

THE ROLE OF MRI, MSCT AND PET/CT DIAGNOSTIC IMAGING IN THE FOLLOW-UP OF PATIENTS WITH METASTATIC BREAST CARCINOMA

Toni Džeba 

Faculty of Health Studies, University of Mostar, 88 000 Mostar, Bosnia and Herzegovina

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ABSTRACT

Introduction: Breast cancer is one of the most frequently diagnosed malignant diseases, and its incidence has been continuously increasing in the last few decades. It is the leading cause of cancer-related mortality in the female population. Despite advances in diagnostics and treatment, disease recurrence and metastatic form continue to represent a significant clinical challenge.

Materials and methods: A search of scientific literature was conducted in the PubMed database using the following keywords: radiology imaging, metastatic breast cancer, PET/CT, MRI and MSCT. Out of a total of 88 identified works, 21 were selected for detailed analysis according to the criteria of relevance, quality and availability.

Results: The analysis showed that MRI and PET/CT modalities are the most sensitive and specific in detecting breast cancer metastases, especially in the bones, liver and brain. MRI allows early detection of metastatic changes due to its high spatial resolution, while PET/CT provides additional metabolic information that complements the anatomical view. CT is a standard available modality, but with lower sensitivity in early detection of metastases.

Conclusion: The combination of different imaging methods (MRI + PET/CT) provides complementary information and increases diagnostic accuracy. The selection of the optimal modality should be individualized according to the type of cancer, the clinical picture and the availability of technology.

Keywords: breast, metastases, MRI, MSCT, PET/CT.

Corresponding author: Toni Džeba, Master of Radiological Technology;

toni.dzeba@gmail.com

INTRODUCTION

Breast cancer is the most common malignancy in women, both in Western Europe and in the United States. Its incidence peaks between the ages of 40 and 55, and its prevalence is still increasing (1). The disease behaves differently in different patients. Each patient has a different tumor behavior, different response to treatment, and an individual prognosis (2). Malignant neoplasms of the breast are among the leading causes of death in women in 2022, ranking seventh, while in the category of malignant diseases they are the first leading cause of death in women, followed by malignant neoplasms of the bronchi and lungs and malignant neoplasms of the colon (3). Due to the increasing incidence of breast cancer, it is estimated that mortality associated with breast cancer will increase by 43% globally from 2015 to 2030 (4). Despite great progress in surgical treatment, radiotherapy, and adjuvant chemotherapy protocols, tumor recurrence and metastasis remain the main problems in the treatment of breast cancer (1). Advanced breast cancer includes metastatic (MBC) and locally advanced breast cancer (LABC). MBC is still an incurable disease with a 5-year survival rate of between 15 and 27%, and progression to MBC occurs in approximately 20–30% of patients without metastases (5). Some studies have shown that approximately 4–10% of breast cancers have already metastasized at the time of diagnosis (4). The risk of recurrence and the different patterns of metastatic spread are not only influenced by the stage at initial presentation, but are also related to the molecular subtype of the primary tumor (6).

Aim of the literature review

The aim of this review is to analyze the existing imaging methods used in the diagnosis and staging of advanced breast cancer, with an emphasis on the role of CT, MRI, PET/CT, and hybrid techniques, in order to identify advantages, limitations, and optimal application protocols.

Research methodology

The literature review was performed by searching the PubMed database using the key terms: "radiology imaging", "metastatic breast cancer", "PET/CT", "MRI" and "MSCT". From a total of 88 papers identified, 21 papers were selected for detailed analysis based on the criteria of relevance, quality, content and availability with the aim of obtaining a comprehensive insight into current diagnostic practices and guidelines.

RESULTS

The analysis of 21 included studies showed that MRI and PET/CT modalities showed the highest sensitivity and specificity in detecting metastases in different sites, especially in the bones, liver and brain. MRI stands out for its high resolution and the possibility of early detection of metastatic changes before structural lesions develop, while PET/CT provides metabolic information that complements the anatomical view. CT remains the standard and widely available modality, but its sensitivity is lower compared to newer hybrid techniques.

WB-MRI and PET/MRI are particularly important, as they allow for a full-body examination in one step and show the potential to become the techniques of choice in the future. The combination of

modalities (e.g. MRI + PET/CT) increases the accuracy compared to individual methods. In conclusion, imaging methods should not be viewed competitively, but

rather as complementary, and their selection should be adjusted to the type of metastasis, the patient's clinical picture and the availability of equipment.

