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## Narcotic analgesics for acute migraine in the emergency room: are we meeting Headache Societies' guidelines?

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**Abstract** We analysed 161 patients with acute migraine in our emergency room (ER) to identify the use of narcotic analgesics as first-line treatment. Twenty-four percent of patients were treated with opioid analgesics and 76% patients were treated with non-opioid analgesics. Pain was completely relieved in 100 (62%) patients, partially relieved in 50 (31%) patients and was not relieved in 11 (7%) patients at the time of discharge. Pain relief was not related to the use of opioids vs. non-opioids. The treatment of acute migraine in our ER is in line with the guidelines of the Headache Societies and needs further improvement.

**Keywords** Migraine • Emergency room • Narcotics • Guidelines

### Introduction

Migraine is one of the most disabling, chronic disorders rated by a recent WHO survey [1]. A large number of

these patients are treated in the emergency room (ER) for acute migraine. ER treatment for acute migraine is highly variable, including various NSAIDs, triptans, phenothiazines, metaclopramide, ergotamines, narcotics and sometimes a combination of these [2]. The American

Academy of Neurology, Canadian Medical Association and Italian Society for the Study of Headaches have published guidelines and recommendations related to the management of severe migraine in the ER [3–6]. These guidelines clearly recommend the use of non-narcotics as first-line agents and the use of narcotics as the last resort for treatment of severe migraine in the ER. Two studies from the USA and one study from Canada reported very high use of narcotic analgesics (47.5%, 50.7% and 59.6% respectively) in the ER for management of acute migraine [7–9].

No studies are available from Pakistan regarding attitudes toward narcotic use and management of acute migraine in the ER. Our study aimed to find out whether practice in a tertiary care hospital ER in Karachi meets IHS guidelines.

## Methods

All patients with acute migraine visiting the ER at the Aga Khan University were retrospectively reviewed during a three-month period. Patients with headaches other than migraine and patients requiring hospitalisation were excluded from the study.

A total of 8300 patients were seen during that period in our ER. Charts of 239 (2.87%) patients presenting with a primary complaint of headache at the ER during the study period were reviewed. One hundred and sixty-one (1.91%) patients with a diagnosis of acute migraine (IHS criteria) were included in the study. Charts excluded from the study (n=78) were due to diagnosis other than migraine, that is subarachnoid haemorrhage (n=10), intracerebral haemorrhage (n=7), subdural haematoma (n=7), meningitis (n=3), sinusitis (n=16), head trauma (n=25), cluster headaches (n=2), miscodings (n=1),

incomplete records (n=6) and non-availability (n=1). Pain status was recorded as complete relief, partial relief or no relief at time of discharge of patient. This subjective information was given by the patient and documented by a nurse on the chart. We did not contact any patients to determine relapses. Patients were divided into two groups based on opioid usage. The comparison of different characteristics like gender, relief status, nausea and vomiting status, and photophobia by type of analgesic used for treatment using a chi-square test and the difference in the mean ages of the patient and mean duration of headache before presentation to ER were analysed using an independent samples *t*-test. The software used for analysis was SPSS (version 13.0).

## Results

Out of 161 patients included in study, 103 (64%) were female. The age range was 18–59 years (mean age=34 years). Associated nausea, vomiting and photophobia were present in 94 (59%) patients. Mean duration of headache was 10 h before presentation to ER. Neurological examination was normal in all patients. Thirty-nine (24%) patients were treated with opioid analgesics (pethidine, 25; pentazocine, 10; and oral opioid analgesics, 4) while 122 (76%) patients received non-opioid analgesics (diclofenac, 80; ketorolac, 32; tramadol, 10). No patient received triptans or steroids in the ER. Fifty-five (35%) patients received injectable anti-emetics, in addition to analgesic injections. Pain was completely relieved in 100 (62%) patients, partially relieved in 50 (31%) patients and was not relieved in 11 (7%) patients at the time of discharge. Pain relief was not related to use of opioids vs. non-opioids (Table 1).

**Table 1** Comparison of patients' characteristics by type of analgesics used

Variable	Opioid analgesics	Non-opioid analgesics	<i>p</i> -value
Number of patients, n (%)	39 (24)	122 (76)	
Average age, years $\pm$ SD	30 $\pm$ 12	34 $\pm$ 15	0.09
Sex, n (%)			
Male	14 (36)	44 (36)	0.1
Female	25 (64)	78 (64)	
Having nausea, vomiting, n (%)	22 (56)	72 (59)	0.95
Having photophobia or phonophobia, n (%)	14 (36)	51 (42)	0.15
Mean duration of headache before presentation to ER, hours	11	9	0.09
Relief status, n (%)			0.497
Complete relief	22 (56)	78 (64)	
Partial relief	15 (38)	35 (29)	
No relief	2 (5)	9 (7)	

## Discussion

Less than a quarter of the patients in our study were treated with opioid analgesics as the first-line therapy for acute migraine in our ER. These findings are in contrast to previously published studies from the USA and Canada. The relatively low use of narcotics is in line with recommendations by various National Headache Societies. It could be due to increased awareness among our ER physicians regarding acute migraine treatment guidelines. Although these guidelines have been well published and circulated in the neurology literature, we believe that most of the ER physicians are not aware of these guidelines. This awareness may be related to a workshop that was organised by the Neurology Department regarding evaluation and management of acute headache in the ER for emergency physicians about six months before this study. The Emergency Department developed guidelines for acute migraine relief in consultation with the Neurology Department after the workshop. They had been put into place at the time of study. We do not know the frequency of opioid use for acute migraine in the ER prior to this workshop and guidelines but it would be interesting to know whether our guidelines made a difference. We suggest that guidelines related to ER management of severe headache or migraine should be jointly published and circulated by the Society of Emergency Physicians and Headache and Neurology Societies. Workshops for acute migraine management in the ER could be organised for ER physicians highlighting those guidelines. Despite the training and guidelines, 24% were still treated with opioid analgesics. We are unable to identify factors responsible for opioid use for acute migraine in our ER. This is a limitation of our study. The possible reasons for opioid use in these patients could be treatment before final diagnosis of migraine was estab-

lished, allergy or contraindications to non-steroidal use, previous history of migraine relief with opioids etc.

Acute headache contributed only 3% and acute migraine only 2% of all ER visits at our hospital. The low frequency of headache in our ER is probably due to its tertiary care nature and long waiting times for headache patients. Another interesting observation was that there was no use of triptans in the ER for acute migraine relief. There could be many reasons for not using triptans in the ER, including lack of awareness among ER physicians, non-availability of subcutaneous triptans, long duration of headache before presentation, and associated nausea and vomiting. Subcutaneous triptans are not available in Pakistan. Only two oral triptans are available in Pakistan: sumatriptan and zolmitriptan; but awareness regarding the usefulness of these medications for acute migraine is limited to neurologists.

We were unable to identify any factors associated with the use of one or the other medications. The use was most likely dependent on ER physicians' preference or experience. This is probably why wide variations are noted in terms of choice of medication for treatment of acute, severe headache in ERs. Our data confirm the previous findings that opioid analgesics are not superior to non-opioid analgesics for relief of acute migraine.

There are certain limitations to this study. We did not collect data regarding time of day as predictor of opioid use, length of stay in ER and relapse rate. This information would have benefited the paper. It is extremely hard to ascertain the exact severity of migraine from a retrospective chart review. Prospective studies should use an analogue scale for quantification of migraine severity. It may correlate to opioid use in the ER.

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