The evaluation of resistance to apoptosis in head and neck cancer healthy stroma.

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INTRODUCTION

Head and neck cancer is the sixth most common cancer in the world. It is characterized by high recurrence rate or the occurrence of second primary tumors within upper respiratory tract mucosa, which is estimated at about 10-30% of surgically resected tumors, independently of the histopathologically clear surgical margins.

Metallothionein (MT) is a metal-binding low molecular weight protein with functional roles in cell growth, repair, and differentiation. MT overexpression in stromal cells, lymphocytes and tumor infiltrating lymphocytes might be a normal or protective reaction of healthy adjacent tissue.

2.1. The subjects

In all cases patient's informed consent was received. The approval for the research program from the Ethical Committee of the Jagiellonian University in Krakow: KBET/379/13/2003 was also granted. The patients in this study were randomly selected. Patients with head and neck cancer in this study had undergone surgery at the Department of ENT and Head and Neck Surgery of Jagiellonian University in Krakow (1). The patients were observed during one year after the surgical treatment. We have sampled total of 58 tissue samples: 30 samples from head and neck squamous cell carcinoma, 30 samples from clear surgical margins of these tumors and 20 salivary glands. The slides were deparaffinized, rehydrated and rinsed 5 times in distilled water. Endogenous peroxidase activity was blocked by 8-min-incubation in 3% H2O2 at room temperature. The slides were then rinsed and immersed in boiling citrate buffer (pH 6.0) in a microwave oven with three changes of buffer for 5 minutes each. The degree of metallothionein positivity was quantified as the percentage of MT-positive cells in the tissue section, done in at least 5 high power fields (usually at least 150 cells were counted). Only cytoplasmic staining (nuclear reaction occurring especially in cancers was not considered) was evaluated as: 0 – lack of any positivity; 1+ - weak staining in less than 5% of the cells; 2+ - moderate – various staining intensity but in <50% of the cells, 3+ - strong – staining of more than 50% of the cells.

MT expression was identified in 85,7% squamous cell carcinomas, 4 squamous cell carcinoma specimens were MT expression negative. All stromal specimens, mainly composed of spindle-shaped fibroblasts expressed MT, even in which cancer specimens were MT expression negative. Salivary glands were MT expression negative. Lymph node and tumor infiltrating lymphocytes were MT expression negative.

RESULTS

MT expression was identified in 85,7% squamous cell carcinomas, 4 squamous cell carcinoma specimens were MT expression negative. All stromal specimens, mainly composed of spindle-shaped fibroblasts expressed MT, even in which cancer specimens were MT expression negative. Salivary glands were MT expression negative. Lymph node and tumor infiltrating lymphocytes were MT expression negative.

Figure 1. MT expression in cancer nest, nuclear and cytoplasmic staining patterns were identified.

CONCLUSIONS

MT contributes in delaying cells from apoptosis, the effect of apoptotic factors released from cancerous tissues in our study might be counterbalanced increased synthesis of MT adjacent healthy tissues. MT might be a normal or protective reaction of healthy adjacent tissue.

REFERENCES