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Pain perception during cranial nerve blocks for chronic migraine: local anesthetic injection produces greater pain than needle penetration

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Introduction
Peripheral nerve blocks and sphenopalatine ganglion blocks are widely used in the treatment of chronic migraine. Although generally considered minimally invasive, procedural discomfort may affect patient acceptance and adherence. The relative contribution of needle penetration and local anesthetic injection to pain perception remains poorly characterized.

Objective
To compare pain associated with needle penetration and local anesthetic injection during a standardized 360-degree headache block protocol in patients with chronic migraine.

Methods
Eight women (mean age 46±17 years) diagnosed with chronic migraine according to ICHD-3 criteria underwent bilateral greater occipital, lesser occipital, auriculotemporal, and supraorbital nerve blocks using 1 mL of 2% lidocaine per site administered through a 30-gauge insulin needle. Bilateral transnasal sphenopalatine ganglion blocks were also performed. Pain intensity was rated on a 0–10 numerical scale immediately after needle penetration and again after anesthetic injection. At the end of the procedure, patients rated overall procedural discomfort.

Results
A total of 64 nerve block sites were evaluated. Mean pain scores were significantly higher during anesthetic injection than during needle penetration (5.5±3.2 vs. 3.7±3.0; p<0.001). Pain scores between 8 and 10 were reported in 31.3% of injections compared with 14.1% of needle penetrations. The supraorbital region showed the highest pain scores for both needle penetration and anesthetic injection. Nasal discomfort associated with the sphenopalatine ganglion block was generally mild (mean 1.3±1.8). Overall procedural discomfort was rated as 6.4±2.1.

Conclusion
In patients with chronic migraine undergoing a 360-degree headache block protocol, pain related to local anesthetic injection exceeded that associated with needle penetration. The supraorbital region appeared particularly sensitive. Strategies aimed at reducing injection-related pain may improve patient tolerance and acceptance of repeated interventional headache procedures.

Keywords:
Migraine disorders
Anesthetics
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Peripheral nerves
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