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P919 SIGNIFICANCE OF IHC AND BIOCHEMICAL MARKERS OF BONE METABOLISM FOR PREDICTING OSTEODESTRUCTIVE SYNDROME IN PLASMA CELL PROLIFERATION

Topic: 14. Myeloma and other monoclonal gammapathies - Clinical

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Background:

Multiple myeloma (MM) is a malignant disease of a lymphoid nature accompanied by the proliferation of tumor plasma cells, in its development passing through the stage of monoclonal gammapathy of undetermined significance (MGUS) and smoldering myeloma (SM). One of the main manifestations of MM is the lesion of the skeleton bones, which may already manifest at the stage of MGUS and SM and further it can lead to a decrease in the quality of life of patients. Our work is devoted to the study of the role of markers that contribute to the detection of the progression of the destructive syndrome at the stage of MGUS and SM.

Aims: To study significance of IHC and biochemical markers of bone metabolism for predicting osteodestructive syndrome in MGUS and SM.

Methods: All patients underwent aspiration and BM biopsy for cytological and histopathological assessment of PC infiltration. An immunological study of blood serum and the determination of biochemical markers of bone metabolism of serum were also performed. All patients underwent CT and MRI of the whole body. The diagnosis of MGUS was based on international criteria: the presence of less than 10% of clonal plasma cells in the bone marrow aspirate, the concentration of M-protein in the blood serum <30 g/l. Among patients with MM, a group without osteodestructive lesions of the skeleton bones was identified. Statistical processing of the results was carried out using the Statistica 6.1 software package. Differences were considered statistically significant at p<0.05.

Results:

The study included 132 patients (63 MM patients and 68 MGUS patients), who did not differ in age at the time of diagnosis, p = 0.089, the median age was 64.0 years (25% and 75% - 56.0 to 69, 0) and 61.0 years (25% and 75% - 53.0 and 66.0), respectively. In the MG group, female patients predominated (70.1%), they were significantly more common than in the MM group (53.1%), p=0.045.

Damage to the skeleton bones during primary diagnosis (including SP) was detected in 37.4% (68) of cases. Bone tissue destruction was more common in males (p=0.029). Changes in bone tissue for patients with MGUS and SM detected by MRI in most cases are presented as a diffuse lesion, foci of bone tissue rarefaction without obvious foci of destruction or SP. The presence of destructive lesions was more frequently detected in MGUS patients with subsequent progression to MM (p<0.002). Time to progression was about 14 months on average (range from 3 to 25 months).

When analyzing the obtained results, in MGUS patients, an excess of the β CrossLaps level in serum occurred in 7.8% of cases. At the stage of MGUS, 25.3% of patients (according to the level of osteocalcin) and 16.1% (according to the level of VAR) had disorders in the processes of bone tissue formation. Bone tissue destruction was detected more often in patients with IgM secretion (p=0.014), the ratio of immunoglobulin light chains κ/λ <0.1 and >10 and more than 10% of CD 138+ plasma cells in immunohistochemical studies.

Summary/Conclusion: At the stage of MGUS, disturbances in the processes of bone tissue remodeling occur, which is
accompanied by the appearance of deviations in the level of biochemical markers (osteocalcin, β CrossLaps). Therefore, these markers have the potential to be used to identify individuals at increased risk of developing a destructive syndrome, and in conjunction with other risk factors (IgM secretion of more than 10% of CD 138+ plasma cells on immunohistochemistry) and to identify patients at increased risk of progression during MM.