

SHORT COMMUNICATION: POSTER

# A Prospective Audit of Food Intolerance Among Migraine Patients in Primary Care Clinical Practice\*

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## SUMMARY

This prospective audit was set up to investigate if migraine sufferers have evidence of IgG-based food intolerances and whether their condition can be improved by the withdrawal from the diet of specific foods identified by intolerance testing. Migraine patients were recruited from primary care practices and a blood sample was taken. Enzyme-linked immunosorbent assays (ELISA) were conducted on the blood samples to detect food-specific IgG in the serum. Patients identified with food intolerances were encouraged to alter their diets to eliminate appropriate foods and were followed up for a 2-month period. Endpoints included identification of the specific foods to which the patients were intolerant, assessing the proportion of patients who altered their diet and the benefit obtained by these patients at 1 and 2 months. Patients reported the level of benefit on a 6-point scale, where 0 = no benefit and 5 = high benefit. Sixty-one patients took part in the audit

and 39 completed 2 months of investigation. The mean number of foods identified in the IgG test was 5.3 for all participants and 4.7 for those successfully altering their diet. About 90% of patients changed their diet to a greater or lesser extent following the identification of possible food intolerances. A marked proportion of the migraine patients benefited from the dietary intervention, approximately 30% and 40% reporting considerable benefit at 1 and 2 months, respectively. Over 60% of patients who reintroduced the suspect foods back into their diets reported the return of their migraine symptoms. This investigation demonstrated that food intolerances mediated via IgG may play a part in the development of migraine attacks and that changing the diet to eradicate specific foods is a potentially effective treatment for migraine. Further large controlled clinical studies are warranted in this area.

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## Introduction

Dietary components are frequently proposed as precipitating factors for migraine<sup>1,2</sup> and many different foods have been implicated as potential triggers for migraine attacks. Migraine may be precipitated by food via chemical or immunological mechanisms<sup>2</sup>. Immunological reactions may be mediated by Immunoglobulin E (IgE [classical food allergies occurring immediately after eating]) or, more controversially, by Immunoglobulin G (IgG [food intolerance involving a delayed allergic reaction 2–120 hours after eating]). Available evidence indicates that an IgE mechanism is relatively unimportant in food-induced migraine<sup>3</sup>, while the role of a putative IgG mechanism is presently unknown.

## Objectives

'Proof of concept': to investigate if migraine sufferers have evidence of IgG-based food intolerances and whether their condition can be improved by the withdrawal of specific foods identified by intolerance testing from the diet.

## Methods

### Patients

Patients with high-impact headaches were recruited from primary care clinical practices by their GPs. Patients suffered either from episodic migraine ( $\leq 15$  days of headache per month) or chronic migraine ( $> 15$  days of headache per month).

### Study Design

- All patients completed a baseline questionnaire and a Headache Impact Test (HIT-6) questionnaire to record demographic and headache-specific information, respectively.
- Patients were sent a blood testing kit by YORKTEST Laboratories Ltd. (York, UK), took a blood sample and returned the kit by mail for testing.
- ELISA tests on blood samples were used to detect food-specific IgG in the serum of the blood samples. Results of the ELISA tests were sent directly to the patients, together with a guidebook on food intolerances and their treatment<sup>4</sup>.

- Patients could change their diets to eliminate specific foods identified as possibly causing intolerance, either on their own initiative or after consultation with their GP or another healthcare professional.
- Follow-up questionnaires were sent to patients after 1 and 2 months to monitor their progress.

### Endpoints

- Demographic data, allergy and headache histories.
- Identification of the specific foods to which the patients tested as intolerant, identified from the ELISA tests of IgG levels.
- The proportion of patients who altered their diet following these tests.
- The benefit obtained at 1 and 2 months by the patients who altered their diet compared with the situation before diet alteration. Patients reported their level of benefit on a 6-point scale, where 0 = no benefit and 5 = high benefit.

All endpoints were analysed using descriptive statistics.

## Results

### Patients

- Sixty-one patients from six UK GP practices (range 1–17 per centre) were recruited into the audit and completed baseline assessments. Forty-six patients (75.4%) completed 1 month and 39 (63.9%) completed 2 months.
- The average age was 45.2 years (range 21–68) and most patients (80%) were women. A minority of patients (25–34%) had a self-reported history of allergy.
- Most patients had suffered from headache for  $\geq 10$  years. Patients were severely affected by their headaches (Table 1). The mean weighted HIT score at baseline was 64.9 (range 48–78), corresponding to severe impact.

### Identification of Food Intolerances

- In the total study population, 60 of 61 patients (98.4%) had reactions to a total of 48 different foods, with an average of 5.3 (range 0–17) reactions per patient.
- In the patients who completed 2 months, 38 of 39 patients (97.4%) had reactions to a total of 36

different foods, with an average of 4.7 (range 0–17) reactions per patient.

- The distribution of food intolerances in these two populations is shown in Table 2. The most frequently reported intolerances (in over 10% of patients in either population) were to cow’s milk, yeast, egg white, egg yolk, wheat, gluten (gliadin), corn, cashew nuts, mollusc mix, Brazil nut, cranberry and garlic.

