Study overview – Transtec® effective in treatment of neuropathic pain

Experimental studies and clinical observations have confirmed the efficacy of buprenorphine in the treatment for neuropathic pain.

Animal studies

- Different rodent models of acute and chronic pain showed that administration of buprenorphine resulted in a strong and dose-dependent alleviation of tactile allodynia in a spinal ligation model. It also caused a dose-dependent inhibition of both mechanical hyperalgesia and cold allodynia. It was concluded that buprenorphine is fully effective both in mononeuropathic and polyneuropathic pain models in animals (Christoph et al., 2005).
- Different models of neuropathic pain demonstrated buprenorphine’s good anti-nociceptive efficacy with some distinct characteristics compared to other opioids such as morphine and fentanyl, indicating that buprenorphine may be of special interest in the management of neuropathic pain in humans (McCormack, 1998; 1999).
- A study comparing the anti-nociceptive and anti-hyperalgesic effect of buprenorphine found that in normal rats it produced dose–dependent anti-nociception on the hot plate test. In rats with peripheral nerve or spinal cord injury, buprenorphine alleviated neuropathic pain-related behaviours at doses comparable to those producing anti-nociception (Kouya et al., 2002).

Human trials

- A double-blind randomized study of patients who developed neuropathic pain following thoracic surgery, showed i.v. buprenorphine produced a reduction of spontaneous pain symptoms at doses significantly higher than that needed to relieve short-term postoperative pain (Benedetti et al., 1998).
- An experimental human pain model has been investigated in a randomized, double-blind, placebo controlled, cross-over study following the time course of analgesic and anti-hyperalgesic effects of s.l. and i.v. buprenorphine. It was shown that for both application forms the anti-hyperalgesic effects were more pronounced and longer lasting compared to the analgesic effects. This was in contrast to the behaviour of pure μ-receptor agonists (Koppert et al., 2005).

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In studies of patients with moderate cancer and non-cancer pain, some of whom were suffering from chronic neuropathic pain, Transtec® was found to provide effective and sustained pain relief, with few adverse events (Rodriguez-Lopez *et al*., 2004. Griessinger *et al*., 2005).

**Case reports**

- Two cases of neuropathic pain and two cases of nociceptive pain with a significant neuropathic component have been treated with Transtec®. In each case, sufficient pain relief was obtained and the patients encountered no problems in switching from their previous therapy. Compared to the previous opioids used, dose reductions of up to 30% were achieved without limitation in analgesic efficacy. (Likar and Sittl, 2005).
- The efficacy of Transtec® has been investigated in eight patients with neuropathic pain of various aetiologies. Pain changed from severe to mild-moderate pain in 50% of the cases. In general the treatment with Transtec® was well tolerated (Orts *et al*., 2006).
- A prospective open-label study of 18 diabetic patients evaluated the analgesic efficacy, tolerability and acceptability of Transtec in patients with severe chronic pain from diabetic foot. A significant reduction in the severity of pain was observed in the first 15 days that was maintained throughout the trial. Buprenorphine was well tolerated and sleep patterns showed improvement (Duse, 2006).

**Literature review**

- A review of a variety of studies of cancer patients whose pain frequently presents with a neuropathic component concluded that transdermal buprenorphine was efficacious and had superior safety with respect to respiratory depression, immunological and renal effects compared to standard WHO step III opioids. It was suggested that this efficacy could be attributed to the pronounced anti-hyperalgesic effect of buprenorphine which has been proven in a human pain model (Sittl, 2006).
References