



#### 4. THE ROLE OF NUCLEAR MEDICINE INVESTIGATIONS IN DIAGNOSIS AND MANAGEMENT OF BREAST CANCER

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**Introduction.** It should be pointed out that breast cancer is the most common pathological tumor among women worldwide. Nuclear medicine investigations, such as whole-body bone scintigraphy, offer possibilities for diagnosis, personalized treatment and post-treatment follow-up. Based on the fact that breast cancer most often metastasizes to the bones, we can analyze the importance of nuclear medicine screenings.

**Aim of study.** For over five decades, radiopharmaceuticals have been employed to study breast cancer according to recent guidelines. The role of nuclear medicine, which began in the 1990s when the radiotracer Tc-99m was first used to directly detect breast cancer, is seeing progress. Bone scintigraphy is the classic method of confirming metastasis to the skeleton.

**Methods and materials.** The retrospective descriptive study included 42 patients with diagnosed, histopathological proven breast cancer. They were investigated with administration of the radioactive tracer Tc99m-MDP by WB bone scintigraphy at Gamma Camera AnyScan S in the Nuclear Medicine Laboratory of the Oncological Institute of the Republic of Moldova during May-July 2023.

**Results.** The study enrolled 42 patients with breast cancer, with an average age of  $62.07 \pm 10.91$  years. Among the participants, 4 patients (9.52%) exhibited metastatic skeletal bone lesions. In 22 cases (52.38%), suspicious changes for secondary involvement were identified, necessitating further imaging investigations, including radiography (Roentgen), computed tomography (CT), and magnetic resonance imaging (MRI) to confirm the diagnosis. For 16 patients (38.10%), the nuclear medicine investigations revealed non-specific findings for secondary spread. The results highlight the potential of nuclear medicine investigations in early detection of metastases in the bone system.

**Conclusion.** In conclusion, the results of this study emphasize the significant role of nuclear medicine investigations in diagnosing and managing breast cancer, particularly in the context of skeletal bone metastases. WB bone scintigraphy offers essential information, which has efficacy in influencing therapeutic decisions and potentially improving patient outcomes. These findings underscore the importance of integrating nuclear medicine into the comprehensive care of breast cancer patients for more personalized and effective treatment approaches.