

## **EVALUATION OF BIOCHEMICAL MARKERS FOR DETECTING BONE METASTASES IN BREAST CANCER PATIENTS**

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THE **AIM** of this study was to test whether serum levels of breast cancer antigen CA 15.3 and bone specific alkaline phosphatase (bALP) (marker of bone formation) may substitute bone scintigraphy for detection of bone metastases from breast cancer.

**PATIENTS AND METHODS:** Serum concentrations of CA 15.3 and bALP were evaluated in 124 and 109 women (age 36 - 79 years) with histologically confirmed breast cancer in the presence (bM+) and absence of bone metastases (bM0) on skeletal scintigraphy. Patients with extraosseous metastases were not included in the study. Scintigraphies and markers measurements were done at least 3 months after radiotherapy or other therapies.

**RESULTS:** In bM+ patients value of CA 15.3 (median 31.8, range 7.6-528 U/ml) was significantly higher than in bM0 patients (median 17.2, range 0.100 - 167 U/ml;  $p < 0.0001$ , Mann Whitney U test). This tumor marker was above cut - off value (30.0 U/ml) in 23 of 38 patients with bone metastases (sensitivity for skeletal metastases = 60.5%). In nonmetastatic women CA 15.3 were normal in 71 of 86 cases (specificity = 82.6%). Serum CA 15.3 values were not proportional to the number of metastases on bone scan ( $r = 0.130$ ,  $p = 0.437$ ). Also, significant difference between number of metastatic foci in patients with increased (median 4.0, range 1-14) and normal (median 3.0, range 1-9) levels of CA 15.3 was not proved ( $p = 0.344$ ). Bone ALP was increased in 17 of 42 bM+ patients (sensitivity = 40.5%), and within normal range in 63 of 67 patients without skeletal involvement (specificity = 94.0%).

**CONCLUSIONS:** CA 15.3 is more sensitive than bALP in detecting bone metastases of breast cancer. Serum levels of the investigated markers can not replace bone scan for detection of bone metastases in breast cancer patients.

**Key words:** breast cancer, CA 15.3, bone specific alkaline phosphatase, bone scintigraphy