

## **Muscle compartment pressure, intraocular pressure and inflammatory response after cardiopulmonary bypass**

L. Simonardottir, B. Torfason, E. Stefansson, B. R. Ludviksson, J. Magnusson, Reykjavik, Iceland

Hemodilution is always considerable during cardiopulmonary bypass. This dilution and activation of the inflammatory system increases unavoidable edema after cardiac surgery. Previous study reveal that intra compartment muscle pressure increases significantly after cardiac surgery for at least 24 hrs. Hemodilution was not the only cause as the compartment pressure stayed increased after the colloid osmotic pressure had recovered.

The purpose of this study was primarily to find out if any of the factors described below decreases compartment pressure and inflammatory response and secondly if there was a relationship between changes in muscle compartment pressure and intraocular pressure.

Thirty six CABG and AVR patients were randomly allocated in four groups. In group A albumin and mannitol were added in the priming fluid. The surface of the tubing system and oxygenator was heparin coated in group B. Group C had leukocyte depletion arialfilter and D was a control group. Muscle compartment pressure was continuously measured pre op. and for 24 hrs. Intraocular pressure was measured in the control group. Samples for COP, complement C3d, TNF $\alpha$  and white blood cell count were taken and intraocular pressure measured at following timepoints; 1) after anesthetic, 2) 5 min. after aortic crossclamping, 3) 10 min. after the aortic crossclamp was removed, 4) 10 min. after start of protamin injection, 5) two hours after sample 4 and 6) 24 hrs after the start of the operation. Registration was made of fluid balance, usage of volume expanders, and time in ICU and patient status.

The muscle compartment pressure was significantly lower in group A comparing to the control group. Intraocular pressure changed in two samples. The muscle compartment pressure and the intra ocular pressure changes behaved differently as the ocular pressure was much faster to recover. The volume balance, leukocyte count, COP, TNF $\alpha$  and C3d all changed significantly from its starting value, but there were no significantly difference between the groups and the control group.

It is concluded that the muscle compartment pressure can be decreased after cardiac surgery by adding albumin and mannitol to the pump prime, presumably by decreasing edema and total body inflammatory response.