

SCA 65

**PRO-INFLAMMATORY RESPONSE AND INFECTIONS AFTER ANTIOXIDATIVE INTERVENTION IN PATIENTS AFTER CARDIAC SURGERY**

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**Introduction:** Patients undergoing cardiac surgery with cardiopulmonary bypass (CPB) suffer damage from free radical oxygen species (ROS), especially after cardiopulmonary bypass by ischemia-reperfusion. As previous studies have reported influence of ROS on the immune system (1) we investigated the effects of antioxidants on interleukin (IL)6, and IL10 levels and their relation to infectious complications.

**Methods:** After ethical approval and written informed consent, 50 patients scheduled for CPB were included in this prospective randomised placebo controlled study. 23 patients received 350 mg per kg body weight acetylcysteine, 400 mg alpha-tocopherol and 100 µg selene i.v. on the day of surgery starting application 30 min prior surgery and 900 mg/d acetylcysteine, 400 mg/d alpha-tocopherol and 300 µg/d selenase until day 3 after surgery. Plasma-levels of IL6 and IL10 were determined pre- and postoperatively at defined points of measurement using standard ELISA. Infections were determined according to the criteria of the Center of Disease Control (2). Statistical analysis was performed with the Mann-Whitney-U test.

**Results:** Basic patient characteristics did not differ between groups. We found no significant differences regarding levels of IL6 and IL10 between patients receiving study medication or placebo. Patients with postoperative infectious complications had increased levels of IL6 preoperatively (17.3 vs. 43.8 pg/mL ; p<0.01). In these patients the levels of IL6 remained increased on admission to the ICU (137.3 vs. 388.9 pg/mL; p p<0.01) as well as on day 1 (70.0 vs. 147.3 pg/mL; p<0.01) and day 3 (48.2 vs. 128.4 pg/mL; p p<0.01) after surgery. Levels of IL10 as well as conventional labo-

ratory markers were not significantly different between groups. Interestingly, in patients with postoperative infectious complications the postoperative pro-inflammatory response was even more enhanced in patients receiving study medication, whereas IL10 did not differ. In patients with infectious complications after CPB receiving verum medication the duration of ICU treatment was elevated (Table 1).

**Conclusion:** Patients with infectious complications after CPB had significantly elevated levels of IL6 before surgery. After antioxidative treatment patients with infections demonstrated even more enhanced postoperative cytokine responses. In selected patients this immuno-modulatory treatment effect might help to attenuate early postoperative immunosuppression leading to a - in tendency, but not significant – decrease in ICU stay for all patients receiving antioxidative treatment. However, as the duration of ICU treatment was elevated in the verum group for patients with severe infections, the beneficial effect of an antioxidative treatment remains uncertain after CPB.

**References:**

1. Frering B et al. *J Thorac Cardiovasc Surg* 1994;
2. Garner J et al. *Am J Infection Control* 1988

Table 1

	Patients with severe infections			All patients		
	Verum n=6/23	Placebo n=7/27	P	Verum n=23	Placebo n=27	P
IL6 preoperatively (pg/mL)	42.5 (24.4-88.4)	43.8 (25.9-59.6)	0.99	18.5 (5.7-56.9)	29.9 (6.3-50.0)	0.76
IL6 admission ICU (pg/mL)	491.3 (250.6-958.7)	388.9 (201.8-933.9)	0.93	197.8 (121.5-450.1)	223.7 (97.6-457.0)	0.67
IL6 ICU day 1 (pg/mL)	<b>208.0 *</b> (151.7-245.5)	<b>94.5 *</b> (48.3-147.2)	<b>0.03</b>	84.5 (48.4-172.7)	83.1 (43.7-101.8)	0.36
IL6 ICU day 3 (pg/mL)	130.9 (93.1-141.3)	113.4 (54.3-218.8)	0.69	73.2 (33.6-117.6)	64.9 (43.4-128.5)	0.62
Length of ventilation (h)	113 (12-401)	75 (22-243)	0.94	14 (12-24)	14 (10-58)	0.87
ICU stay (d)	20 (5-26)	7 (6-12)	0.15	1 (1-5)	3 (1-6)	0.41
Severe Infections	6	7	0.62	6	7	0.62

Figures are given as median (quartiles)

\* p<0,05