44201 - MODULATION OF INFLAMMATORY RESPONSE BY REGIONAL ANESTHESIA IN KNEE ARTHROPLASTY

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INTRODUCTION: Knee arthroplasty evokes a neuroendocrine –inflammatory stress response, which, if minimized may facilitate the postoperative recovery process. Neuraxial blockade has been shown to attenuate the metabolic-endocrine response, but not the local and systemic inflammatory response. There is some recent evidence available from animal studies that deafferentation of the limb alter and modulate the systemic and local inflammatory response [1] The purpose of this study was to verify whether continuous deafferentation with local anesthetics as compared to morphine based PCA causes greater attenuation of systemic inflammatory and endocrine stress response post knee arthroplasty.

METHODS: With ethics approval twelve, otherwise healthy, patients scheduled for elective primary arthroplasty were randomly allocated to two groups of 6 patients each. All patients received spinal anesthesia with 15 mg hyperbaric bupivacaine 0.5%. The control group received patient controlled analgesia (PCA group) with i.v. morphine for 48h, while the patients in the regional group (RA group) received a continuous lumbar plexus block with 0.2% ropivacaine 8 cc/h for 48 h and continuous sciatic block with 0.2% ropivacaine 4cc/h for 48 h .

Venous blood samples were taken before surgery and at 3, 8, 24 and 48 h after surgery to measure serum C-reactive protein and interleukine-6 (IL-6), and plasma cortisol, glucose and lactate. Other measurements included verbal rating scale for pain at rest and with movements, body temperature and white cell count. Primary outcome was the inflammatory response (CRP and IL-6).

RESULTS: Demographic characteristics and clinical data were similar for both groups. There was no difference in cortisol and plasma metabolites between the two groups. In contrast, there was a tendency toward a blunted inflammatory response in patients with a regional anesthesia. CRP levels were significantly different at 24 and 48 hours. The area under the curve of the CRP levels was lower in the group of patients under regional anesthesia, 2363 (IQ 2009 – 2914) mg•h•L-1 versus 4716 (IQ 3129 – 6558) mg•h•L-1 (p<0.005). When compared to baseline, the mean relative increase of IL-6 reached 21 (IQ 5.3 – 26.6) times in the PCA group versus 5.9 (IQ 4.9 – 8.0) times in the regional anesthesia group (p<0.03).

CONCLUSIONS: This preliminary data would indicate that deafferentation of the limb with local anesthetics attenuate the postoperative systemic inflammatory response. The role of spinal anesthesia, the dose of local anesthetics used for the deafferentation and the

possible clinical implications of this inflammatory modulation need to be clarified further.

REFERENCES:

1. Br J Anaesth 2005;95:243-6.