Anesth Analg
2008 Dec;107(6):2048-55.
doi: 10.1213/ane.0b013e31818881ca.

Single dose analgesic efficacy of tapentadol in postsurgical dental pain: the results of a randomized, double-blind, placebo-controlled study

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- PMID: **19020157**
- DOI: 10.1213/ane.0b013e31818881ca

Abstract

Background: Tapentadol is a novel, centrally acting analgesic with two modes of action, combining mu-opioid agonism and norepinephrine reuptake inhibition in a single molecule. We compared the efficacy and tolerability of tapentadol and a standard dose of morphine with placebo in a model of moderate-to-severe postoperative dental pain.

Methods: Patients undergoing mandibular third molar extraction and experiencing moderate-to-severe pain postsurgery were randomized to receive single, oral doses of tapentadol HCl (25, 50, 75, 100, or 200 mg), morphine sulfate (60 mg), ibuprofen (400 mg; used to establish model sensitivity), or placebo. Mean total pain relief over 8 h (TOTPAR-8) was the primary end point. Secondary end points included mean total pain relief over 4 h (TOTPAR-4) and onset of analgesia. Pairwise comparisons of study drug to placebo were assessed using the Fisher least significant difference test. Adverse events were recorded.

Results: Four hundred patients were randomized to treatment and completed the study. Compared with placebo, mean TOTPAR-8 was significantly greater for tapentadol HCl 50 mg ($P = 0.041$), 75 mg ($P = 0.001$), 100 mg ($P < 0.001$), and 200 mg ($P < 0.001$); morphine sulfate 60 mg ($P < 0.001$); and ibuprofen 400 mg ($P < 0.001$) in a nonparametric analysis of the primary end point. The significantly higher TOTPAR-8 score for ibuprofen compared with placebo established the sensitivity of the model. Mean TOTPAR-4 was higher and onset of action appeared more rapid for tapentadol HCl 200 mg than morphine sulfate 60 mg. Pain relief scores with morphine sulfate 60 mg were between those of tapentadol HCl 100 and 200 mg. The incidence of nausea and vomiting appeared to be lower with all doses of tapentadol HCl compared with morphine sulfate 60 mg, but was not statistically significant.

Conclusion: Single oral doses of tapentadol 75 mg or higher effectively reduced moderate-to-severe postoperative dental pain in a dose-related fashion and were well-tolerated relative to

morphine. These data suggest that tapentadol is a highly effective, centrally acting analgesic with a favorable side effect profile and rapid onset of action.

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