

The Role of some Cytokines in Plasma Cell Neoplasms in Gomel Region Residents

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Background

Plasma cell neoplasms are monoclonal proliferations of plasma cells that produce a clonal paraprotein. Various cytokines are involved in the immune response and inflammatory processes in plasma cell neoplasms.

Objective

To determine the levels of selected cytokines in the blood serum of patients with plasma cell neoplasms and to study their role in progression.

Materials & Methods

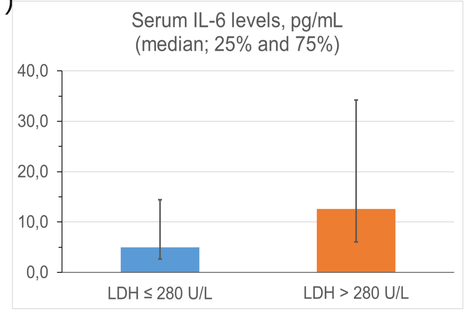
Cytokines (IL1, IL2, IL6, IL8 and TNF-α) were studied in 210 patients with plasma cell neoplasms (MGUS (n=1), MM (n=110), SP (n=19)) for the period from October 2018 to January-2022 in the Gomel region of Belarus. The study of cytokines in blood serum was performed by enzyme immunoassay. The median age was 61.0 (25% and 75% - 54.0 and 67.0) years in patients with MGUS, 65.0 (25% and 75% - 58.0 and 70.0) years in patients with MM, 61.0 (25% and 75% - 54.0 and 68.0) years in patients with SP. Females prevailed among the patients in all groups.

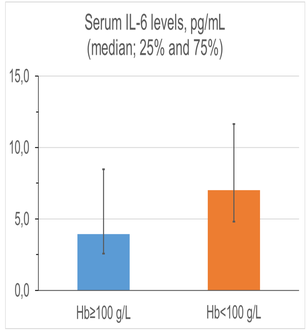
Discussion

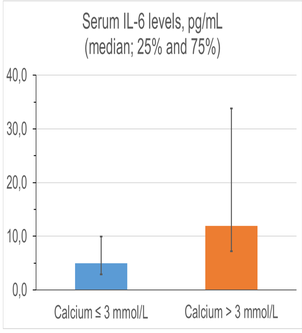
According to the results, we observe a significant excess of the levels of IL2 (p=0.001), IL6 (p=0.006) and TNF-α (p=0.006) with the progression of MM in comparison with MGUS and SP, which is associated with a high activity of the process.

According to the results of our study, an excess of IL8 levels was found in patients with MM with lytic bone lesions and with kidney damage, as well as in patients with MGUS with disease progression (p = 0.014).

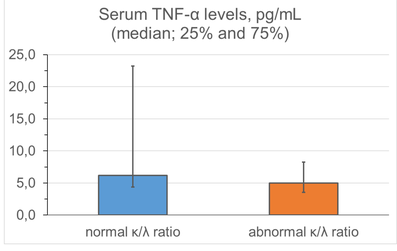
A significant excess of the level of IL6 (p=0.00001) was revealed in MM patients at the stages of ISSII and ISSIII and in patients with high levels of LDH (p=0.0088), anemic syndrome (p=0.0064) and hypercalcemia (p=0.021)



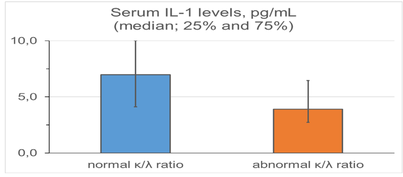




We have revealed a significant excess of the levels of IL1 (p=0.0036), IL2 (p=0.069) and TNF-α (p=0.043) in MM patients of a high risk group (κ/λ <0.1 and >10), in comparison with the group with the absence of this criterion.



A significant correlation was revealed in patients with MM by levels of IL1 (p=0.02), IL6 (p=0.00001), IL8 (p=0.02) and TNF-α (p=0.004), IL6 (p=0.0004), IL8 (p=0.015) and TNF-α (0.006), in SP patients by IL6 level (p=0.05).



Summary

MM, MGUS, SP are associated with an increase in the levels of cytokines at different stages of development. The progression of diseases is characterized by an increase in the levels of various cytokines, depending on the signs of organ damage. Thus, the process activity in MM was reflected by IL2, IL6, and TNF-α, in MGUS - by IL1, and IL6, and in SP - by IL1. When detecting lytic lesions and kidney damage, we have revealed a correlation with the level of IL8 and TNF-α.Thus, we have shown that these cytokines are associated with the process activity in plasma cell neoplasms. The study of these cytokines at the initial stage may help identify patients at high risk of progression for more careful follow-up.

References

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No conflict of interest