

## THE EXPRESSION OF METALLOTHIONEINS ON IMPRINT SMEARS OF PROSTATE CARCINOMA: CORRELATION WITH CLINICOPATHOLOGIC PARAMETERS AND TUMOR PROLIFERATIVE CAPACITY

Paulina Athanassiadou<sup>1</sup>, Athanasios Bantis<sup>2</sup>, Maria Gonidi<sup>1</sup>, Peter Athanassiades<sup>1</sup>, Eleni Agelonidou<sup>1</sup>, Dimitra Grapsa<sup>1</sup>, Polyxeni Nikolopoulou<sup>1</sup>, and Efstratios Patsouris<sup>1</sup>

<sup>1</sup>Pathology Laboratory-Cytology Unit, Medical School, Athens University, Athens; <sup>2</sup>Urology Department, University Hospital, Alexandroupolis, Greece

**Aims and background:** Metallothioneins are a family of metal-binding cysteine-rich proteins that play an important role in cellular processes such as proliferation and apoptosis, protection against oxidative stress and metal ion homeostasis and detoxification. Recent findings suggest that metallothioneins might play a significant role in the development and progression of prostate cancer. It has been also demonstrated that Ki-67 expression may have prognostic value for disease-free survival in cases of prostate carcinoma.

**Study design:** Imprint smears samples obtained from 70 patients immediately after radical prostatectomy for prostatic carcinoma were immunostained with monoclonal antibodies against metallothioneins and Ki-67. Metallothionein expression was correlated with Ki-67 immunostaining, Gleason score, stage,

preoperative prostate-specific antigen levels and biochemical recurrence.

**Results:** Metallothionein expression was shown to correlate strongly with Gleason score ( $P < 0.001$ ) and significantly with pathological staging and Ki-67 immunostaining ( $P < 0.001$ ,  $P < 0.05$ , respectively). In contrast, no significant association between metallothioneins and preoperative PSA was demonstrated. Both of the studied markers (metallothioneins and Ki-67) correlated with recurrence ( $P = 0.009$ ,  $P = 0.006$ , respectively).

**Conclusions:** The present findings support the independent predictive value of metallothioneins and Ki-67 in prostate cancer. However, additional data are needed in order to reveal the factors that influence the expression of metallothioneins in epithelial neoplastic cells and clarify their mechanism of action.

**Key words:** immunocytochemistry, Ki-67, metallothioneins, prognostic factors, prostate cancer.