Increased chemiluminescence activity of blood neutrophilic granulocytes from patients with Graves' disease

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OBJECTIVES

The role of neutrophilic granulocytes in pathogenesis of Graves' disease

- Respiratory burst of neutrophilic granulocytes
- Chemokines
- TNF-alpha
- Macrophage inflammatory protein 1-alpha
- ROS
- PROINFLAMMATORY CYTOKINES

Aim: to investigate chemiluminescent (CL) activity of blood neutrophilic granulocytes in patients with Graves disease (GD).

RESULTS

Twenty six women, mean age 40,7±13,2, with manifestation of GD up to antithyroid therapy and 30 sex- and age-matched healthy subjects were examined. Serum thyroid hormone concentrations were measured by RIA. The median of TSH, FT4, anti-TSHR and anti-TPO concentration in GD patient were 0,17 (0,01; 0,72) mU/l, 17,9 (13,1; 30,3) pmol/l, 16,81 IU/l and 374,0 (223,0; 817,4) IU/ml respectively. The neutrophilic granulocytes were isolated from heparinized whole blood by double density gradient centrifugation in the ficoll-urografin: p=1,077 g/cm³ for lymphocytes separation, p=1,119 g/cm³ for the neutrophils isolation. The spontaneous and zymosan-induced (ZICL) was studied for 90 minutes on 36-channel chemiluminescent analyzer "CL3606". The following characteristics have been identified: time to maximum (Tmax), maximum intensity value (Imax), reflecting the maximum reactive oxygen species (ROS) level synthesis and the area under the curve (S), describing total synthesis of ROS during 90 min. of the study.

Fig. 1. The indicators of spontaneous (a) and zymosan-induced (b) CL in patient with GD (n=26) and control group (n=45).

a) The indicators of spontaneous CL in patients with GD and control group

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<th>GD</th>
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b) The indicators of zymosan-induced (ZICL) in patients with GD and control group

<table>
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Fig. 3. The interaction between thyroid hormone and CL indicators in healthy controls (n=45).

CONCLUSIONS

Hyperactivity and reactivity of peripheral blood neutrophils in GD certify by respiratory explosion in spontaneous and induced of secondary ROS level synthesis. Enhanced excitability to phagocytosis-related stimuli can mediate the autoimmune mechanism in GD.

References


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