In contrast to CD64 expression, CD14 expression is persistently downregulated on polymorphonuclear cells (PMN) but not on monocytes of patients with septic shock

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Objectives: To investigate the time course of surface CD14 and CD64 on PMN and on monocytes, in postoperative/post-traumatic patients with septic shock, from the first day of septic shock onwards.

Methods: Over a six month period, in 22 patients admitted to the intensive care unit, a daily analysis of CD14 and CD64 surface expression on PMN and monocytes was performed by flow cytometry (Becton Dickinson, USA). All patients suffered from septic shock for three days at least. Box plots of the mean intensity (MnI) values of surface CD14 and CD64 are given for days 1–14. Statistical analysis was performed by Wilcoxon rank sum test ($P < 0.05$; significant intragroup differences between the day indicated by a star [*] and the following days denoted by a line over the respective days [I–I]). In addition, normal range of controls [C] is presented by a box plot.

Results: CD64 is significantly upregulated on PMN and monocytes compared to healthy volunteers, whereas CD14 expression is significantly decreased on all days. Regarding the time course, a significant decrease in CD14 and CD64 expression on PMN occurred within the first three days. In monocytes, compared with the first two days, CD64 expression was diminished from day 3 onwards, however, CD14 expression on day 4, only.

Conclusions: Upregulation of CD64 expression on PMN and monocytes indicates leukocyte activation in patients with septic shock. In contrast to CD64, surface CD14 on PMN decreased and is continuously downregulated over time, whereas no decrease in surface CD14 on monocytes is observed. This may be due to different membrane anchors and/or different LPS–CD14 signaling in PMN and monocytes in patients during septic shock.

Respiratory burst activity of PMN is increased in most patients during septic shock

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Objectives: To investigate whether burst activity of polymorphonuclear cells (PMN) of postoperative/post-traumatic patients during septic shock is predominantly increased, unchanged or decreased compared to that of healthy volunteers.

Methods: Over a period of six months, 12 patients (four survivors and eight nonsurvivors) with septic shock for at least three days duration were studied during their period of septic shock on the intensive care unit. E. coli induced burst activity of granulocytes was determined by flow...