I take this opportunity of expressing to my colleagues at the Oxford Eye Hospital and at the Horton General Hospital, Banbury, my appreciation of their generous co-operation in this investigation; also of thanking Messrs. Parke, Davis Ltd. for supplies of histamine-azo-globulin used for 24 patients.

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ALLERGIC CONDITIONS OF THE EYE * †

2.—Migraine

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MIGRAINE is of importance to ophthalmologists, *first* because all humans with severe headaches, from whatever cause, eventually find their way to an eye hospital to be checked for refraction errors, and *second* because 50 per cent. of migraine cases have eye symptoms, often very severe in onset.

As early as 1820 some French authors were classifying migraine with epilepsy, eczema and asthma as manifestations of allergy, but Strümpell¹ (1860) was the first to suggest an allergic basis for some cases of migraine, and he spoke of it as "an exudative process comparable to urticaria and angio-neurotic oedema." Liveing's² (1873) monograph "On megrim" is a classical work on the subject.

In the 20th century many papers have been written quoting cases of migraine attacks in patients who gave positive skin reactions

* Part of an address delivered to the British Association of Allergists at Oxford, April 17, 1948.

† Received for publication, May 10, 1948.

with certain foods or inhalants, but there has been a noticeable hesitation to claim a direct connection between the symptoms and signs. Perhaps one of the difficulties of any argument on the subject is the fact that migraine attacks usually occur in the healthiest of patients, sudden in onset, and leaving no trace of pathological abnormality when the attack is over, whether it has lasted one hour or twelve. This difficulty can be overcome if we consider allergy as a physiological, rather than a pathological response, differing from the normal in degree but not in kind.

In the 1935 Edition of Osler's³ text-book, migraine is defined as "A paroxysmal affection characterized by severe headache, usually unilateral, and often associated with vomiting and/or disorders of vision." Numerous subsequent writers have elaborated this to suit individual patients or groups of patients. All cases classified as migraine in the following tables satisfy this definition.

In 100 consecutive cases of such migraine investigated in 1943-47, 54 were proved to be allergic, either by clinical trials, by skin tests, or, more often, by both methods. With each patient an attempt was made to produce a migraine attack, before prophylactic treatment was begun.

Typical examples of these patients were:—

CASE 1. Patient, male, aged 52 years. 115/75. C/o migraine + neuralgia. Duration: 8 years (about 50 attacks a year). F.H.: Asthma and migraine.

Positive allergies by skin test: Feathers + + +, Dust + + +, Cat +.

Allergies confirmed by clinical trial: feathers and dust. Treatment: desensitisation. Attacks in next 6 months, 0; attacks in next 3 years, 1.

CASE 2. Patient, female, aged 48 years. 110/80. C/o migraine. Duration: 20 years (resigned position as secretary owing to frequency of migraine). F.H.: Migraine.

Positive allergies by skin test: House dust + + +, Kapoc + +.

Allergies confirmed by clinical trial: house dust, kapoc. Treatment: desensitisation. Attacks in next 6 months, 2; attacks in next 5 years, 12.

CASE 3. Patient, male, aged 8½ years. 90/60. C/o migraine + urticaria. Duration: 4 years, in summer only. F.H.: Hay-fever and urticaria.

Positive allergies by skin test: Timothy grass + + +. Allergy confirmed by clinical trial: Timothy grass. Treatment: Desensitisation. Attacks in next summer, 0; attacks in next 3 years, 0.

CASE 4. Patient, female, aged 53 years. 121/90. C/o migraine + eczema. Duration: 25 years (irregular—usually 3 in a month). Worse in last three years. F.H.: None reported.

Positive allergies by skin test: Cheese + + +, Peas + +, Beans + +.

Allergies confirmed by clinical trial: cheese, haricot beans. Treatment: avoidance. Attacks in next 6 months, 0; attacks in next 6 years, 3.

CASE 5. Patient, female, aged 42 years. 115/80. C/o migraine. Duration: 15 years (at least once a week). F.H.: Migraine.

Positive allergies by skin test: House dust + + +, Kapoc + +.

Allergies confirmed by clinical trial: house dust. Treatment: with extracted dust from own house. Attacks in next 6 months, 0; attacks in next 5 years, 1.

CASE 6. Patient, male, aged 10 years. C/o sickness and dull headaches ("half-headaches"). Duration: 2 years. Missed 31 days at school in 1 term. F.H.: Migraine and asthma.

Positive allergies by skin test: Cat +, Dog +, Fish +, Chocolate + +, Milk + +.

Allergies confirmed by clinical trial: chocolate, cod liver oil, whole milk (unboiled). Treatment: Avoidance. Days absent from school in next term, 2; days absent from school in next 6 terms, 3.

While these cases show that *if* a patient has *allergic* migraine, he can be helped tremendously by avoiding those allergens to which he is specifically sensitive, or by being desensitised, we must remember that the other 46 per cent. should be excluded from these somewhat tedious investigations, as they can derive no benefit from them. They do not belong to allergic families, and they do not present other manifestations of allergy themselves.

Realising that all patients are reluctant to give a detailed family history or an accurate personal history, other more clinical methods

TABLE I
Migraine in 100 consecutive *adult* cases

No.	Average age	Systolic pressure	Allergic origin	Per cent.
8	45	150—180	0	0
20	43	130—150	8	4
10	44	120—130	3	30
45	43	100—120	28	62
17	40	>100	15	88
100	43	—	54	—

Average for 46 non-allergic cases - - 147

Average for the 54 allergic ones - - 108

for separating the 54 per cent. allergic from the 46 per cent. non-allergic patients have been sought, and during routine general examinations significant differences of systolic blood pressures in the two groups were observed; there was no marked difference in pulse pressures.

These were all adult cases, and the pressures were all taken *between*, rather than *during* attacks. Bray¹ (1937) stated that in children he had not found any marked changes in the blood pressure during allergic attacks. Witts⁵ (1933) determined the blood pressure in 440 cases of asthma, and found that the majority showed normal figures, but he did not separate the allergic asthmas from those due to other causes. From Table I it becomes clear that although *all* migraine cases do not have low systolic pressures, and all migraines are not of allergic origin, if a patient with true migraine has a low systolic pressure, then allergy should be suspected and treated appropriately.

In conclusion, attention is drawn to the apparent increase in the number of allergic patients in any community during the last two decades. They are presenting as asthmas, eczemas, conjunctivitis cases, migraines or urticarias to our general practitioners all over the country. Perhaps this increase is apparent only: it may be that many minor cases of *sub-clinical* allergy, have by the stress of present-day conditions, both mental and physical, become major cases, seeking the help of their medical advisers, and that the actual number remains fairly constant from generation to generation. Many patients seeking advice to-day for incapacitating migraine give a history of "mild half-headaches" in 1938, or even in 1928.

Summary

(1) An analysis of 100 cases of migraine is given. Fifty-four of them were proved to be of allergic origin, and remained free from head pain after desensitisation, or avoidance of their allergens.

(2) The average systolic blood pressure of the fifty-four allergic cases was noticeably lower than that of the forty-six non-allergic ones.

(3) It is concluded that migraines in patients with a *low* systolic pressure are manifestations of allergy.

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