Table 1. *Characteristics of studies included in the final analysis*

Autor (year)	Study design	Diagnostic modality	Key findings
Pan et al. (2010)	Cohort	CT, PET/CT, MRI	Presentation of the effectiveness of different modalities in the detection of metastases in breast cancer
Lothar et al. (2023)	Review	CT, PET/CT, WB – MRI, DWI	A comprehensive overview of modern imaging methods in MBC
Lupichuk et al. (2020)	Cohort	CT, MRI	Excessive imaging in DCIS and early breast cancer, without clinical benefit
Pesapane et al. (2020)	Review	PET/CT, MRI, CT	Guidelines for optimal diagnosis of metastatic breast cancer
Zugni et al. (2018)	Prospective	WB - MRI	WB – MRI adds value in the assessment of advanced breast cancer
Gioia et al. (2015)	Cohort	WB - MRI	Early detection of metastatic disease in asymptomatic patients
Xia et al. (2023)	Meta - analysis	PET/CT, PET/MRI	PET/MRI equally or more sensitive than PET/CT for bone metastases
Gerke et al. (2024)	Systematic review and meta - analysis	PET/CT, NaF – PET/CT, MRI, CT, scintigraphy	MRI and PET/CT most sensitive and specific for bone metastases
Heindel et al. (2014)	Review	CT, MRI, PET/CT, scintigraphy	Presentation of the role of certain modalities in the detection of bone metastases
Cook (2022)	Review	PET/CT, scintigraphy	PET/CT recommended for early assessment of response to therapy of bone metastases
Haug et al. (2012)	Cohort	PET/CT	PET/CT as a predictor of survival after radioembolization of liver metastases
Barabasch et al. (2015)	Cohort	PET/CT, DWI - MRI	MRI superior to PET/CT in assessing early response of liver metastases
Lecouvet et al. (2024)	Review	WB – MRI	WB – MRI the future standard for metastatic disease and myeloma
Marino et al. (2020)	Review	CT, MRI, PET/CT	Analysis of diagnostic tools for lymph nodes in breast cancer
Morawitz et al. (2021)	Cohort	CT, MRI, PET/MRI	PET/MRI shows advantages in nodal staging compared to CT/MRI
Aktas et al. (2022)	Cohort	UZV, MRI, PET/CT	Combination of MRI + PET/CT improves diagnostic accuracy for lymph nodes
Fares et al. (2019)	Review	MRI, PET/CT	Barriers and innovations in clinical trials of brain metastases
Mohan et al. (2015)	Case report	MRI	Leptomeningeal metastases as the first presentation of breast cancer
Short et al. (2014)	Cohort	PET/CT	PET/CT can help detect leptomeningeal metastases
Shan et al. (2007)	Case report	PET/CT	FDG – PET/CT shows increased glucose uptake in leptomeningeal metastases
Constantinidou et al. (2011)	Retrospective	PET/CT	PET/CT useful in monitoring and determining the stage of recurrence/metastatic breast cancer

BONE METASTASES

The bone is the most common place where breast cancer cells appear. The presence of bone metastases can cause severe death (7). Research has shown that approximately 70% of breast cancer patients develop bone metastases after a certain time. Current National Comprehensive Cancer Network (NCCN) clinical guidelines recommend consideration of additional imaging with

computed tomography (CT) and skeletal scintigraphy in patients with stage I–III invasive breast cancer. CT according to the onco protocol, skeletal scintigraphy and magnetic resonance (MR) are also recommended for invasive breast cancer in stage IV, while 18F fluorodeoxyglucose (FDG) positron emission tomography - computed tomography (PET/CT) is recommended as an additional modality exclusively for patients in whom there is a

certain risk or suspicion of distant metastases (8).

The largest number of bone metastases behave osteolytically. Approximately 15 – 20% of patients develop osteoblastic metastases. Osteoblastic metastases are very easily detected on CT scans, unlike lytic metastases. They behave hypodensely on CT and are surrounded by bone marrow. For lytic metastases to be visible on CT, minimal cortical destruction is required, which can reduce the sensitivity of CT in early detection of metastases, since only the bone marrow is affected. A study by Yang et al. showed that CT is sensitive in 73% and specific in 95% of patients in detecting bone metastases. Other authors have conducted similar studies and all have reached the same or similar results (9). Magnetic resonance imaging (MRI), due to its high contrast between soft tissues and high spatial resolution, has the ability to detect metastases before any changes in the internal structure of the bone occur that would then be visible on other diagnostic modalities. Thanks to the discovery of new sequences, for example STIR, the need for the use of a contrast agent has been reduced, which then enables patients with impaired renal function to undergo one such imaging (9). In addition to standard morphological sequences including T1 and T2 weighted images and short recovery tau inversions, diffusion weighted images – DWI are now routine. The increase in water diffusion, which can be seen on ADC maps, is the result of the cytotoxic effect of the therapy, which causes a decrease in the integrity of the cell membrane (10). In the aforementioned meta-analysis, the aforementioned research by Yang et al. it was concluded that MR is

