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S. Heller, Axel R. Heller, R. Urbaschek, Thea Koch

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A.343 Effects of pentoxifylline on bacterial clearance after haemorrhage and endotoxaemia in rabbits

S. Heller¹, A. Heller¹, R. Urbaschek², T. Koch¹. ¹ Dept. of Anaesthesiology and Op. Intensive Care Medicine, Univ. of Heidelberg; FRG; ² Dept. of Med. Microbiology Faculty of Clinical Medicine Mannheim, Univ. of Heidelberg; FRG

Introduction: Methylxanthines, like Pentoxifylline (POF), have been shown to attenuate tissue injury in hemorrhagic and endotoxin shock (1,2). Aim of this study was to investigate whether POF affects bacterial-clearance of the organism in states of hemorrhage and endotoxemia.

Methods: To enable quantification of the clearance process, defined numbers of exogenous *Escherichia (E.) coli* (1.3×10^8 CFU) were injected intravenously 60 min after induction of hemorrhage ($n = 7$), and after infusion of endotoxin ($40 \mu\text{g/kg/h}$) ($n = 7$) in anaesthetised rabbits. Hemorrhage was induced by bleeding, standardised by defined reduction of mean arterial pressure (30% of baseline value). Animals without intervention served as controls ($n = 7$). To evaluate potential effects of POF on bacterial elimination and killing in states of hemorrhage and endotoxemia, blood-clearance of *E. coli* and organ colonisation were investigated after pretreatment with POF (50 mg/kg/h , $n = 14$). Parameters monitored were rates of bacterial elimination from the blood, arterial pressure, blood gases and white blood cell counts. 180 min after bacterial injection, the animals were sacrificed and tissue samples of liver, kidney, spleen and lung were collected for microbiological examinations.

The logarithm of bacterial counts was used for statistical comparison. Differences between groups were tested by ANOVA and subsequent multiple range test (LSD).

Results: Compared with controls, hemorrhage and endotoxemia resulted in a prolonged elimination of the injected *E. coli* out of the blood. The delayed blood clearance was associated with a significantly ($p < 0.001$) higher colonisation of all organs, especially of the lung with more than 100-fold higher counts compared to controls. Pretreatment with POF did not alter blood clearance of *E. coli*, but reduced significantly ($p < 0.05$) the colonisation of lung and kidney in the hemorrhage and endotoxemia group.

Conclusion: Hemorrhage, and endotoxemia induced impaired bacterial clearance from the blood associated with altered organ distribution patterns. Pretreatment with POF may attenuate bacterial colonisation of the organs in states of hemorrhage and endotoxemia, thus reducing the risk of bacterial infections.

References

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