

Mucosal immunity in hematological patients with oropharyngeal candidiasis

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Background

Oropharyngeal candidiasis (OC) is a common complication in hematological patients. The pathogenesis of OC is still not well understood in these patients.

Objective

This study aimed to investigate the cytokine levels in oral fluid of hematological patients with OC

Methods

In a prospective study we included 43 hematological patients (lymphoma - 49%, acute myeloid leukemia - 23%, multiple myeloma - 16%, other - 12%) with OC (median age - 54 y (range 21-78), males - 49 %) and 59 hematological patients (lymphoma - 57%, acute leukemia - 13%, multiple myeloma - 18%, other - 12%) without OC (median age - 60 y (range 21-82), males - 49 %).

Control group included 19 healthy people (median age - 27 years (range 26-31), males - 42 %).

Oral fluid samples were tested for IFN- γ , IL-17, IL-8, IL-6, TNF- α , G-CSF, MCP-1, DEFb2, SLPI with ELISA test («Cytokine», «Vector-best» Russia; «Cloud-Clone Corp.», and «R&D», USA).

Results

Before chemotherapy in all patients was increased local synthesis of TNF- α (6 (3÷13) vs 2 (2÷3) pg/ml; p<0,05), IL-17 (7 (5÷10) vs 3 (2÷6) pg/ml p<0,05) and G-CSF (18 (10÷93) vs 8 (2÷9) pg/ml; p<0,05) as compared with the control group (Fig.1).

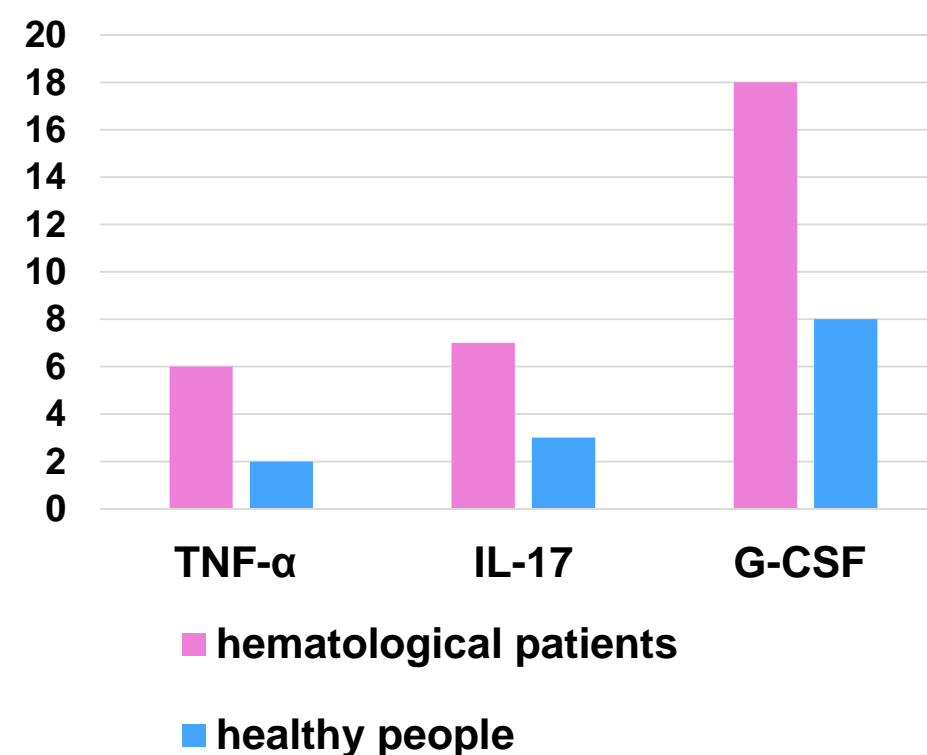


Fig.1. Cytokine levels before chemotherapy

After chemotherapy in all patients was reduced the activity of the local synthesis of TNF- α (2 (1,6÷2) vs 6 (3÷13) pg/ml; p<0,05) (Fig.2).