91% sensitive and 95% specific in diagnosing bone metastases. Therefore, it is superior to both CT and bone scintigraphy and about as good as PET/CT. Further studies came to the same results, for example one that included only patients with breast cancer. Another meta-analysis showed that MRI and PET/CT were more than 80% sensitive and more than 90% specific for the detection of bone metastases (9). Bone metastases of ductal carcinoma origin are more sensitive to 18F-FDG PET/CT than lobular carcinoma. This is attributed to differences in cell density, proliferation rate, and GLUT1 expression. It has been previously known that sclerotic metastases are significantly less sensitive to 18F-FDG than lytic metastases. Since lobular carcinoma metastases are most often sclerotic, they are less frequently diagnosed with this imaging modality (10).

LIVER METASTASES

Despite advances in adjuvant treatment of breast cancer, approximately 20% of patients with initially local disease will still develop metastases involving the liver (11). Liver metastases are often routinely detected by ultrasound, contrast-enhanced CT, MRI, or PET/CT, but the question remains as to which is the most optimal way to monitor the effects of treatment on liver metastases. A study by Barabasch et al. showed that the accuracy between PET/CT and DWI-MR is not only comparable, but also significantly higher on MRI than on PET/CT alone. DWI-MR appears to be superior to PET/CT for early assessment of response to treatment in patients with liver metastases from common solid tumors (colorectal, breast) (12). Liver metastases are visualized as

areas of hyperintense signal on DWI sequences. T2-weighted anatomical sequences are used to confirm their diagnosis. Studies conducted so far have shown that WB-MR is more sensitive in detecting visceral lesions compared to CT and FDG PET/CT (13).

LYMPH NODE METASTASES

Lymph nodes represent the first regional site of metastasis and it is very important to confirm or exclude metastatic sites in lymph nodes at the very beginning of treatment and determining the stage of the disease. This significantly affects the treatment plan and prognosis of the disease (14).

MRI does not have a great diagnostic value in the analysis of lymph nodes. The main reason for this is that the breast coil does not sufficiently cover the axillary area, as well as physiological movements (breathing, heartbeat, pulsations of large blood vessels, swallowing) all of which are movements that create artifacts. MRI allows to see cortical thickening, loss of fatty hilus and altered shape of the lymph node, but these features cannot confirm metastatic disease. Edema in the area around the lymph node, which appears as a hyperintense signal on T2 sequences, has been shown to have the highest predictive value for confirming malignancy (100%) among predefined quantitative and qualitative descriptors. After injection of contrast agent, the nodes enlarge rapidly and homogeneously with a characteristic signal intensity that is higher at the periphery of the node than at its center (edge enhancement). Modified axillary imaging protocols exist, but despite the fact that they can significantly increase the sensitivity and specificity of the

examination itself, they are rarely used in practice because they significantly prolong the scanning time (14).

A study by Cheung et al. demonstrated that CT has a sensitivity of 72, specificity of 40, and accuracy of 66.7% in detecting the presence of metastatic lymph nodes after patients received neoadjuvant chemotherapy. In their study, of 148 patients who underwent preoperative CT, 61 patients, or 41.2%, had a positive CT finding for lymph node metastases. The thickness of the lymph node cortex, which is most often analyzed, was significantly greater in metastatic lymph nodes (7.5–5.0 mm versus 2.6–2.8 mm; $p < 0.001$). Previous studies have confirmed that cortical thickness > 3 mm with a 95% confidence interval and loss of hilar fat are predictors of confirmation of a lymph node graft (14).

