EXPRESSION OF TGF-β RECEPTORS AND SMAD PROTEINS IN HUMAN ENDOMETRIAL CANCERS

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Resistance to the anti-proliferative effect of TGF-β (transforming growth factor-β) is characteristic for many human cancer cells and may contribute to loss of growth control which is important for tumorigenesis and progression of human cancers. Cellular insensitivity to TGF-β was found to be associated with deregulation of specific TGF-β receptors (type I and type II) or Smad proteins (the term coined from sma and Mad), recently identified effectors of TGF-β signalling.

The aim of our study was to examine a profile of gene expression of TGF-β signalling pathway including TGF-β receptors type I and type II and Smad proteins i.e., Smad2, Smad3 and Smad4 in the same specimens of human endometrial cancer and normal tissue. Fresh-frozen samples of 26 human endometrial tumours, 2 hyperplastic and 13 normal endometrial tissues were analysed. The expression of studied genes was examined by semiquantitative RT-PCR technique. RT-PCR was performed using RNA PCR Kit ver. 2.1 (Takara Suzo Co., Ltd., Japan) according to manufacturer. The integrated optical density of electrophoretically separated products of amplification of studied genes and β-actin as reference gene was measured using a video densitometer and Gel-Pro 3.0 software.

The expression of the TGF-β receptors and Smads was analyzed in the relation to FIGO classification, tumour grade and myometrial invasion. In the endometrial cancers in comparison with the normal tissue, increased number of the positive cases, with detectable expression of the TGF-β receptor type I (13/26 vs. 5/13), TGF-β receptor type II (19/26 vs. 7/13) and Smad4 (22/26 vs. 10/13) was observed. However, no statistically significant differences of the mRNA level between tumour and normal tissue specimens were found.

Further studies with larger number of examined tumour specimens are required to define whether deregulation of the TGF-β signalling cascade may be caused by changes of the gene expression at the level of mRNA or at the level of protein.