

Loss of DNA mismatch repair proteins characterises Grade group 3-5 prostate carcinoma and did not correlate with serum PSA level

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Introduction & Objectives: DNA mismatch repair (MMR) is integral to the maintenance of genetic stability. MMR can influence the regulation of tumour development in various cancers but their role on prostate cancer was controversial.

The objective of the current study was to compare the expression of MSH2, MSH6, MLH1, and PMS2 by immunohistochemistry (IHC) in the tissue of patients with prostate cancer and benign hyperplasia.

Materials & Methods: The study was retrospective. Altogether, 30 patients with prostate acinar adenocarcinoma and 10 patients with prostate benign hyperplasia were enrolled in the study. The patients underwent surgical treatment at Riga East University hospital at 2014. The MSH2, MSH6, MLH1, and PMS2 expression was analysed by immunohistochemistry. The Mann-Whitney U test was used to assess the differences between the groups. The p value < 0.05 was considered as statistical significant.

Results: Obtained results showed that MMR was absent in 10 patients (two patients with Grade group 3, five patients with Grade group 4 and three patients with Grade group 5).

6 cases showed IHC-Absent (IHC-A) in both MSH2 and MSH6, in 2 cases both MLH1 and PMS2 had negative staining, and just in two cases MSH6 was defective.

The loss of MSH2, MSH6, MLH1, and PMS2 was characteristics in high Grade cancer (Grade group 3, 4 and 5). In addition, the loss of MSH2, MSH6, MLH1, and PMS2 was not observed in patients with Grade group 1-2. The loss of MSH2, MSH6, MLH1, and PMS2 did not correlated with serum PSA level. MMR was present in all cases of benign prostate hyperplasia (mild to moderate staining).

Conclusions: Loss of mismatch repair proteins is characteristic in high grade prostate cancer (Grade group 3-5). The loss of MMR did not correlate with serum PSA level. The PD-1 inhibitors in prostate cancer personalized treatment seem to be beneficial in the Grade group 3-5 patients.