Splenic TNF-α levels are suppressed in a murine post-operative immune dysfunction model but turn into an excessive release upon inflammatory stimulus

149 Zeichen (mit Leerzeichen)

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1. BACKGROUND/PURPOSE

Surgical procedures induce immune dysfunction in the post-operative period. The mouse model of surgically-induced immune dysfunction (SID) represents this immune status following a surgical trauma. In this study we analyzed the unstimulated and LPS-stimulated splenic cytokine profile in the model of SID.

2. METHODS

Female C57BL/6 mice were laparatomised and both vagus branches were dissected subdiaphragmatically (VGX). In the sham group only laparatomy was performed (Sham-VGX). 6 days after VGX or Sham-VGX the small intestine was explored and standardized manipulation was performed by compressing the small intestine in antegrade direction three times consecutively (SID). Splenozytes were isolated 6 hours or 3 days after SID and stimulated with 1µg/mL LPS or medium only over 24h, supernatants were collected. Cytokine levels were detected using CBA FlexSet (BD). Data were analyzed by Graph Pad Prism.

3. RESULTS

6 hours after SID unstimulated TNF-α level was depressed ($p<0.001$) in the Sham-VGX+SID group compared to a non-treated control group, but not in the VGX+SID group. When stimulated with LPS the TNF-α level increased in both groups ($p<0.01$) compared to LPS-stimulated non-operated control groups. 72h following SID LPS-stimulation increased TNF-α level significantly only in the Sham-VGX+SID group ($p<0.01$) but not in the VGX+SID group.

4. CONCLUSIONS

Surgical procedures induce postoperative immune dysfunction which is characterized by a suppressed splenic cytokine level in the early period. An inflammatory stimulus leads to an excessive cytokine release in our mouse model representing an hyperinflammatory status. This effect is dependent on an intact vagus nerve suggesting a strong influence of the parasympathic nervous system.

1473 Zeichen (ohne Leerzeichen)