

Topical Lidocaine for Localized Neuropathic Pain

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1. Introduction

Neuropathic pain (NP) is defined like “pain arising as a direct consequence of a lesion or disease affecting the somatosensory system” (1). It greatly interferes with daily activities affecting overall quality of life and associated with high economic costs either at individual or social level (2, 3). Additionally, the great heterogeneity among different NP conditions, despite availability of novel treatments and pharmacological approach, makes its management a clinical challenge.

2. Arguments

Neuropathic pain affects millions people worldwide and would become increasingly common since ageing of population (4). Despite the burden of the disease, its management still remains greatly inadequate. Epidemiological surveys suggest that less than a half of patients receive clinically meaningful relief and many continue to experience moderate to severe pain despite using medications (5). Many factors might contribute to this scenario, as low accuracy in clinical diagnosis, low efficacy of treatments and their unfavourable tolerability profile, poor knowledge of drugs properties and their inappropriate prescription from physicians (6, 7). Additionally, either new drugs or novel routes of administration of well-known agents have enriched the available pharmacopeia and thus widened the expertise needed by health professionals. Prescription of therapy should be guided by many individual variables such as age, concomitant diseases, potential adverse effects and pharmacological interactions and personalized according to the characteristic features of painful syndrome itself as aetiology, pattern of symptoms and signs and localization. In this respect, localized neuropathic pain (LNP) has been recently introduced as a distinctive entity within the broad spectrum of peripheral NP and defined as “consistent and circumscribed area(s) of maximum pain associated with negative or positive sensory

signs and/or spontaneous symptoms typical of neuropathic pain” (8).

LNP constitutes almost 60% of all cases of NP and encompasses a huge number of different conditions including post-herpetic and trigeminal neuralgia, localized diabetic neuropathy, traumatic and postoperative nerve injury, complex regional pain syndrome, neuropathic cancer and low back pain. The most striking implication for routine clinical practice for correct recognition of LNP lies in its potential responsiveness to local agents (9). The use of 5% lidocaine-medicated plaster, either alone or combined with traditional medications for NP as antidepressants, gabapentinoids and opioid analgesic, has become an emerging issue for several advantages related to a topical rather than systemic approach (10). Lidocaine is a targeted peripheral amide-type anesthetic agent. It stabilizes neuronal membranes and reduces ectopic discharges through the selective inhibition of the ionic fluxes through the abnormally sensitized sodium channels of hyperactive or damaged dermal nociceptors (11). The action on channels of damaged fibers without binding to undamaged ones provides an analgesic effect without a complete sensory block or anesthetic action (12). Furthermore, its prolonged application may promote an auto-regulatory down-regulation of channels, induce modification of the central sensitization and reduce the expanded receptor field and spinal cord excitability (13).

Since its minimal systemic absorption, topically applied lidocaine presents an excellent safety and tolerability profile with a very low risk of drug-drug interactions and adverse effects, mostly cutaneous at the site of application, and therefore high rates of adherence and compliance. Topical 5% lidocaine has been registered for the treatment of post-herpetic neuralgia, but there is accruing evidence for its effectiveness in other LNP conditions. In open label studies, lidocaine medicated plaster reduced pain intensity and painful area, negative impact

of pain on daily activities and psychological distress, provided sustained relief in long-term treatment and improved overall quality of life in patients with localized painful syndromes (10-14). Furthermore, satisfactory clinical results could reduce concomitant drug use and simplify therapeutic regimen with the greatest benefit reached where safety concerns exist, especially in frail and elderly patients.

3. Conclusions

Despite increasing knowledge of its pathophysiological mechanisms, control of NP still remains scanty. In many cases, drugs can only provide partial relief and adverse effects, above all sedation, dizziness, nausea and constipation, influence adherence to treatment, limit the dose escalation and create a precarious balance between analgesia and tolerability (15). In this respect, when the predominant driver of NP may be recognized in a peripheral and localized generator, topical lidocaine may represent an appropriate choice. Since its proven efficacy and excellent short- to long-term tolerability, it should be considered more systematically in all treatment algorithms for LNP. Further studies should be prompted to identify suitable predictors of response and thus facilitate an evidence-based and individualized treatment approach.

Footnote

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