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ONE MINUTE CONSULT

BRIEF ANSWERS TO SPECIFIC CLINICAL QUESTIONS

Q: What inpatient treatments do we have for acute intractable migraine?

As complete relief of chronic daily headache is difficult, establish a realistic goal (eg, 50% relief) from the outset

A: We recommend the following combination treatment:

Normal saline (0.9% NaCl) 1 to 2 L by intravenous (IV) infusion over 2 to 4 hours. This can be repeated every 6 to 12 hours.

Ketorolac 30-mg IV bolus, which can be repeated every 6 hours. However, patients with coronary artery disease, uncontrolled hypertension, acute renal failure, or cerebrovascular disease should instead receive **acetaminophen** 1,000 mg, **naproxen sodium** 550 mg, or **aspirin** 325 mg by mouth.

Prochlorperazine or metoclopramide 10-mg IV infusion. This can be repeated every 6 hours. However, to reduce the extrapyramidal adverse effects of these drugs, patients should first receive **diphenhydramine** 25- to 50-mg IV bolus, which can be repeated every 6 to 8 hours.

Sodium valproate 500 to 1,000 mg by IV infusion over 20 minutes. This can be repeated after 8 hours.

Dexamethasone 4-mg IV bolus every 6 hours, or 10-mg IV bolus once in 24 hours.

Magnesium sulfate 500 to 1,000 mg by IV infusion over 1 hour. This can be repeated every 6 to 12 hours.

If the migraine has not improved after 3 cycles of this regimen, a neurologic consultation should be considered. Other options include dihydroergotamine and occipital nerve blocks[1] performed at the bedside.

GENERAL PRINCIPLES

Managing acute intractable migraine can be frustrating for both the practitioner and the patient. Some general principles are helpful.

Use a combination of drugs. Aborting a severe migraine attack often requires a combination of medications that work synergistically.

Use IV and intramuscular formulations rather than oral formulations: they are more rapidly absorbed, provide faster pain relief, and can be given when the nausea that often accompanies migraine precludes oral treatments.

Rule out secondary causes. The mnemonic SNOOP—systemic signs, neurologic signs, onset, older age, progression of existing headache disorder—is useful for assessing underlying causes.[2] Any patient presenting with intractable migraine should also have a thorough neurologic examination.

Screening electrocardiography may be helpful, as the pretreatment QTc interval may direct the choice of intravenous treatment. If the patient has a prolonged QTc or is taking another drug that could prolong the QTc, certain medications, specifically dopamine receptor antagonists and diphenhydramine, should be avoided.

Ask the patient what has worked previously. A particular agent may have been effective in aborting the migraine; thus, a single dose of it could abort the headache, expediting discharge.

Establish if a triptan or ergot derivative has been used during the 24 hours before presentation, as repeated dosing within this interval is not recommended.[3]

Establish the baseline headache severity. Complete headache relief is difficult to achieve in a patient with chronic daily headache, and establishing a more realistic goal (eg, 50% relief) from the outset is useful.

OPTIONS FOR DRUG THERAPY

Antiemetics

Dopamine receptor antagonists are assumed to merely treat nausea in patients with migraine;

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however, they act independently to abort migraine and thus should be considered, irrespective of the presence of nausea.

The two most commonly used agents are prochlorperazine and metoclopramide. The American Academy of Neurology guidelines recommend prochlorperazine as first-line therapy for acute migraine. Metoclopramide is rated slightly lower and is considered to have moderate benefit.[4] The Canadian Headache Society cites a high level of evidence supporting prochlorperazine and a moderate level of evidence supporting metoclopramide.[5] The American Headache Society assessment of parenteral pharmacotherapies gives prochlorperazine and metoclopramide a level B recommendation of "should offer" (a recommendation only additionally assigned to subcutaneous sumatriptan).[3] Hence, either agent can be used.

To reduce the risk of posttreatment akathisia, diphenhydramine or benztropine may be given before starting a dopamine receptor antagonist. Diphenhydramine may be independently effective in migraine treatment,[6,7] but data on this are limited.

Ketorolac, ibuprofen

Ketorolac and ibuprofen are the only available nonsteroidal antiinflammatory drugs (NSAIDs) for IV administration. The Canadian Headache Society guidelines strongly recommend ketorolac for the treatment of migraine in emergency settings.[5] Doses range from 30 mg to 60 mg.[1] Ibuprofen 400 to 800 mg by IV infusion is an acceptable alternative. These medications should be avoided in patients with renal failure or severe coronary artery disease.

Oral naproxen sodium is a possible alternative in patients with cardiovascular disease, as it has been shown to carry a lower cardiovascular risk than other NSAIDs.[8]

The same concerns in patients with renal dysfunction apply to any NSAID, as the enzyme cyclooxygenase plays a constitutive role in glomerular function.

Antiepileptic drugs

The antiepileptic drugs sodium valproate and levetiracetam are available in IV formulations that have demonstrated efficacy in the treatment of status migrainosus[1] (ie, migraine lasting more than 72 hours). Valproate has the strongest track record, is well tolerated, and is effective in rapidly aborting migraine.[9]

Volume repletion

Although its use is anecdotal and to date no trial has measured its efficacy, IV volume repletion is often used in acute migraine, as most headache experts surmise it to be highly effective, especially in patients with prolonged nausea or vomiting.[1]

Magnesium

IV magnesium is effective, particularly for migraine with aura.[10] Hypotension is a common side effect, and pretreatment or concurrent treatment with IV fluids is advised. Doses from 500 mg to 1,000 mg have demonstrated efficacy.[10]

Corticosteroids

Corticosteroids can be used in the treatment of status migrainosus. Most studies have shown benefit in preventing recurrences rather than merely aborting migraine.[11] A systematic review suggested that recurrent headaches are milder with corticosteroid treatment; 19 of 25 studies indicated favorable benefit, and 6 of 19 studies indicated noninferior outcomes.[12]

Both IV methylprednisolone and IV dexamethasone may be considered.[12] Dexamethasone appears to be particularly effective in preventing headache recurrence when combined with other IV therapies.[13] It can be given as a single dose of 10 mg, or as repeated doses of 4 mg up to 16 mg/day.[1] Patients with active psychosis or uncontrolled diabetes should be closely monitored for these conditions, which corticosteroids can worsen.

Empiric fluid repletion may help patients with migraine and prolonged nausea or vomiting

Serotoninergic agents

Serotonin agonists including subcutaneous sumatriptan and IV dihydroergotamine are highly effective, with proven statistical and clinical benefit.[4] They should be considered in patients with no known history of coronary artery disease or other vaso-occlusive vascular disorder.[1]

Ideally, IV dihydroergotamine should be administered after consultation with a neurologist or headache specialist, given the pretreatment and cotreatment requirements often necessary to suppress its side effects. Careful ti-

tration is important to prevent transient headache exacerbations during infusion, as well as abdominal cramping, nausea, and diarrhea.

Avoid opioids

Opioids should be avoided. Evidence supporting their use in acute migraine is extremely limited,[3] and the risks of migraine becoming chronic and of addiction are high.[14] Safer, more effective alternatives have been detailed above.

A detailed algorithm for the management of patients with acute migraine has been published[14] and is aimed at decreasing acute treatment with opioids and barbiturates.

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