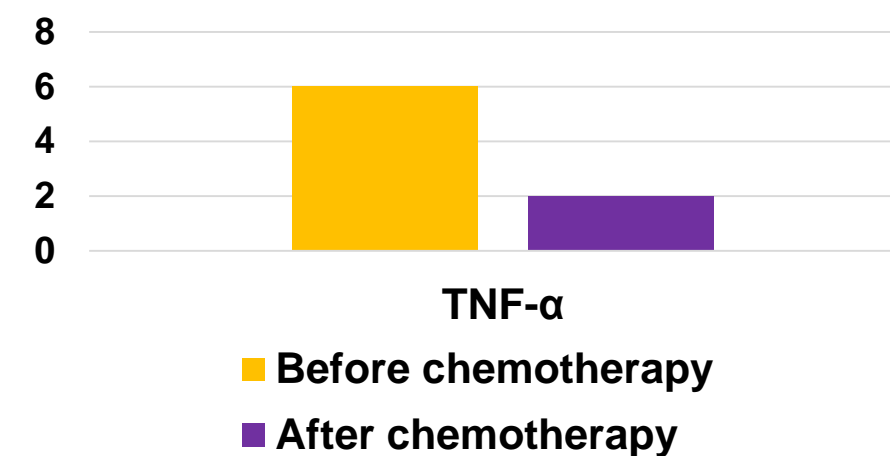


Fig.2. The impact of treatment on the levels of cytokine

In patients without OC were increased level of MCP-1 (156 (62÷188) vs 88 (44÷154) and 44(30÷53) pg/ml; p<0,05) compared to patients with OC and control group and IFN- γ (39 (23÷53) vs 28 (18÷42) and 49 (11÷59) pg/ml; p<0,05) compared to patients with OC (Fig.3).

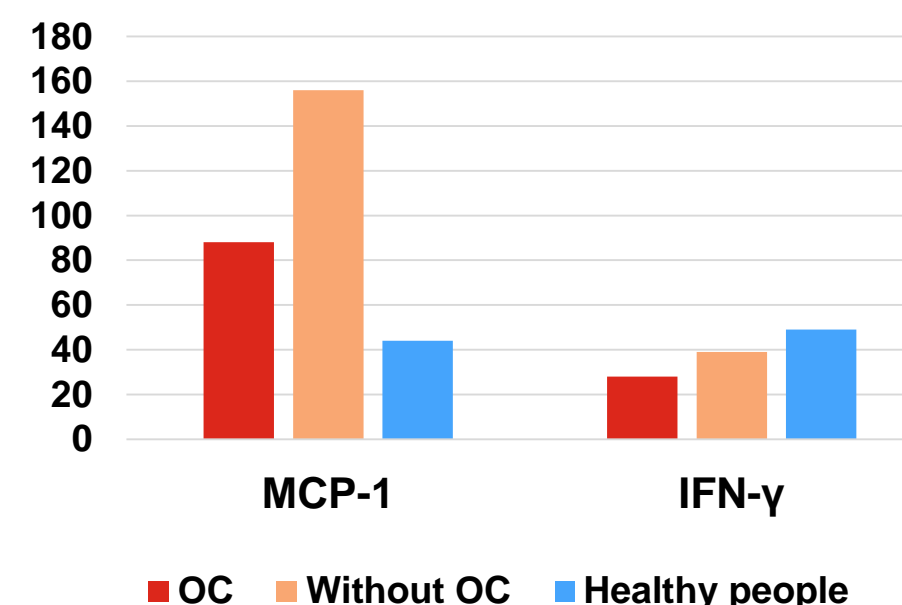


Fig.3. Cytokine levels depending on OC

In patients with OC were increased levels of DEFb2 (95 (17÷174) vs 34 (0÷86) and 53 (24÷104) pg/ml, p<0,05), and SLPI (3442 (603÷7649) vs 2514 (399÷7490) and 1918 (522÷3950) ng/ml, p<0,05), compared to patients without OC and control group (Fig.4).

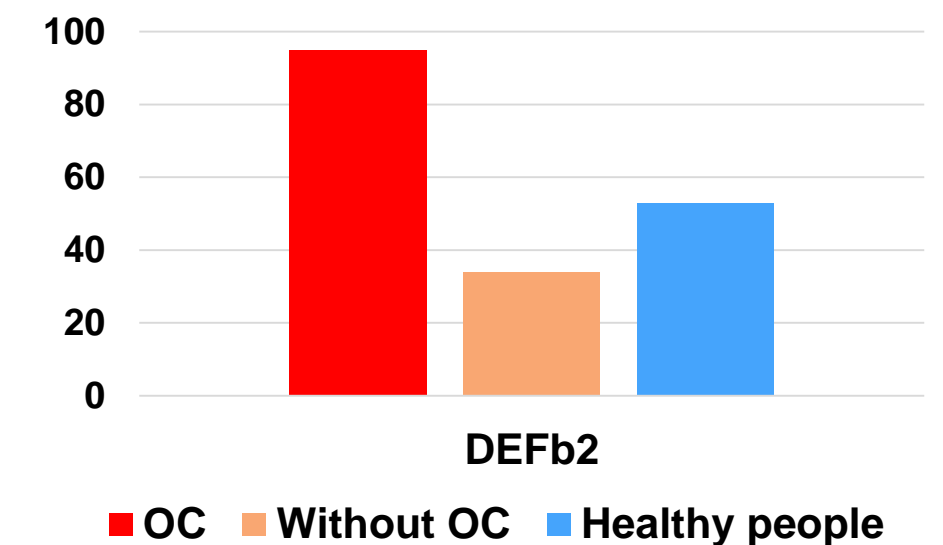


Fig.4. Levels of DEFb2 depending on OC

Conclusions

The increase in cytokines production, activating neutrophils and other cells of the innate immune system may indicate the increase of antimicrobial protection in the conditions of T-dependent mechanism deficiency, but can cause inflammatory mucosal damage, which in turn may facilitate oropharyngeal candidiasis.