

## ORIGINAL ARTICLE

**Relationship of serum levels of tumor markers with tissue expression of gene products in ovarian carcinoma**M. Šorak<sup>1</sup>, S. Arsenijević<sup>1</sup>, G. Lukić<sup>1</sup>, N. Arsenijević<sup>2</sup>, P. Ristić<sup>2</sup>, S. Pavlović<sup>2</sup>, S. Popović<sup>2</sup>, D. Baskić<sup>2</sup><sup>1</sup>Clinic for Gynecology and Obstetrics, Clinical Centre, Kragujevac; <sup>2</sup>Institute of Microbiology and Immunology, Medical Faculty, University of Kragujevac, Kragujevac, Serbia**Summary**

**Purpose:** The aim of this prospective study was to determine serum levels and tissue expression of CA125, CA 15-3, p53, HER-2 and nm23 tumor markers, which are used in the detection and follow up of patients with ovarian carcinoma.

**Patients and methods:** 19 patients with malignant and benign ovarian tumors were included in this study. Serum levels of CA125, CA 15-3 and p53 tumor markers were detected in preoperative and postoperative blood samples using ELISA technique. Tissue expression of p53, HER-2 and nm23 were examined using immunohistochemistry.

**Results:** All serum tumor markers were elevated in patients with ovarian carcinoma. Serum level of CA 15-3 was increased in patients with ovarian carcinoma (median 48.33 U/ml, normal range 0-36), while it was normal in patients with benign ovarian tumors (median 20.67 U/ml;  $p > 0.05$ ). CA125 serum values were strikingly increased in ovarian carcinoma (median 264.16 IU/ml, normal range 0-35) and benign ovarian tumors (median 119.59 IU/ml;  $p < 0.05$ ). Serum levels of p53 in patients with ovarian carcinoma

were increased (median 0.69 U/ml, normal range 0-0.50) compared to patients with benign tumors (0.32 U/ml;  $p < 0.05$ ). Histological HER-2 overexpression was detected in 7 cases, including 4 with strong (score 3+ and 2+) and 3 with weak or no HER-2 expression (score 1+ and 0) in ovarian carcinoma tissue; in benign tumors HER-2 overexpression was detected in 1 case ( $p > 0.05$ ). Strong overexpression of p53 was detected in 3 cases with malignant and none with benign tumors ( $p > 0.05$ ); and strong overexpression of nm23 was detected in 5 cases with malignant and 2 with benign tumors ( $p > 0.05$ ).

**Conclusion:** Serum levels of CA125, CA 15-3 and p53 are strikingly increased, as well as the expression of HER-2 and p53 in carcinomatous tissue. Detection and analysis of multiple tumor-specific markers in serum and tissue can give useful clinical information for the management of ovarian carcinoma and can also improve the sensitivity and specificity of these markers.

**Key words:** benign ovarian tumors, oncogenes, ovarian carcinoma, serum tumor markers, tissue tumor markers

**Introduction**

Ovarian carcinoma is the leading cause of cancer

death in women. It ranks sixth in incidence after breast, lung, colon, rectal and endometrial cancer. In female genital pathology it is third, after cervix and corpus uteri carcinoma [1,2]. The peak incidence of ovarian cancer is at the 62nd year of life.

Prognosis of ovarian carcinoma depends on the clinical and histopathological examination. The most strong prognostic factor is the stage of disease at the time of diagnosis, based on the AJCC (American Joint Committee on Cancer) and FIGO staging classifications [3].

No efficient method for screening and detection of early-stage ovarian cancer exists [4].

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