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Effectiveness of therapeutic interventions in short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing: a systematic review

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Introduction
Short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing (SUNCT) is a rare but extremely debilitating trigeminal autonomic cephalalgia. Its treatment includes several therapeutic options whose relative effectiveness requires further understanding.

Objective
To evaluate the effectiveness of available treatments for SUNCT.

Methods
This systematic review was conducted using the PICO strategy and according to the PRISMA guidelines. A search was conducted for studies published in the last 10 years in English, Portuguese, and Spanish in PubMed, Scopus and Embase databases using the MeSH terms SUNCT Syndrome and Treatment Outcome combined with the Boolean operator "AND". 113 studies were identified and underwent double independent screening. Inclusion criteria were studies evaluating the clinical impact and/or efficacy of treatment options in patients diagnosed with SUNCT; observational studies and randomized clinical trials. Exclusion criteria were studies that did not evaluate patients diagnosed with SUNCT or coexisting conditions that could alter the response to the treatment itself, resulting in 5 articles selected for data extraction.

Results
SUNCT patients demonstrated responsiveness especially to lamotrigine (54 to 62%), followed by oxcarbazepine (45%) and topiramate (33 to 48%) in long-term preventive treatment, suggesting a potential role of sodium channel dysregulation in SUNCT pathophysiology. In short-term prevention, intravenous infusion of lidocaine was highly efficacious as a short-term therapy (91 to 100%), but poor response was observed in chronic SUNCT patients; greater occipital nerve injections were beneficial, but to a lesser extent (24 to 50%). In treatment-refractory patients, trigeminal microvascular decompression was associated with reductions in pain severity, attack duration, Headache Impact Test scores, and interictal pain (all $p<0.05$), with 67.7% responding to the treatment, while patients with pre-operative magnetic resonance abnormalities showed higher response rates ($p=0.001$). Sphenopalatine ganglion pulsed radiofrequency presented favorable outcomes in treatment-refractory SUNCT patients in the long term, with a mean improvement of 53% in severity and/or frequency, which persisted for a mean of 6.4 months; however, 40% of them experienced a worsening of head pain for 2 to 4 weeks immediately after the procedure.

Conclusion
For long-term prevention, lamotrigine and topiramate appeared to be the most effective treatments, and the same was observed for intravenous lidocaine in the short term, but not in chronic cases. For treatment-refractory patients, trigeminal microvascular decompression appears to be a promising therapeutic option. Larger longitudinal studies are necessary for better comprehension of the most effective treatment strategies.

Keywords:
Trigeminal autonomic cephalalgias
Treatment outcome
SUNCT syndrome

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