Influence of norepinephrine on isolated arterial and jugular venous neutrophils in patients with severe traumatic brain injury

Summary / Zusammenfassung

BACKGROUND:
Neutrophils contribute to evolving tissue damage by releasing various cytokines which, in turn, induce a plethora of different destructive cascades. Stimulation of adrenergic receptors by e.g., norepinephrine which is administered in clinical routine can activate neutrophils. This, in turn, could aggravate underlying tissue damage.

MAIN HYPOTHESES:
1. Cerebral sequestration of neutrophils reflected by positive arterio-jugular venous differences in neutrophils coincide with signs of cerebral metabolic impairment
2. Norepinephrine concentration-dependent stimulates isolated neutrophils

STUDY DESIGN:
1. Changes in arterial and jugular venous differential blood counts including analysis of different cytokines and adhesion molecules as well as parameters of cerebral metabolism are determined daily in patients suffering from severe traumatic brain injury to investigate pathological impact of neutrophils.
2. Arterial and jugular venous neutrophils are isolated daily and stimulated with norepinephrine to characterize functional changes over time and to determine the influence of the injured brain on isolated neutrophils.

Publications / Publikationen

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microcirculation, brain-tissue oxygenation, and edema formation in brain-injured rats.
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Kroppenstedt SN, Sakowitz OW, Thomale UW, Unterberg AW, Stover JF.
Norepinephrine is superior to dopamine in increasing cortical perfusion following controlled
cortical impact injury in rats.

Keywords / Suchbegriffe
neutrophils, norepinephrine, traumatic brain injury

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