**Dihydroergotamine** (dye-hye-droe-er-got-a-meen)

**Trade Names:** D.H.E. 45, Dihydroergotamine-Sandoz, Migranal

**Classification:** Therapeutic: vascular headache suppressants  Pharmacologic: ergot alkaloids

**Pregnancy Category X.**

**Indications**
Vascular headaches including: Migraine, Cluster headaches.

**Action**
Vasoconstriction of dilated blood vessels by stimulating alpha-adrenergic and serotonin (5-HT) receptors. Larger doses may produce alpha-adrenergic blockade and vasodilation. 

**Therapeutic Effects:**
Constriction of dilated carotid artery bed with resolution of vascular headache.

**Pharmacokinetics**

- **Absorption:** Rapidly absorbed following IM and subcut administration and 32% absorbed from nasal mucosa.
- **Distribution:** Unknown.
- **Protein Binding:** 90%.
- **Metabolism and Excretion:** Highly metabolized (90%) by the liver. Some metabolites are active.
- **Half-life:** 10 hours.

**TIME/ACTION PROFILE (relief of headache)**

<table>
<thead>
<tr>
<th>Route</th>
<th>Onset</th>
<th>Peak</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM, Subcut (Adults)</td>
<td>15–30 min</td>
<td>15 min–2 hr</td>
<td>8 hr</td>
</tr>
<tr>
<td>IV</td>
<td>5 min</td>
<td>15 min–2 hr</td>
<td>8 hr</td>
</tr>
</tbody>
</table>

**Contraindications/Precautions**

- Contraindicated in: Peripheral vascular disease; Ischemic heart disease; Uncontrolled hypertension; Severe renal or liver disease; Malnutrition; Known alcohol intolerance (injection only); OB: Pregnancy; Lactation: Lactation; Concurrent use of CYP 3A4 enzyme inhibitors (macrolide anti-infectives and protease inhibitors).
- Use Cautiously in: Illnesses associated with peripheral vascular pathology such as diabetes mellitus; Concurrent administration of other vasoconstricting agents; Pedi: Children <6 yr (safety not established).

**Adverse Reactions/Side Effects**

- CNS: Dizziness.
- EENT: Rhinitis.
- CV: Myocardial infarction, hypertension, angina pectoris, arterial spasm, intermittent claudication.
- GI: Abdominal pain, nausea, vomiting, altered taste, diarrhea, polydipsia.
- MS: Extremity stiffness, muscle pain, stiff neck, stiff shoulders.
- Neuro: Leg weakness, numbness or tingling in fingers or toes.
- Misc: Fatigue.

**Interactions**

- **Drug-Drug:** Concomitant use of CYP 3A4 enzyme inhibitors (macrolide anti-infectives and protease inhibitors) may produce serious, life-threatening peripheral ischemia and is contraindicated. Concomitant use with beta blockers, oral contraceptives, or nicotine (heavy smoking) may risk of peripheral vasoconstriction. Dihydroergotamine antagonizes the antianginal effects of nitrates. Concomitant use with vasoconstrictors may have additive effects (avoid concommitant use). Concomitant use with sumatriptan may result in prolonged vasospasm (allow 24 hr between use).

**Route/Dosage**

- **IM, Subcut (Adults):** 1 mg may be repeated in 1 hr to a total of 3 mg (not to exceed 3 mg/day or 6 mg/wk).
- **IM, Subcut (Children 6 yr):** 0.5 mg; may be repeated in 1 hr.
- **IV (Adults):** 0.5 mg may be repeated in 1 hr (not to exceed 2 mg or 6 mg/wk). For chronic intractable headache, 0.5–1 mg q 4 hr may be given (not to exceed 15 mg/day).
- **IV (Children 6–9 yr):** 0.25 mg; may be repeated in 1 hr.
- **IV (Children and Adolescents 12–16 yr):** 0.5–1 mg; 1–2 more doses may be given 20 min.
- **IV (Children 9–12 yr):** 0.25–0.5 mg; 1–2 more doses may be given 20 min.
- **IV (Children 6–9 yr):** 0.25–0.5 mg; 1–2 more doses may be given 20 min.
- **Intranasal (Adults):** 1 spray (0.5 mg) in each nostril, repeat after 15 min (1 mg total dose), not to exceed 3 mg/24 hr or 4 mg/wk.
NURSING IMPLICATIONS

Assessment
● Assess frequency, location, duration, and characteristics (pain, nausea, vomiting, visual disturbances) of chronic headaches. During acute attack, assess type, location, and intensity of pain before and 60 min after administration.
● Monitor BP and peripheral pulses periodically during therapy. Report any increases immediately.
● Assess for signs of cephalgia (cold, numb fingers and toes; nausea, vomiting; headache; tremor; weakness).
● Assess for nausea and vomiting. Ergotamine stimulates the chemoreceptor trigger zone.

Implementation
● Administer as soon as patient reports prodromal symptoms or headache.

IV Administration
● pH: 3.4–4.9.
● Direct IV: Dihydroergotamine may be administered undiluted. Rate: Administer each dose over 1 min.
● Storage Compatibility: promethazine.

Patient/Family Teaching
● Instruct patient to use dihydroergotamine at the first sign of a headache and repeat at 1-hr intervals up to 3 doses. Once minimal effective dose is determined, adjust dose for subsequent attacks.
● Intranasal: Instruct patient in proper use of nasal spray. Prime nasal sprayer 4 times before dose. Administer 1 spray to each nostril followed by an additional spray in each nostril for a total of 8 sprays. Do not tilt head or sniff following spray. Do not use more than amount instructed. Discard sample within 48 hr after opening. Do not refrigerate. Assembly may be used for 4 treatments; then discard.

Evaluation/Desired Outcomes
● Relief of pain from vascular headaches.

Why was this drug prescribed for your patient?