

SHORT REPORT

Primary headache disorder in the emergency department: perspective from a general neurology outpatient clinic

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Over a six month period, 22% of patients with headache seen in general neurology outpatient clinics reported prior attendance at an emergency department because of their headache; 9% of the headache cohort had been admitted to hospital. All had primary headache disorders according to International Headache Society diagnostic criteria. Improved primary care services for headache patients are required to reduce the burden of primary headache disorders seen in emergency departments.

Headache may be the presenting feature of various symptomatic acute intracranial pathologies seen in the emergency department (ED), including subarachnoid haemorrhage, bacterial meningitis, carotid or vertebral artery dissection, pituitary apoplexy, and cerebral venous sinus thrombosis.^{1–4} However, not all patients with headache attending the ED have intracranial pathology, and clinical criteria have been suggested to identify those who do.⁵ Such patients are in the minority—for example, in a recent retrospective study, Locker *et al*⁶ found that of 77 421 patients attending one ED over a one year period, alert patients with headache numbered only 353 (0.5%), and in those for whom a final diagnosis was available ($n = 345$) the vast majority had a primary headache disorder ($n = 280$; 81.2%). The outcome of these patients is uncertain: some are subsequently referred by ED staff, other hospital practitioners, or general practitioners to general neurology outpatient clinics, where the vast majority of patients have primary headache disorders.

This study aimed to ascertain what proportion of patients with headache seen in general neurology outpatient clinics had previously been to the ED, and the outcome of these visits. Some preliminary data from this retrospective observational study have appeared previously.⁷

PATIENTS AND METHODS

Consecutive new outpatient referrals were seen at three general adult neurology clinics at three hospitals in north-west England over a six month period by one consultant neurologist with no specific interest in headache disorders. In those whose principal reason for referral or principal complaint in the clinic was headache, diagnosis of headache syndrome was based on the criteria of the International Headache Society (IHS).⁸ Patients were asked during consultation whether their headaches had ever been so severe that they had ever attended or been sent to a hospital emergency department. If so, details of whether they were admitted and what investigations, if any, had been performed were elicited. Subsequently an attempt was made to obtain the hospital notes relating to these attendances to corroborate the patient report.

RESULTS

Over a period of six months (mid-May to mid-November 2004), 479 new referrals were seen in 53 consecutive clinics. Of these, 119 (25%) had the principal complaint headache. Referral to the neurology outpatient clinic was from a general practitioner ($n = 109$) and from a hospital based practitioner ($n = 10$); only one of the latter was from ED staff. Prior attendance at an ED was reported by 26 patients with headache (22%); four had attended on more than one occasion. Of these 26 ED attenders, 15 had not been admitted to hospital (one self-discharged against medical advice) and 11 had been admitted (9% of all headache patients). The age range, median age, sex ratio, and final specific headache diagnoses for each of these groups are listed in table 1. Of the 11 patients admitted to hospital, 9 underwent structural brain imaging (CT = 7, MRI = 2), and 3 had a lumbar puncture. No abnormalities were found on either brain imaging or cerebrospinal fluid analysis. Duration of hospital stay ranged between one and seven days. Nine of the 11 admissions occurred within six months of referral to the neurology clinic.

Hence, comparing the cohort of all headache patients with the subgroups of those attending the ED and those admitted to hospital, the numbers with a headache falling under the general rubric of migraine⁸ (migraine without aura, migraine with aura, typical aura without headache, chronic migraine) showed a gradual decline in frequency (whole cohort 46/119 (38.7%); attending ED 9/26 (34.6%); admitted to hospital 2/11 (18.2%)). Tension-type headaches⁸ (chronic, frequent episodic) showed the opposite pattern (whole cohort 66/119 (55.5%); attending ED 13/26 (50%); admitted to hospital 7/11 (63.6%)).

Table 1 Demographic and diagnostic data of patients with headache

	All headache patients (n = 119)	ED attenders (n = 26)	Admitted (n = 11)
Age range (years)	16–78	18–74	18–74
Median age (years)	39	38	38
Sex ratio (M:F)	45:74	11:15	5:6
% Men	37.8	42.3	45.5
Specific diagnosis			
Chronic tension-type headache	60	11	5
Frequent tension-type headache	6	2	2
Migraine without aura	14	3	1
Migraine with aura	11	2	–
Migraine without headache	1	1	–
Chronic migraine/transformed migraine	20	3	1
Medication overuse headache	3	1	–
Cluster headache/trigeminal autonomic cephalalgia	4	3	2

DISCUSSION

The frequency of headache in this general neurology outpatient population (25%), patient age, and gender were similar to results in cohorts of headache patients from other general neurological clinics^{9,10} suggesting this cohort was likely to be representative of this setting.

The study methodology had a number of shortcomings. It was retrospective, patient numbers were small, there was the potential bias in interpretation of IHS criteria by one neurologist, and no information was available on headaches managed successfully in the ED and therefore not being referred, either from the ED or from primary care. Moreover, the results were dependent upon patient recall, and hence liable to recall bias, although no major discrepancies were found between patient recall and the medical notes for those patients admitted to hospital. We are not, however, aware of previous studies providing information about prior ED attendance in headache patients attending outpatient neurology clinics.

Just over a fifth (22%) of the headache patients seen in the clinic had previously attended the ED, and just under a tenth (9%) had been admitted. Compared with the whole cohort, admission was more common for those with tension-type headaches, and less common for migraine patients. This observation, that migraine patients were proportionately fewer in the subgroups visiting the ED and being admitted to hospital compared to the whole cohort, was surprising since previous studies have reported migraine and its complications to be the commonest primary headache disorder seen in the ED.¹¹⁻¹³ This is presumably because the symptoms and signs of migraine may overlap with those of subarachnoid haemorrhage (worst ever headache, vomiting) or meningitis (photophobia, vomiting). The findings of this study also contradict the suggestion that patients with tension-type headache are usually not seen in the ED.¹

What is the optimal management of patients with primary headache disorders attending the ED? Their infrequency (<0.5% of all ED attenders⁶), the difficulty of assessing patients in pain without the benefit of prior records, and concerns about the possibility of serious intracranial pathology, along with the spectrum of possible headache disorders including conditions with specific treatment, such as headaches responsive to indometacin, and spontaneous intracranial hypotension, all contribute to the diagnostic problems. As many of these patients are bypassing primary care, use by ED staff of screeners designed for primary care might assist with diagnosis.¹⁴

One possible solution is the development of a collaboration between neurologists from a headache centre and ED staff. Such an arrangement has been piloted in Rome: neurologists saw 237 headache patients in the ED in a three month period, of whom 190 (80%) were diagnosed as having migraine or its complications, 18 cluster headache, 20 secondary headaches, and 9 psychiatric disorders. Of the migraineurs, only 14% reported being seen by a headache specialist, and only 10% had used a triptan before their ED visit, indicating that migraine was both underdiagnosed and undertreated.¹¹⁻¹³ The complete absence of patients with chronic tension-type headache in this study is in striking contrast with the perspective developed from our neurology outpatient clinic based study.

Although such findings from ED based headache centres are preliminary, the arrangements described might facilitate

correct diagnosis, avoid unnecessary admissions and investigations, and ensure prescription of appropriate medications through provision of appropriate expertise. Moreover, it is in keeping with a policy document from the Association of British Neurologists advocating greater neurological involvement in the acute setting.¹⁵ Alternatively, greater access to dedicated headache services in primary care settings, possibly including professions allied to medicine such as community pharmacists, as recommended by the British Association for the Study of Headache^{16,17} might reduce the numbers of patients with primary headache disorders attending the ED.

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