Abstract: **P102**

**Effects of intravenous administration of HBOC-201 in two distinct open-chest pig models of myocardial infarction**

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Background: Hemoglobin oxygen carrier HBOC-201 can act as a direct oxygen donor and facilitate diffusive oxygen delivery between red blood cells and tissues to improve tissue oxygenation. Previously we reported that pre-oxygenated HBOC-201 infused distal to a coronary occlusion, fully restored myocardial aerobic metabolism and contractile function.

Purpose: To study the effects of systemic administration of HBOC-201 on left ventricular (LV) function and myocardial infarct size in two distinct open-chest swine models: (i) total coronary artery occlusion (CAO) of the left anterior descending (LAD) coronary artery for 45-min and (ii) coronary artery stenosis (CAS) by placing a stenosis catheter with an inner diameter of 0.35 mm for 120-min in the LAD reducing flow by 70±2%.

Methods: Five minutes after the onset of CAO, 8 swine received HBOC-201 (0.5 g/kg i.v.), while 8 swine received an equivalent volume of the plasma expander Voluven during 25-min. Fifteen minutes after the onset of CAS, 14 swine received HBOC-201 (1 g/kg i.v.) alone, 12 swine received HBOC-201 (1 g/kg i.v.) combined with nitroglycerine (NTG), while 16 swine received an equivalent volume of the plasma expander Voluven during 30-min. Following restoration of LAD perfusion, hearts were reperfused for 120-min and the area-at-risk (AR) and area of infarction (IA) were determined from which infarct size was calculated as IA/AR.

Results: HBOC-201 did not ameliorate ischemia-induced loss of regional systolic segment shortening (from 16±2% to -4±1% in CAO-model and from 20±1% to -3±1% in CAS-model) in the anterior LV wall and had no effect on IS in either model compared to the corresponding controls (CAO-model: 55±9% vs 55±9% and CAS-model: 33±5% vs 39±5%). To compensate for scavenging of nitric oxide by HBOC-201, we co-infused NTG during HBOC-201 infusion in a dose that prevented HBOC-201-induced systemic and coronary vasoconstriction. However, even in the presence of NTG, HBOC-201 unaffected regional dysfunction or limit IS (CAS-model: 40±6%).

Conclusion: Despite the established oxygen transport capacity of HBOC-201, intravenous administration of HBOC-201 did not afford cardioprotection in the setting of irreversible ischemia-reperfusion damage in pigs.