

# Value of bone scintigraphy in breast cancer patients staged with computed tomography

Authors: Vladislav N. Evseev, Ernest S. Dzhelialov, Yuliya V. Mikheeva, Rostislav V. Pavlov

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## Background

Staging of early breast cancer is a controversial issue. Current guidelines recommend consideration of a computed tomography (CT) scan of the chest, abdominal imaging and a bone scintigraphy for patients with clinically involved lymph nodes, big primary tumors and aggressive biologic subtypes. In clinical practice patients with early breast cancer are commonly staged with bone scintigraphy and CT scan of chest and abdomen. Nevertheless, additional value of bone scintigraphy in patients staged with CT scan remains not well studied.

## Methods

All breast cancer patients who were initially staged and treated in the Oncology Department of Saint-Petersburg State University Hospital during period from January 2019 to March 2021 were included in this study. We retrospectively reviewed electronic medical records to identify all bone scintigraphy and CT scans performed on these patients during initial evaluation. Results of staging CT and bone scintigraphy scans were compared to evaluate the incidence of bone metastasis not detected on CT scan, incidence of additional bone metastasis in the field of CT scan and of additional bone metastasis outside of CT scan field. Additionally we reviewed how often bone scintigraphy changed therapeutic decisions.

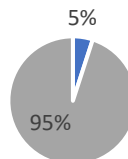
## Results

We identified 147 breast cancer patients staged with CT scan of chest and abdomen, of whom 73 (49,6%) had also undergone a bone scintigraphy. After complete staging 23 out of 147 patients (15,6%) were diagnosed with metastatic (stage IV) breast cancer. Out of 73 patients staged both with CT scan and BS 0 (0%) were upstaged because of BS results. Additional bone metastasis in CT scan field were detected in 1 out of 20 patients (5%). Additional bone metastasis outside of CT scan field were detected in 1 (5%) out of 20 patients. This metastasis was located in temporal bone. Bone scintigraphy changed therapeutic decisions in 0 patients.

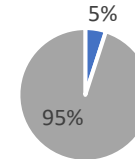
Table 1. Patient Characteristics (n = 147)

| Age                                  |              |
|--------------------------------------|--------------|
| Median (range)                       | 53 (33 – 86) |
| Stage (AJCC 8 <sup>th</sup> edition) |              |
| I                                    | 17,7%        |
| II                                   | 39,4%        |
| III                                  | 27,3%        |
| IV                                   | 15,6%        |

Additional bone metastasis detected by scintigraphy



Patients with bone metastasis outside of CT field



## Conclusion

Bone scintigraphy is often performed in breast cancer patients, but plays very limited role in patients that were already staged with computed tomography scan of chest and abdomen. Undergoing this additional test doesn't change stage of the disease and doesn't detect additional bone metastasis in the majority of patients.