

Histological characteristics of EBV-associated gastric cancer

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Background

Epstein-Barr virus (EBV) is the direct pathogenetic cause of Burkitt's lymphoma, some subtypes of Hodgkin's lymphoma and a typical nasopharyngeal carcinoma. It is also known that the virus is detected in 5-10% cases of gastric cancer. According to recent studies, EBV-associated gastric cancer is classified by all groups of researchers in a separate molecular subtype, while information about the incidence of EBV+ gastric cancer and the histological characteristics of these tumors are controversial.

Aims

To study EBV latent membrane protein (LMP-1) expression in various histological subtypes of gastric cancer immunohistochemically.

Materials and methods

Total 27 cases (8 men and 19 women, age 25-80 years) were included in the study. Surgical material from patients with a histologically verified diagnosis was used for immunophenotyping. Primary mouse monoclonal antibodies Dako, CS.1-4 were used. Deparaffinization and antigen reduction was performed by using Thermo Dewax and HIER Bufer L, pH6 buffer. The preparations were studied with a Leica DM LB2 microscope by two independent researchers. LMP-1 expression was considered as positive if out of the selected 10 fields of view, x40 increase, ratio of the cells number with LMP-1 expression to the total cells number exceeded 10% at least in one field of view. Only cytoplasmic expression of LMP-1 was considered as positive.

Results

Based on the microscopy results preparations from 6 cases were excluded from the study due to pronounced background staining. In 2 cases of 21 (9.52%) positive staining of tumor cells was observed (adenocarcinomas with clinical stage IA, without ring-shaped cells in the tumor and metastasis). In 11 cases (52.38%), a positive cytoplasmic reaction was observed in the normal glands of the gastric mucosa lamina propria (some showed intestinal metaplasia), but there was no reaction in the tumor cells (7 adenocarcinomas without ring-shaped cells, with lymph node metastases; 4 signet ring cell carcinomas). In 8 cases, there was no response from the tumor cells and normal glands (6 adenocarcinomas with the presence of ring-shaped cells and 2 signet ring cell carcinomas).

Conclusions

Frequency of EBV+ gastric cancer detection (9,52%) corresponds to the literature data. EBV+ cancer had a higher degree of differentiation and better prognosis than EBV-negative cancers, but more patients are required for the study. LMP-1 cytoplasmic expression in the normal lamina propria glands in cancers which are characterized by intermediate position between the EBV+ and EBV-groups is most interesting. Therefore we can assume that EBV causes a premalignant transformation of the normal glands and the cancer that originates from them may differ from the typical EBV+ gastric cancer in terms of its properties and prognosis.