44233 - GABAPENTIN PREVENTS TOURNIQUET-INDUCED HYPERTENSION

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INTRODUCTION: Prolonged tourniquet inflation in orthopedic surgery is often associated with severe pain and a hyperdynamic circulatory response. Activation of central neurons is an important factor in tourniquet-induced hypertension (1). The anticonvulsant gabapentin has demonstrated its efficacy to reduce the elements of central sensitization (2). We then hypothesized that preoperative gabapentin would blunt the hyperdynamic response during prolonged tourniquet use under general anesthesia.

METHODS: The institutional review board of our hospital approved the study and written informed consent was obtained from each patient. Thirty ASA I patients undergoing knee cruciate ligament reconstruction were randomized 1:1 to receive oral gabapentin 1200 mg or placebo 2 hours before surgery and studied in a double-blinded manner. The patients had standard monitoring in place (non-invasive arterial pressure, electrocardiography, pulse oximetry, end-tidal CO₂, and anesthetic concentrations). After intubation, anesthesia was maintained with sevoflurane in oxygen 2 L/min and all patients were mechanically ventilated to maintain the end-tidal CO₂ level at 35-40 mmHg. The end-tidal sevoflurane concentration was kept at 2.8% to 3.2% during the study period. Tourniquet inflation was performed at thigh level by using 350 mmHg of pressure in all patients. Systolic, diastolic arterial pressure (SAP and DAP) and heart rate (HR) were recorded at 0, 15, 30, 45, and 60 min after start of tourniquet inflation. For categorical variables expressed as percentages of patients, groups were compared by using Fisher's exact test. Continuous data were compared by using the two-tailed student's t-test. Changes in SAP, DAP and HR values were analyzed by two-way repeated-measures analysis of variance followed by bonferroni's multiple comparison test.

RESULTS: Both groups of patients were similar with regard to demographic characteristics and tourniquet time. Baseline arterial pressure and heart rate at the start of tourniquet inflation were not significantly different between the two groups. After tourniquet inflation, SAP was significantly increased at 45 min and 60 min when compared with that at baseline in the placebo group. Although SAP of the gabapentin group increased at 60 min, the increment was not significant. SAP at 60 min in the placebo group was significantly higher than that in the gabapentin group (148 ± 18 mmHg versus 126 ± 14 mmHg; $p < 0.01$). DAP and HR gradually increased from 45 min to 60 min in both groups, but these differences were not significant.

DISCUSSION: The results of this study showed that preoperative oral gabapentin significantly prevented arterial blood pressure and heart rate increases during prolonged tourniquet inflation in patients undergoing knee cruciate ligament reconstruction under general anesthesia.

REFERENCES: 1. *Anaesthesia* 2001;56:534-45. 2. *Anesthesiology* 2004;101:1400-8.