EPIDURAL ANALGESIA FOR PAIN RELIEF FOLLOWING HIP OR KNEE REPLACEMENT

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A B S T R A C T

Background

Hip and knee replacement are common operative procedures to improve mobility and quality of life. Adequate pain relief is essential in the postoperative period to enable ambulation and initiation of physiotherapy. Lumbar epidural analgesia is a common modality for pain relief following these procedures. As the use of epidural analgesia may delay the initiation of anticoagulant thromboprophylaxis due to the potential risk of epidural hematoma, a synthesis of the evidence is necessary to determine whether or not alternative analgesic modalities are worse, equivalent, or better than epidural analgesia.

Objective

Is lumbar epidural analgesia more efficacious than systemic analgesia or long-acting spinal analgesia for postoperative pain relief in patients after elective hip or knee replacement?

Criteria for considering studies for this review

MEDLINE, EMBASE, CINAHL, LILACS, and the CENTRAL were searched from their inception to June 2001.

Selection criteria

A study was included if it was a randomized or pseudo randomized controlled clinical trial (RCT) of patients undergoing hip or knee replacement, in which postoperative lumbar epidural analgesia was compared to other methods for pain relief. Study selection was performed unblinded in duplicate.

Data collection and analysis

Data were collected unblinded in duplicate. Information on patients, methods, interventions, outcomes (pain relief, postoperative function, length of stay) and adverse events were recorded. Methodological quality was assessed using a validated 5-point scale. Meta-analysis was conducted when sufficient data existed from two or more studies. Heterogeneity testing was performed using the Breslow-Day method. The fixed-effect model was used unless heterogeneity was present, in which case, a random-effects model was used. Continuous data were summarized as weighted mean differences (WMD) or standardized mean differences (SMD) with 95% confidence intervals (CI). Dichotomous data were summarized as odds ratios (OR) and numbers-needed-to-treat-to-benefit (NNT) or numbers-needed-to-treat-to-harm (NNH) with their respective 95% CI.

Main results

In the first four to six hours after surgery, patients receiving epidural analgesia had less pain at rest, based on visual analog scores (VAS), than patients receiving systemic analgesia (SMD -0.77; 95% CI -1.24 to -0.31). This effect was not statistically significant by 18 to 24 hours (SMD -0.29; 95% CI -0.73 to 0.16). These observations were based only on studies evaluating populations

consisting of total knee replacements alone or mixed populations of total hip or total knee replacements. For pain relief with movement after surgery, patients receiving epidural analgesia reported lower pain scores than patients receiving systemic analgesia in all four studies examining these outcomes. The choice of epidural agents may also influence the extent to which epidural analgesia differs from systemic analgesia. The differences between epidural analgesia and systemic analgesia in the frequency of nausea and vomiting (OR 0.95; 95% CI 0.60 to 1.49) or depression of breathing (OR 1.07; 95% CI 0.45 to 2.54) were not statistically significant. Sedation occurred less frequently with epidural analgesia (OR 0.30; 95% CI 0.09 to 0.97) with a number-needed-to-harm of 7.7 (95% CI 3.5 to 42.0) patients for the systemic analgesia group. Retention of urine (OR 3.50, 95% CI 1.63 to 7.51; NNH 4.5, 95% CI 2.3 to 12.2), itching (OR 4.74, 95% CI 1.76 to 12.78; NNH 6.8, 95% CI 4.4 to 15.8), and low blood pressure (OR 2.78, 95% CI 1.15 to 6.72; NNH 6.7, 95% CI 3.5 to 103) were more frequent with epidural analgesia compared to systemic analgesia. There were insufficient numbers to draw conclusions on the effect of epidural analgesia on serious postoperative complications, functional outcomes, or length of hospital stay.

Authors' conclusions

Epidural analgesia may be useful for postoperative pain relief following major lower limb joint replacements. However, the benefits may be limited to the early (four to six hours) postoperative period. An epidural infusion of local anaesthetic or local anaesthetic-narcotic mixture may be better than epidural narcotic alone. The magnitude of pain relief must be weighed against the frequency of adverse events. The current evidence is insufficient to draw conclusions on the frequency of rare complications from epidural analgesia, postoperative morbidity or mortality, functional outcomes, or length of hospital stay.