

## Repetitive intravenous dihydroergotamine as therapy for intractable migraine

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Persistent, long-standing headache can be difficult to treat, and it is a common in-hospital consult for all Neurology residents. Patients are often dependent on various other medications that can be exacerbating their pain, resulting in frequent, medication overuse headaches. Ergotamine was first used in the 1920's as an abortive medication for migraine. A semi-synthetic, hydrogenated compound was later created, dihydroergotamine (DHE). While both are effective for the acute treatment of migraine, DHE was associated with fewer side effects (nausea, vomiting, peripheral vasoconstriction) and a lower risk of drug tolerance and dependence. Overall, the goal of this study was to compare the use of DHE to Diazepam for the management of chronic migraine.

**Experimental Design/Statistics:** This was a non-blinded, non-randomized study with 109 patients: 55 received IV DHE (starting at 0.5mg and titrated up by 0.5mg q8h as tolerated with 10mg metoclopramide) and 54 received IV diazepam (10 mg q8h). Participants were unmatched. Inclusion criteria included at least 2 months of continuous headache that met criteria for "common migraine." In both groups, about 65-70% were drug-dependent, defined as headache exacerbation if a single dose of a standard medication was delayed. These were commonly analgesics, including codeine, oxycodone, Fioricet, ergotamine, diazepam, and prednisone. There was no overlap between the two treatment arms and no washout period was required. Following 48hrs of IV DHE, patients were given DHE rectal suppositories or subcutaneous injections q12hr, if headaches persisted. All patients, including those receiving IV DHE and IV diazepam, were given propranolol 60mg BID after the first 48hrs of treatment. If a headache persisted after one month, propranolol was discontinued and ergonovine 1.2mg was given daily. DHE was discontinued when the headache was less than 3x/week and mild in intensity. Patients were not allowed to be on any other analgesics or ergotamine during this time. Thereafter, medications were continued on a case-by-case basis.

**Results:** On average, the 0.7mg dose of DHE was used. A total of 49 (89%) patients were headache-free within 48 hours of receiving DHE; only 7 (13%) patients who received diazepam were headache-free within 3-6 days. The length of hospitalization in those who received DHE was also 3.8 days vs. 8.4 days in those that received diazepam ( $p < 0.01$ ). Commonly reported side effects from DHE included diarrhea, leg muscle pain, and abdominal pain. Drug dependence in the DHE treatment group was "negligible", though it occurred in 16 patients in the diazepam group.

**Conclusions:** While this study design was not ideal, it offered data to support the benefit of the use of DHE for intractable migraine, with limited side effects and good efficacy.

Summary created by Arathi Nandyala, M.D.