PET scanning, when used in combination with CT, is a very powerful tool in demonstrating advanced axillary disease and spread beyond the axilla. Studies have shown that the sensitivity in this case ranges from 80 to 94%, and the specificity is 86 to 90%. PET/CT saves patients from unnecessary and painful lymph node biopsies, allows for monitoring of patients before and after therapy, and leads to better treatment planning depending on whether the finding is positive or negative for metastatic disease. However, PET/CT is not yet sensitive enough to detect primary breast cancer or to assess axillary lymph nodes in early-stage breast cancer (stages I and II) (14). The literature shows that PET/CT can provide information on extraaxillary lymph node involvement better than conventional imaging methods and that the diagnosis of extraaxillary lymph node metastases by clinically well-

established methods shows a lack of sensitivity (15). Aktas et al. demonstrated that MRI had better accuracy than PET-CT. When the imaging modalities were used together, the accuracy rate was slightly better than when they were used separately (16).

PERITONEAL CARCINOMATOSIS

Regarding peritoneal carcinomatosis, CT is the most common imaging modality used to evaluate the peritoneum, but it requires intravenous contrast. For example, it has been reported that the sensitivity is only 25% for implants smaller than 0.5 cm compared with 90% for those larger than 5 cm. In contrast, MRI has been shown to be more accurate in detecting small peritoneal masses and carcinomatosis because of its superior soft tissue contrast and ability to provide additional information about tissue characteristics with the addition of dynamic contrast-enhanced imaging (2).

DWI sequences play an indispensable role in the analysis of peritoneal disease. Cianci et al. evaluated the sensitivity of DWI combined with MRI in detecting peritoneal carcinomatosis in 24 patients with malignancies and reported that DWI combined with MRI increased the sensitivity and detection of peritoneal carcinomatosis compared with MRI alone. In this setting, PET/CT with FDG radiopharmaceutical has a limited role and its main use would be to detect unsuspected extraperitoneal involvement (2).

BRAIN METASTASES

Breast cancer brain metastases most often occur at the gray-white matter junction or at the smooth edges of the brain. They may also present as small tumor foci with or

without extensive vasogenic edema, depending on tumor size (17).

MRI is the modality of choice for imaging the neurological system. Computed tomography (CT) scanning can be a useful diagnostic tool in acute situations to exclude hemorrhage and effusion; however, it lacks the resolution, coverage, and attention to detail offered by MRI. However, CT is widely available and its diagnostic results can be obtained quickly. Since the 1980s, contrast-enhanced MRI has become the modality of choice for imaging the brain and potential metastases. It is more sensitive than native MRI or CT in detecting lesions in patients suspected of having brain metastases. It also provides a better ability to distinguish metastatic brain changes from other neurological disorders that may be visible on MRI. Over time, as technology develops and the magnetic field becomes stronger, as well as the use of contrast agents, it is possible to detect metastases even when their size is less than 5 mm. Research shows that the time after the application of the contrast agent and the start of the scan can have a significant impact on the detection of metastatic lesions. Kushnirskz et al. found at least one additional lesion in 43% of patients after introducing a delay of 15 minutes (29). A limitation is that patients with implanted devices are a contraindication for undergoing MR and may have to settle for CT instead (17).

Positron emission tomography with computed tomography PET/CT provides metabolic information about metastatic changes in the brain to complement anatomical and physiological data collected by MR or CT. The problem occurs due to the high metabolic activity of the brain and the high consumption of

glucose, where a large amount of background signaling occurs. Also, after treatment, inflammatory changes occur around metastatic lesions that accumulate FDG and can give a false positive result for the presence of pathological changes. This results in an overestimation of the amount of tumor cells, which limits the ability of FDG-PET to detect smaller metastatic lesions. Image fusion with PET/CT scans combines information from two different modalities and interprets them in a single image. Combined PET/CT scans provide images that precisely determine the anatomical location of abnormal metabolic activity in the body (17).

LEPTOMENINGEAL METASTASES

Leptomeningeal metastases (LM) are rare complications of malignant disease and most commonly occur in patients diagnosed with primary breast cancer. In the literature, most cases describe LM carcinomatosis as a result of seeding of a solid primary tumor into the arachnoid mater and pia mater, either by hematogenous spread or directly through the cerebrospinal fluid. As a result, the entire neuroaxial system can be affected (18). Contrast-enhanced magnetic resonance imaging can detect meningeal involvement suggestive of LM before lumbar puncture (19). The gold standard for diagnosing this disease is MRI with intravenous contrast. The enlargement of the metastatic lesion is dramatic because even small nodular metastases grow vigorously and are easily detected on postcontrast T1-weighted sequences. If MRI is performed without contrast, metastatic lesions could easily be missed. Due to increased glycolysis and cellular

turnover, tumor cells increase glucose uptake. FDG studies use this property of malignant cells to help identify areas of increased metabolism, indirectly locating areas of metastasis. LM also retains this property (20).

