

POSTER PRESENTATION

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0295. Induction and repression effects of heat shock (HS) and LPS and modulatory effects of glutamine on blood mononuclear cells -hsprotein-72 from icu patients with severe sepsis, trauma and healthy controls

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Introduction

In severe sepsis (SS) or trauma-related systemic inflammatory response syndrome (SIRS), induction of heat-shock-protein-72 (HSP72) may protect cells from stress.

Objectives

We compared the heat-shock (HS) with the lipopolysaccharide (LPS) induction/repression effect on HSP72 of peripheral blood mononuclear cells (PBMCs) in SS or SIRS patients and healthy-controls (H) and investigated any possible modulating glutamine (Gln) effect.

Methods

PBMCs from 16/H, 11/SS, and 7/SIRS were incubated with 1 μ g/ml LPS or 43 $^{\circ}$ HS vs. no stimulation for 4h. In each group 3 experiments involved L-Ala-Gln10mM incubation 1h before (Gln-b) or after (Gln-a) induction, or no glutamine (1088 measurements). Intracellular Mean Fluorescence Intensity (MFI) levels of monocytes (mHSP72) or lymphocytes (lHSP72) were determined using Flow Cytometry.

Results

In H-PBMCs, LPS did not affect mHSP72 (79 \pm 10 MFI vs. 78 \pm 13) or lHSP72 (7 \pm 1.7 vs. 7 \pm 2). HS induced mHSP72 (454 \pm 60, $p < 0.0001$) and lHSP72 (41 \pm 7, $p < 0.0001$) with or without Gln ($p < 0.0001$). Basal mHSP72

was higher in SIRS compared to H (144 \pm 25 vs. 78 \pm 10, $p < 0.03$). A HS-induction effect on SIRS-mHSP72 (394 \pm 108, $p < 0.04$) and lHSP72 (37 \pm 5, $p < 0.02$) was further enhanced by Gln-b (495 \pm 114, $p < 0.01$ and 58 \pm 14, $p < 0.04$). LPS suppressed SIRS-mHSP72 (120 \pm 54 vs. 144 \pm 25, $p < 0.02$) especially in the Gln-b group (107 \pm 19, $p < 0.02$). Basal Gln-b mHSP72 in SS was higher compared to H (112 \pm 16 vs. 69 \pm 10, $p < 0.03$). In SS-PBMCs HS, but not LPS, induced mHSP72 (492 \pm 56 vs. 108 \pm 19, $p < 0.003$). LPS repressed the SS-lHSP72 (10 \pm 2 vs. 17 \pm 2, $p < 0.007$) an effect attenuated by Gln-b (13 \pm 5).

Conclusions

Heat shock greatly induces mHSP72 and lHSP72 of ICU patients' PBMCs. LPS may repress lHSP72 in septic or trauma patients. Glutamine pre-treatment may either enhance HS-induction or LPS-repression on mHSP72 or attenuate LPS-repression on lHSP72 in SS and SIRS groups.

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