

THORACIC EPIDURALLY ADMINISTERED BUPIVACAINE IMPAIRS LOWER URINARY TRACT FUNCTION INDEPENDENT OF THE ADDITION OF FENTANYL OR OPEN RENAL SURGERY: A RANDOMIZED DOUBLE BLIND STUDY.

Hypothesis / aims of study

In a previous observational study, lower urinary tract function was impaired during thoracic epidural analgesia (TEA) after open renal surgery, resulting in clinically relevant postvoid residuals. The objectives of this study were to determine if TEA per se and, if so which epidurally administered drugs, or surgery are behind the changes in lower urinary tract function.

Study design, materials and methods

Randomized, double blind, single center study. Forty patients with no lower urinary tract symptoms (IPSS \leq 7 and postvoid residual <100ml) were randomized to receive an epidural regimen with bupivacaine 0.125% or bupivacaine 0.125% with fentanyl 2 μ g/ml. All patients underwent urodynamic investigations before TEA, during TEA preoperatively and during TEA 2-3 days after open kidney surgery by lumbotomy. All patients received a TEA placed at the insertion site interspace T 8-9. Primary outcome was the difference in postvoid residuals between the bupivacaine group and bupivacaine/fentanyl group postoperatively.

Results

The difference in postvoid residual during TEA postoperatively vs before TEA was 180 ml in the bupivacaine group [range: -85, 645] ($P<0.001$) and 235 ml in the bupivacaine/fentanyl group [0, 580] ($P<0.001$), without a significant difference between the groups ($P=0.579$). The decrease in detrusor pressure at maximum flow rate was more pronounced in the bupivacaine/fentanyl group both postoperatively and preoperatively: -18 cmH₂O [-64, 0], $P<0.001$ and -10 [-64, -2] $P<0.001$ than in the bupivacaine group: -12 [-43, 22], $P=0.002$ and -3 [-35, 13], $P=0.132$, respectively. These differences were significant between the groups both postoperatively ($P=0.045$) and preoperatively ($P=0.015$).

Interpretation of results

Independent of adding fentanyl to bupivacaine, TEA lead to detrusor underactivity resulting in clinically relevant postvoid residuals pre- and postoperatively.

Concluding message

Thoracic epidurally administered bupivacaine resulted in clinically relevant postvoid residuals on the basis of impaired detrusor function both pre- and postoperatively. The addition of fentanyl enhanced this effect without generating greater postvoid residual postoperatively. Surgery did not further impair voiding function.

Disclosures

Funding: none **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Kant. Ethikkommission Bern **Helsinki:** Yes **Informed Consent:** Yes