



High-dose Capsaicin patch in treatment of chemotherapy-induced peripheral neuropathy: single-center experience

SCIENCE

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Key Take-Away:

A high-dose capsaicin patch is an effective treatment for pain associated with chemotherapy-induced neuropathy in patients treated with oxaliplatin.

Chemotherapy-induced peripheral neuropathy (CIPN) refers to a complication of anti-neoplastic treatment that significantly reduces quality of life. It is prevalent with established frequency of 30–40% of patients undergoing chemotherapy. It can be induced by many chemo therapeutic agents including taxanes, vinca alkaloids, epothilone, bortezomib, thalidomide and especially platinum agents. Oxaliplatin is the most frequent agent causing CIPN symptoms even after 2 years after cessation of the treatment. Various treatment options such as duloxetine, venlafaxine, gabapentinoids and opioids are considered for prevention of CIPN.

ABSTRACT:

Background:

Chemotherapy-induced peripheral neuropathy (CIPN) refers to a complication of anti-neoplastic treatment that significantly reduces quality of life. It is prevalent with established frequency of 30–40% of patients undergoing chemotherapy. It can be induced by many chemo therapeutic agents including taxanes, vinca alkaloids, epothilone, bortezomib, thalidomide and especially platinum agents. Oxaliplatin is the most frequent agent causing CIPN symptoms even after 2 years after cessation of the treatment. Various treatment options such as duloxetine, venlafaxine, gabapentinoids and opioids are considered for prevention of CIPN.

Current approaches for the treatment of CIPN focus on high-dose topical capsaicin patch. Capsaicin is an agonist of the transient receptor potential vanilloid receptor (TRPV1) that acts by inhibiting neural transmission in sensory axons. It has been proved as a potent therapy for post-herpetic neuralgia and human immunodeficiency virus (HIV)-associated neuropathy.

Rationale behind the research

- There are no studies describing effectiveness of capsaicin on CIPN despite of growing interest in topical high-dose capsaicin patch in treatment of neuropathic pain. Therefore, this study was conducted to assess the benefits of capsaicin in CIPN.

Objective

To determine the effectiveness and safety of high-dose capsaicin patch in treatment of CIPN associated pain.

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Methods:





- **Study outcome measures**

- **The baseline characteristics:** underlying disease, received cumulative dose of neurotoxic agent, neuropathic symptoms, prior treatment and initial pain level.
 - **Other outcomes:** Evaluation of pain with Numeric Rating Scale prior to treatment with high-dose capsaicin and after 1.8 day and after 8 and 12 weeks after introducing treatment.
- **Time Points:** Baseline, 8 weeks and 12 weeks.

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Results:



Study outcomes

- i. **Baseline:** There were no significant baseline differences between the groups.
 - The mean cumulative dose of oxaliplatin after which patients developed symptoms was 648.07 mg/m².
 - The mean pain level observed after 12 weeks of treatment was 0.20 ± 0.41 (Fig.1).
 - Patients with low sensitivity experienced higher pain reduction, especially after 8 days after introducing treatment (69.55±12.09 vs. 49.40±20.34%; *p*=0.02) and after 12 weeks (96.96±5.56 vs. 83.93±18.59%; *p*=0.04), when examined according to high and low sensitivity to neurotoxic agent (Fig.2).



Figure 1: Comparison of pain scores assessed by Numeric rating scale between low and high sensitivity group



Figure 2: Comparison of pain reduction scores between low and high sensitivity group

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Conclusion:

In this study, the efficacy and safety of high-dose (8%) capsaicin patch in treatment of patients with CIPN and treated with oxaliplatin-based chemotherapy for colon cancer was determined.

The pain reduction was reported and ranged between 84% and 97% assessed at 12 weeks. There were no incidences of adverse events indicating that a high-dose capsaicin is safe and effective to treat CIPN. Previous studies indicated a 30% symptomatic relief in an observation period of 2–12 weeks, but this study showed remarkable increase in symptomatic relief up to 97% after 12 weeks in neuropathy-related symptoms after application of a high-dose 8% capsaicin. Therefore, it was concluded that a high-dose (8%) capsaicin patch was safe and effective in reducing pain and provided relief in patients with CIPN.

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Med Oncol (2017) 34: 162.

Therapeutic, Capsaicin, Neuropathic pain, Nerves, Neuropeptide releasing agent, Efficacy, Numeric rating



scale, Topical