Microcirculatory disturbances in obese patients undergoing cardiac surgery with cardiopulmonary bypass

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Introduction: Cardiac surgery with cardiopulmonary bypass (CPB) is associated with perioperative disturbances in microcirculatory perfusion. It is assumed that microcirculatory perfusion is additionally compromised in obese compared to lean patients, but the number of studies focusing on perioperative microcirculatory perfusion in the obese population are limited. In the present study we therefore studied whether obesity is associated with more severe alterations in microvascular perfusion compared to lean patients during cardiac surgery.

Methods:

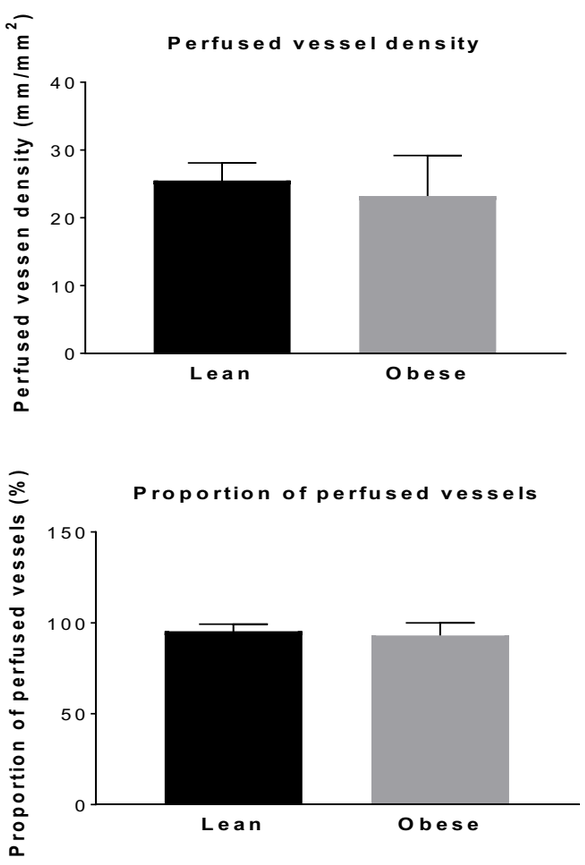
- Obese (BMI>32 kg/m2) vs. lean (BMI 20-25 kg/m2) patients
- Cardiac surgery with cardiopulmonary bypass
- Exclusion: type II diabetes
- Sidestream Dark Field imaging of sublingual microcirculation
- Perfused vessel density
- Proportion of perfused vessels

Patient characteristics:

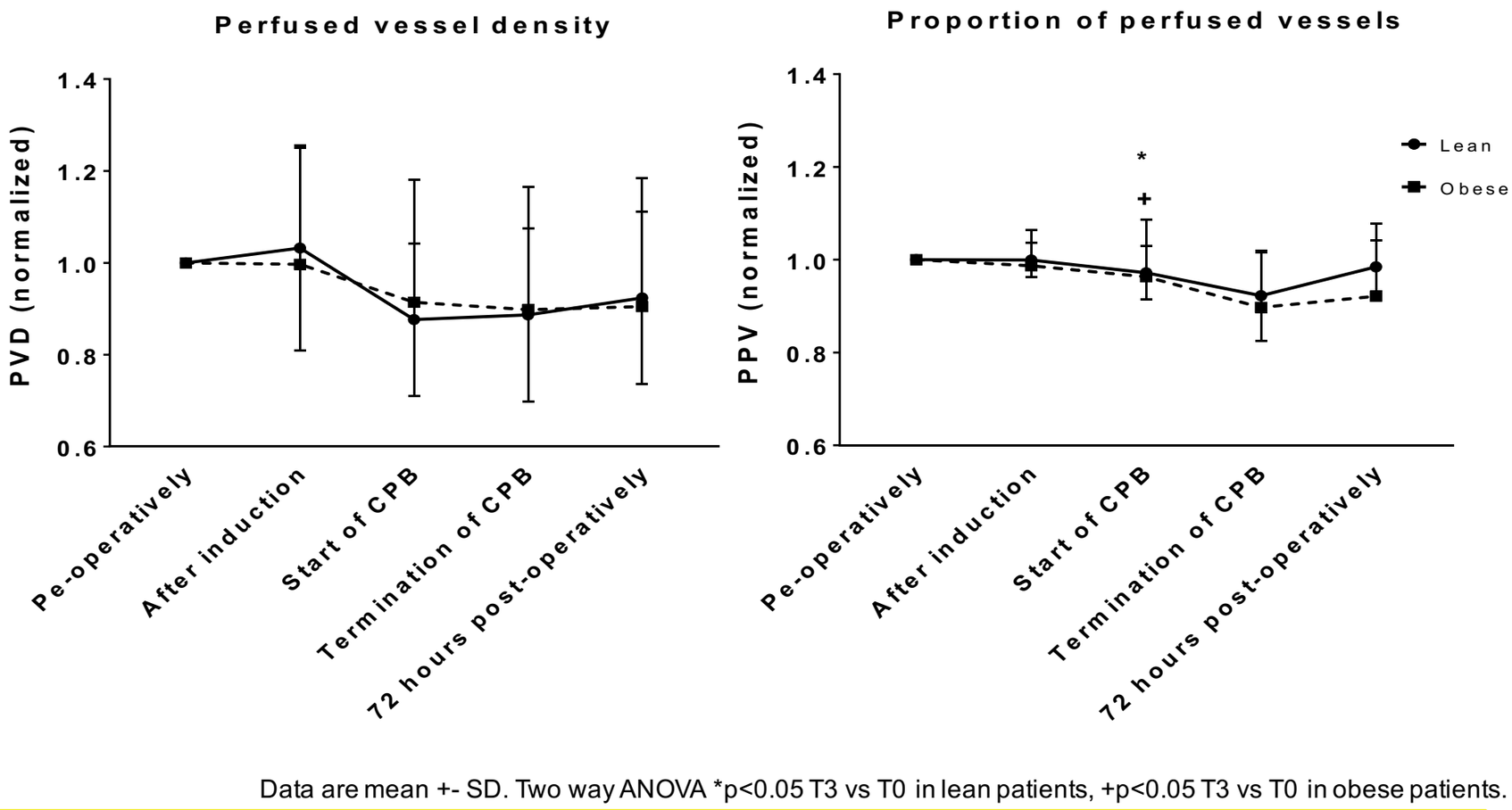
	Lean (n=22)	Obese (n=14)
Gender (male/female)	M: 18 F: 4	M: 12 F: 2
Age (years)	72 ± 9	67 ± 11
Length (cm)	177 ± 9	173 ± 7
Weight (kg)	73 ± 9	104 ± 14*
BMI (kg/m²)	23.2 ± 1.4	34.8 ± 2.8*
HbA1c (mmol/L)	39.2 ± 3.7	42.0 ± 4.4
Duration of surgery (min)	265 ± 89	252 ± 51
Duration of CPB (min)	118 ± 51	112 ± 23

Microcirculatory perfusion

Baseline



During surgery



Data are mean +- SD. Two way ANOVA *p<0.05 T3 vs T0 in lean patients, +p<0.05 T3 vs T0 in obese patients.

Conclusions: In contrast to our assumption, microcirculatory perfusion in obese patients was unaffected at baseline, and similarly affected by anesthesia and surgery with cardiopulmonary bypass compared to lean patients.