Beck et al. Intensive Care Medicine Experimental 2014, 2(Suppl 1):P34
http://www.icm-experimental.com/content/2/S1/P34

Intensive Care Medicine Experimental
a SpringerOpen Journal

POSTER PRESENTATION Open Access

0589. Pravastatin exerts opposite effects on splanchnic microcirculatory oxygenation during sham or septic conditions in an animal model of polymicrobial sepsis

C Beck*, F Barthel, A Herminghaus, C Vollmer, I Bauer, O Picker

From ESICM LIVES 2014
Barcelona, Spain. 27 September - 1 October 2014

Introduction

In addition to lipid-lowering effects HMG-CoA reductase inhibitors like pravastatin also modulate the microcirculation [1]. The exact mechanisms are yet unknown and results are heterogeneous, with both positive and negative effects on endothelial microvascular function [2,3] being reported.

Objectives

The aim of this study was to evaluate the effects of pravastatin on the microcirculatory oxygenation of the colon in a rodent model of polymicrobial sepsis.

Methods

The data derive from a total of 40 experiments on rats studied with approval of the local animal care and use committee. Pravastatin (0.2 mg/kg) or NaCl were injected subcutaneously 18 h prior to sepsis induction (colon ascendens stent peritonitis) or sham operation. 24 h after induction of sepsis the animals were re-laparotomized under general anaesthesia and received ongoing fluid replacement and pressure-limited ventilation for 120 min. Macrohemodynamic variables were recorded and microcirculatory oxygen supply (μDO_2) and post-capillary oxygen saturation (μHbO_2) of the colon were measured simultaneously via laser Doppler and tissue reflectance spectrophotometry, respectively. Data are presented as means ± SD, 2-way ANOVA followed by Dunnett (vs. baseline) or Tukey (between groups).

Results

1.) In pravastatin pre-treated sham animals the microcirculatory oxygenation μHbO_2 declined by 9.8 ± 9.4% with no change in the NaCl group. Figure 1.

2.) During sepsis pravastatin pre-treatment ameliorated the deterioration of μHbO_2 (-5.5 ± 8.2%), compared to a significant decrease in the NaCl group (-8.4 ± 8.7%). Figure 2.

3.) Macrohaemodynamic variables and microcirculatory oxygen supply of the colon did not differ between the groups.

Conclusion

Pravastatin has opposite effects on splanchnic microcirculatory oxygenation depending on septic or non-septic conditions. These effects are independent of the macrocirculation or microcirculatory oxygen supply.

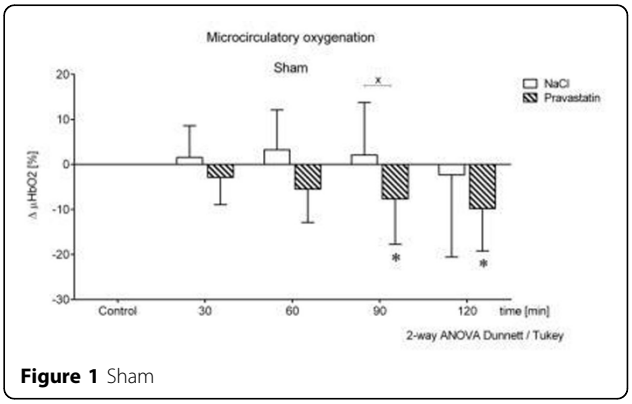

Figure 1 Sham

University Hospital Duesseldorf, Department of Anaesthesiology, Duesseldorf, Germany

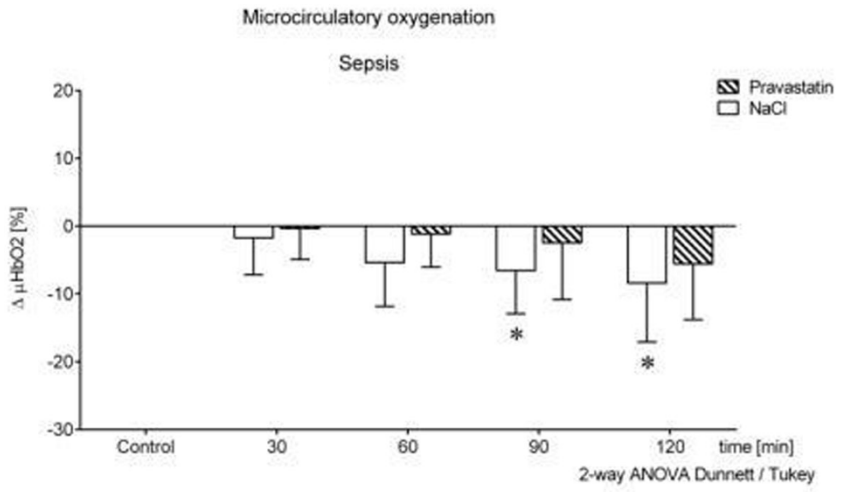

Figure 2 Sepsis

Published: 26 September 2014

References

1. McGown CC, Brookes ZL: **Beneficial effects of statins on the microcirculation during sepsis: the role of nitric oxide.** *Br J Anaesth* 2007, **98**:163-175.
2. La Mura V, Pasarin M, Meireles CZ, Miquel R, Rodriguez-Vilarrupla A, Hide D, Gracia-Sancho J, Garcia-Pagan JC, Bosch J, Abraldes JG: **Effects of simvastatin administration on rodents with lipopolysaccharide-induced liver microvascular dysfunction.** *Hepatology* 2013, **57**:1172-1181.
3. Tehrani S, Mobarrez F, Lins PE, Adamson U, Wallen HN, Jorneskog G: **Impaired endothelium-dependent skin microvascular function during high-dose atorvastatin treatment in patients with type 1 diabetes.** *Diabetes & vascular disease research* 2013, **10**:483-488.

doi:10.1186/2197-425X-2-S1-P34
Cite this article as: Beck *et al.*: 0589. Pravastatin exerts opposite effects on splanchnic microcirculatory oxygenation during sham or septic conditions in an animal model of polymicrobial sepsis. *Intensive Care Medicine Experimental* 2014 **2**(Suppl 1):P34.