CONCLUSION

By reviewing the literature on the topic "Role of MR, CT and PET/CT diagnostic imaging tests in the follow-up of patients with metastatic breast cancer" and analyzing 21 studies, the following key facts can be distinguished:

- CT is the most available and standardly used modality, but has a lower sensitivity in early detection of metastases.
- MRI shows the highest sensitivity and specificity in detecting metastases in bones, liver and brain; it allows for early recognition of changes.
- PET/CT provides additional metabolic information and improves treatment planning, especially in the detection of extraaxillary lymph nodes and assessment of response to treatment.
- WB-MRI presents new perspectives, allows for a full-body examination in one step and will potentially become the technique of choice in the future.
- The combination of different modalities (MRI + PET/CT) increases diagnostic accuracy compared to the use of only one method.
- The choice of diagnostic modality must be individualized according to the type of cancer, stage of the disease, patient age and availability of methods.

REFERENCES

1. Pan L, Han Y, Sun XG, Liu J, Gang H. J Cancer Res Clin Oncol. 2010;136:1007–1022.

2. Lothar D, Robert M, Elwood E, Smith S, Tunariu N, Johnston SRD, et al. Imaging in metastatic breast cancer, CT, PET/CT, MRI, WB – DWI, CCA: review and new perspectives. *Cancer Imaging*. 2023;23–53.
3. Lupichuk S, Tilley D, Surgeoner B, King K, Joy A. Unwarranted imaging for distant metastases in patients with newly diagnosed ductal carcinoma in situ and stage I and II breast cancer. *Research*. 2020;63(2):100-109.
4. Pesapane F, Downey K, Rotili A, Cassano E, Koh DM. Imaging diagnosis of metastatic breast cancer. *Insights into Imaging*. 2020;11:79.
5. Zugni F, Ruju F, Pricolo P, Alessi S, Iorfida M, Colleoni MA, et al. The added value of whole – body magnetic resonance imaging in the management of patients with advanced breast cancer. *PLoS ONE*. 2018;13(10):e0205251.
6. Gioia DD, Stieber P, Schmidt GP, Nagel D, Heinemann V, et al. Early detection of metastatic disease in asymptomatic breast cancer patients with whole – body imaging and defined tumour marker increase. *British Journal of Cancer*. 2015;112:809–818.
7. Xia L, Lai J, Huang D, Qui S, Luo Y, Cao J. Comparing the diagnostic efficacy of 18F FDG PET/CT and 18F FDG PET/MRI for detecting bone metastases in breast cancer: a meta – analysis. *Radiol Oncol*. 2023;57(3):299–309.
8. Gerke O, Nygaard ST, Sigaroudi VR, Vogsen M, Vach W, Hildebrandt MG, et al. Diagnosing Bone Metastases in Breast Cancer: A Systematic Review and Network Meta – Analysis on Diagnostic Test Accuracy Studies of 18F FDG – PET/CT, 18F-NaF-PET/CT, MRI, Contrast – Enhanced CT, and Bone Scintigraphy. *Elsevier*. 2024;0001–2998.
9. Heindel Q, Gubitz R, Vieth V, Weckesser M, Schober O, Schafers M. The Diagnostic Imaging of Bone Metastases. *Dtsch Arztebl Int*. 2014;111:741-7.
10. Cook GJR. Imaging of Bone Metastases in Breast Cancer. *Semin Nucl Med*. 2022;52(5): 531–541.
11. Haug AR, Donfack BPT, Trumm C, Zech CJ, Michl M, Laubender RP, et al. 18F – FDG PET/CT Predicts Survival After radioembolization of Hepatic Metastases from Breast Cancer. *J Nucl Med*. 2012;53:371-377.
12. Barabasch A, Kraemer NA, Ciritsis A, Hansen NL, Lierfeld M, Heinzl A, et al. Diagnostic Accuracy of Diffusion – Weighted Magnetic Resonance Imaging Versus Positron Emission Tomography/Computed Tomography for Early Response Assessment of Liver Metastases to Y90-Radioembolization. *Invest Radiol*. 2015;50:409–415.
13. Lecouvet FE, Chabot C, Taihi L, Kirchgessner T, Triqueneaux P, Malghem J. Present and future of whole – body MRI in metastatic disease and myeloma: how and why you will do it. *Skeletal Radiology*. 2024;53:1815–1831.
14. Marino MA, Avendano D, Zapata P, Riedl CC, Pinker K. Lymph Node Imaging in Patients with Primary Breast Cancer: Concurrent Diagnostic Tools. *The Oncologist*. 2020;25:231-242.
15. Morawitz J, Bruckmann NM, Dietzel F, Ullrich T, Bittner AK, Hoffmann O, et al. Comparison of nodal staging between CT, MRI, and 18F – FDG PET/MRI in patients with newly diagnosed breast cancer. *European Journal of Nuclear Medicine and Molecular Imaging*. 2021;49:992-1001.