- After one month, 27.5% of patients reported considerable benefit (scoring 4 or 5), while 30.0% reported little or no benefit (scoring 0 or 1) (Figure 1a).
- After two months, 38.2% of patients reported considerable benefit (scoring 4 or 5), while 32.4% reported little or no benefit (scoring 0 or 1) (Figure 1b).

## Changing Diets

- Table 3 shows that 89.1% of patients had made a change to their diet after one month and 89.7% after two months.

## Conclusions

This pilot audit demonstrated that food intolerances mediated via IgG may play a part in the development

**Table 1.** Severity of patients' headaches: pain intensity, impact on daily activities and mood alterations

Headache severity	Proportion of patients (%)				
	Never	Rarely	Sometimes	Very often	Always
Severe pain	2	0	16	61	21
Limit to usual activities	0	2	31	51	16
Desire to lie down	2	0	18	41	39
Too tired to work	5	8	51	31	5
Irritation	5	7	33	39	16
Lack of concentration	3	7	38	40	12

**Table 2.** Food intolerances in the audit population: number and proportion of patients with a positive ELISA test to IgG from various foodstuffs (in ≥ 10% of patients)

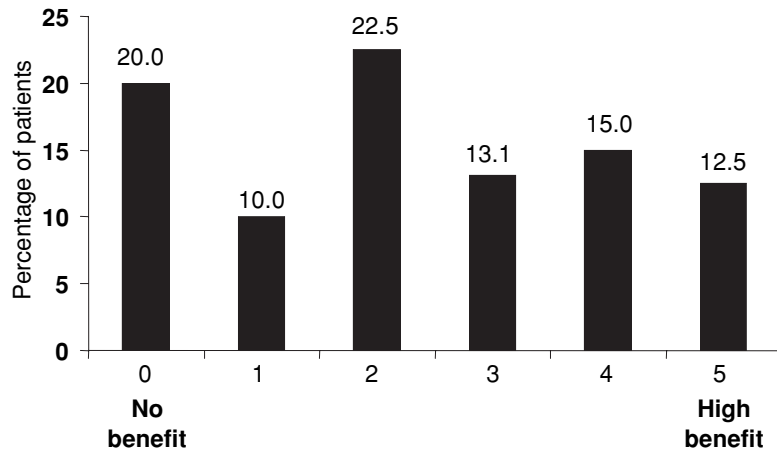
Food	Positive ELISA test (n [%])	
	Whole study population (n = 61)	Patients completing 2 months (n = 39)
Cow's milk	52 (85.2)	34 (87.2)
Yeast	37 (60.7)	22 (56.4)
Egg white	34 (55.7)	23 (59.0)
Egg yolk	20 (32.8)	13 (33.3)
Wheat	19 (31.1)	12 (30.8)
Gliadin	16 (26.2)	10 (25.6)
Corn	15 (24.6)	8 (20.5)
Cashew	12 (19.7)	7 (17.9)
Mollusc mix	10 (16.4)	3 (7.7)
Brazil nut	9 (14.8)	6 (15.4)
Cranberry	7 (11.5)	5 (12.8)
Garlic	5 (8.2)	4 (10.3)

**Table 3.** Proportion of patients who altered their diets

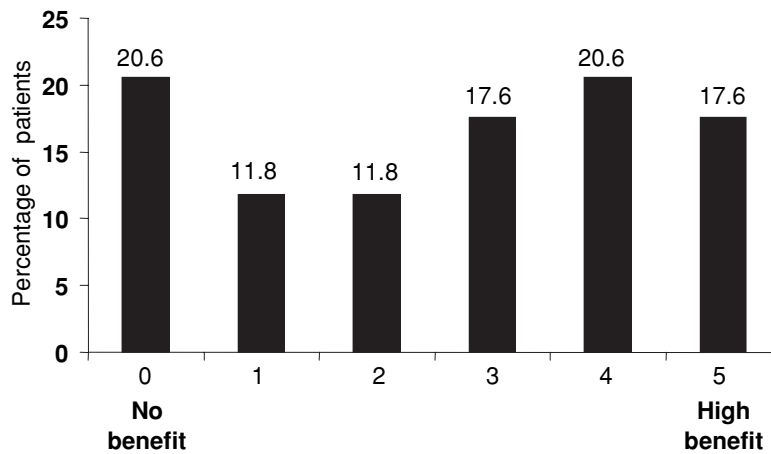
	1 month (n = 46)	2 months (n = 39)
Percentage of patients who changed their diet	89.1	89.7
Percentage of patients who changed their diet 'a lot'	41.3	56.4
Percentage of patients who made a 'reasonable attempt' to change their diet	47.8	33.3

of migraine attacks and that changing the diet to eradicate specific foods is a potentially effective treatment for migraine. Further large clinical

studies are required to confirm these findings and examine the clinical importance of this treatment approach.



(a)



(b)

**Figure 1.** Benefit of the diet after (a) 1 month and (b) 2 months: proportion of patients reporting their level of benefit on a 6-point scale, where 0 = no benefit and 5 = high benefit

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