

## Relationship between bone scintigraphy and tumor markers in patients with breast cancer

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**Purpose:** The aim of this study is to specify the precise role of bone scintigraphy and serum CEA and CA 15-3 assays in the monitoring of breast cancers in order to optimize their use and to determine whether it is possible to guide the prescription of bone scan by the use of CEA and CA 15-3 assays in the monitoring of breast cancer. **Methods:** For this purpose, from November 1997 to May 2002, 98 consecutive female breast cancer patients (median age, 52 years; range 35–77 years) underwent bone scintigraphy during follow-up. In these patients values of tumor markers were compared with the results of bone scintigraphy. Some of the patients with bone metastasis were checked repeatedly at intervals of 6 to 12 months, resulting in 49 patients with bone metastasis and 74 patients without bone metastasis being included in the study. **Results:** In patients with bone metastasis, serum CEA levels were abnormal in 23/49 cases and CA 15-3 serum concentrations were elevated above the cut-off in 33/49 cases. Among patients without bone metastasis, CEA and CA 15-3 serum concentrations were normal in 50/74 and 55/74 cases respectively. The combination of the two markers improved the diagnostic sensitivity. **Conclusion:** Although serial tumor marker measurements are an efficient and cost effective method of monitoring disease progression, it does not allow prediction of the bone scan results; so it is not justifiable to reject a bone scintigraphy on the basis of these markers.

**Key words:** breast cancer, bone scintigraphy, carcinoembryonic antigen (CEA), breast cancer-associated antigen (CA 15-3)