

Biomarkers in cancer

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**REFERENCE RATES AND PREVALENCE OF TUMOUR MARKERS CA 15-3 AND CA 125 IN DIFFERENT GROUPS OF CANCER PATIENTS IN VOLGA FEDERAL DISTRICT, THE RUSSIAN FEDERATION**

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**Objectives.** Cancer antigens 15-3 (CA 15-3) and 125 (CA 125) are the most frequently used serum markers of breast and ovarian cancer respectively. We aimed to evaluate the serum levels of these antigens in samples from healthy individuals and cancer patients in regional population.

**Methods.** CA 15-3 and CA 125 were measured using quantitative ELISA tests (RPC Diagnostic Systems). Serum samples from healthy blood donors (n=245) and oncology patients with confirmed diagnoses (n=560) were evaluated. The groups were compared using Mann–Whitney U test; the difference between groups was considered statistically significant if  $p < 0.05$ . The studied population is representative for Eastern Europe (Volga Federal District, the Russian Federation).

**Results.** In the population of healthy donors the measured concentrations were defined within the range from 1.3 to 68.5 U/mL for CA 125 and from 2.6 to 54.1 IU/mL for CA 15-3. We calculated the upper reference limits with a nonparametric method, in which the upper reference limit is regarded as 97.5 percentile value. Thus, the normal values for the region of interest were established at the level 31.6 U/mL for CA 125 and 29.2 IU/mL for CA 15-3.

The prevalence of abnormal concentrations of the tumour markers was evaluated in groups of patients with different malignancies: gastrointestinal, prostate, ovarian, breast, cervical, and testicular cancer. The significant difference from the control group was observed in the groups with ovarian, breast, prostate and gastrointestinal cancer for CA 125 and with cervical, breast, ovarian and prostate cancer for CA 15-3. The highest prevalence rates were observed in the groups with ovarian cancer (53.5%) for CA 125 and cervical cancer (61.9%) for CA 15-3.

**Conclusions.** According to these data, the upper limit of normal range is 31.6 U/mL for CA 125 and 29.2 IU/mL for CA 15-3 in our region. The prevalence of CA 125 and CA 15-3 over normal value are higher in ovarian and cervical cancer groups, respectively.