evidence [2]. It is possible that IgG may be a biomarker used to identify foods linked to an increased inflammatory response in the body, which in turn may be linked to migraine headaches [3••].

While attempting to find a link between IgG and migraine headaches, Alpay et al. conducted a randomized, double-blind, cross-over, headache-diary trial of 30 migraine patients. IgG antibody testing was performed using a commercially based enzyme-linked immunosorbent assay (ELISA) and participants completed a 6-week individualized diet based on these results. Statistically significant differences were noted between the IgG patients and the control group [3••]. When evaluating the number of headache days and headache count, the authors found that 53% of participants had a > 30% reduction in symptoms and a > 50% reduction of headache days and headache count were noted in 23% and 20%, respectively [3••]. This led authors to conclude that a diet restricting IgG-positive antibodies could be an effective treatment strategy for reducing the frequency of migraine headaches without the use of medications [3••].

Additional studies have shown similar results to the study from Alpay et al. Egger et al. placed 88 children with chronic headaches, defined as having at least one headache per week for a minimum of 6 months, onto an oligoantigenic diet consisting of one meat, one carbohydrate, one fruit, one vegetable, water, and vitamin supplements. Though this test evaluated the IgE component of the immune system, 78 of the 88 participants who completed the oligoantigenic diet saw their symptoms completely resolve [12]. Of the participants, cow's milk caused symptoms in most of the children [12]. In a similar study aimed at evaluating serum IgG in patients with migraine headaches not responding to traditional treatment methods, Hernandez et al. evaluated serum blood samples for analysis of IgG food reactivity to 108 food allergens. One hundred and twelve participants were recruited for the study. Half of those participants were previously diagnosed with migraine headaches while the other half were in the control group [6•]. Participants were placed on an individualized exclusion diet based on their IgG results for 6 months [6•]. After 1 month on this exclusion diet, 43 out of 56 (76.7%) of the patients had a complete remission of their migraine headache symptoms [6•].

In an attempt to detect IgG food reactions, Rees et al. utilized enzyme-linked immunosorbent assays (ELISA). 98.4% of the patients in the study were found to have multiple food intolerances with some of the top foods including cow's milk, eggs, and yeast being included in their list of sensitivities [9]. Of the 95 foods tested, cow's milk had a sensitivity prevalence of 85.2%, yeast 60.7%, egg whites 55.7%, and egg yolks 32.8% [9]. It was reported that over 60% of the patients who reintroduced foods back into their diets had a return of migraine symptoms at a later date [9].

Peatfield et al. examined the prevalence of various foods linked to headaches that included nearly 500 migraine patients. Of the patients reporting, 19% stated chocolate as an aggravating factor of their migraines, 18% reported cheese as being a trigger to their migraines, and 11% reported citrus fruit as an aggravating factor, while only 3% noted dairy and 2% noted eggs as aggravating factors contributing to migraines [10]. In a follow-up study from Peatfield, the author followed 570 patients with migraine headaches and found 16.5% of patients reported their symptoms being aggravated by either cheese or chocolate [11].

Additional research exists linking the benefits of IgG serum testing for migraine headaches when patients present with concurrent conditions such as irritable bowel syndrome (IBS) [14]. Aydinlar et al. performed a double-blind, randomized, controlled, cross-over, clinical trial to evaluate the IgG serum antibody testing via the ELISA method [14]. Patients were tested against 270 food allergens and subsequent elimination diets were utilized based on these results [14]. Aydinlar et al. reported that based on their findings, the combination of elimination diets based on IgG serum results may be an effective way to reduce symptoms from both migraine and IBS disorders [14].

These studies help provide evidence in support of the use of IgG blood testing to determine food sensitivities and intolerances. While an important element to treating patients with migraine headaches is the individualized

approach to their care, research has shown that IgG blood test can be utilized in clinical practice to help control migraine headache symptoms without the use of medications [3••, 6•].

Not all research supports the utilization of IgG serum testing following by an elimination diet. In a single-blind, randomized controlled trial, Mitchell et al. used IgG antibody-specific ELISA testing to customize individualized elimination diets and measured frequency and severity of participant's migraine headaches. Utilizing the Migraine Disability Assessment Scale (MIDAS) and Headache Impact Test (HIT-6) to evaluate daily function and disability as a result of migraine headaches, the authors found little to no evidence supporting the use of IgG serum testing followed by elimination diets [2]. Authors did report that following the IgG serum testing and elimination diet, participants did notice a 23% decrease in the frequency of headaches over a 4-week period, but a statistically insignificant change over the 12-week of the study [2].

Few studies have linked food IgG to mediated diseases, which is why serum IgG antibodies should be considered when diagnosing a patient with migraine headaches [6•]. One drawback to food sensitivity testing is that commercial food antigens are prepared using raw food samples that do not reflect real life situations as most foods are processed [8]. It is believed that the tests examining IgE and IgG can be improved by utilizing raw and processed food antigens [8]. Though additional improvements to commercial tests should be evaluated, the current commercial tests appear to provide clinical practitioners with an additional tool when diagnosing patients with migraine headaches.

Conclusion

Despite some criticism among healthcare providers, research suggests a correlation using IgG serum testing to identify possible food triggers to create customized elimination diets for patients suffering from migraine headaches. IgG sensitivity testing and elimination diets may prove to be an inexpensive option for patients trying to manage their condition. While elimination diets without the use of IgG serum testing may be utilized by practitioners, the time-consuming nature of this process may prove challenging for both patients and practitioners. For this reason, IgG serum testing should be considered as a cost-effective alternative. Because food sensitivity testing involves an individualized approach to patient care, future studies are important, though may be challenging to include double-blind studies because of the individuality of such treatment.

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Compliance with Ethical Standards

Conflict of Interest James F. Geiselman declares no conflict of interest.

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