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16. Aktas A, Gurleyik MG, Aksu SA, Aker F, Gugor S. Diagnostic Value of Axillary Ultrasound, MRI, and 18F – FDG – PET/CT in Determining Axillary Lymph Node Status in Breast Cancer Patients. *Eur J Breast Health*. 2022;18(1):37-47.
 17. Fares J, Kanojia D, Rashidi A, Ahmed AU, Balyasnikova IV, Lesniak MS. Diagnostic Clinical Trials in Breast Cancer Brain Metastases: Barriers and innovations. *Clin Breast Cancer*. 2019;19(6):383–391.
 18. Mohan P, Antonelou M, Dadzie O, Dubrey S. Headache in a young woman: leptomeningeal metastasis as the first presentation of underlying breast malignancy. *BMJ Case Rep*. 2015;2015:bcr2014207643.
 19. Short RG, Bal S, German JP, Poelstra RJ, Kardan A. Potential of F-18 PET/CT in the Detection of Leptomeningeal Metastasis. *The Neuroradiology Journal*. 2014;27:685-689.
 20. Shan S, Rangarajan V, Purandare N, Luthra K, Medhi S. 18F – FDG uptakes in leptomeningeal metastases from carcinoma of the breast on a positron emission tomography/computerized tomography study. *The Indian Journal of Cancer*. 2007;44(3):115-118.
 21. Constantinidou A, Martin A, Sharma B, Johnston SRD. Positron emission tomography/computed tomography in the management of recurrent/metastatic breast cancer: a large retrospective study from the Royal Marsden Hospital. *Annals of Oncology*. 2011;22:307-314.

ULOGA MR, CT I PET/CT DIJAGNOSTIČKIH SLIKOVNIH PRETRAGA U PRAĆENJU BOLESNIKA SA METASTATSKIM KARCINOMOM DOJKE

Toni Džeba 

Fakultet zdravstvenih studija, Sveučilište u Mostaru, Mostar, Bosna i Hercegovina

SAŽETAK

Uvod: Karcinom dojke spada među najčešće dijagnosticirane maligne bolesti, a njegova incidencija u posljednjih nekoliko desetljeća kontinuirano raste. Predstavlja vodeći uzrok smrtnosti od karcinoma u ženskoj populaciji. Unatoč napretku u dijagnostici i liječenju, recidiv bolesti i metastatski oblik i dalje predstavljaju značajan klinički izazov.

Materijali i metode: Provedena je pretraga znanstvene literature u bazi PubMed korištenjem ključnih riječi: radiology imaging, metastatic breast cancer, PET/CT, MRI i MSCT. Od ukupno 88 identificiranih radova, 21 je odabran za detaljnu analizu prema kriterijima relevantnosti, kvalitete i dostupnosti.

Rezultati: Analiza je pokazala da su MRI i PET/CT modaliteti najosjetljiviji i najspecifičniji u detekciji metastaza kod raka dojke, osobito u kostima, jetri i mozgu. MRI omogućuje rano otkrivanje metastatskih promjena zahvaljujući visokoj prostornoj rezoluciji, dok PET/CT pruža dodatne metaboličke informacije koje nadopunjuju anatomske prikaze. CT je standardno dostupan modalitet, ali s nižom osjetljivošću u ranom otkrivanju metastaza.

Zaključak: Kombinacija različitih slikovnih metoda (MRI + PET/CT) pruža komplementarne informacije i povećava točnost dijagnostike. Odabir optimalnog modaliteta treba individualizirati prema tipu karcinoma, kliničkoj slici i dostupnosti tehnologije.

Ključne riječi: dojka, metastaze, MR, CT, PET/CT.

Osoba za korespondenciju: Toni Džeba, mag. rad. teh.; toni.dzeba@gmail.com