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Case report

Metastates of colorectal cancer or a second tumor, correct interpretation of imaging tests in oncology – a case report

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Abstract

Over the last decades, a constant increase in the incidence of multiple cancers has been observed. Consequently, early detection and accurate characterization of lesions that develop during the follow-up period are essential. The authors describe the case of a 69-year-old woman treated for two metastatic cancers: colorectal and breast. Appropriate use of the imaging and pathological examinations permitted optimal systemic treatment, improved her condition, and enhanced the patient's and clinician's satisfaction.

Streszczenie

W ostatnich dekadach obserwuje się stały wzrost zachorowalności na nowotwory mnogie. W związku z tym istotne jest wczesne wykrywanie i charakteryzowanie zmian rozwijających się w okresie obserwacji po leczeniu pierwszego nowotworu. Autorzy opisują przypadek 69-letniej kobiety leczonej z powodu dwóch nowotworów przerzutowych - raka jelita grubego i raka piersi. Właściwe wykorzystanie badań obrazowych i patologicznych umożliwiło wdrożenie optymalnego leczenia systemowego, poprawiło stan pacjentki i dało satysfakcję jej oraz opiekującym się nią lekarzom.

Keywords *colorectal cancer, breast cancer, chemotherapy, hormonotherapy, multiple cancers*
Słowa kluczowe *rak jelita grubego, rak piersi, chemioterapia, hormonoterapia, mnogie nowotwory*

Introduction

Multiple primary neoplasms (MPN) are an increasing problem in contemporary oncology. Their incidence ranges from 0.5 – 10% [1,2]. The problem mainly concerns cancers of the head and neck, digestive system, and respiratory tract [3]. It often happens that a patient treated for one cancer dies from another. According to the contemporary definition of "multiple primary neoplasms" provided by the International Agency for Research on Cancer (IARC) in 1991, these tumors must meet the following conditions: confirmed histological malignancy, separate location (in the case of close proximity they must be separated by 2 cm of healthy tissue; in the same organ they may reoccur after more than 5 years), and exclusion of the possibility that the second tumor is a metastatic lesion from the primary focus [4].

Potential causes of multiple primary cancers include: genetic factors (especially in young people), increased incidence of malignant neoplasms in the population, prolonged survival of cancer patients, treatment with alkylating cytostatics or topoisomerase II inhibitors, previous radiotherapy for the primary lesion, use of immunosuppression, exposure to environmental carcinogens such as asbestos, paints, cigarette smoking, and alcohol consumption [5-8]. Multiple neoplasms may occur simultaneously - simultaneous, within 6 months after completion of treatment of the first cancer, i.e. synchronous (SMPN), or more than 6 months later metachronous (MMPN). Despite increasing diagnostic accuracy, establishing the correct diagnosis remains a challenge.). The index, i.e. the first tumor in simultaneously diagnosed cancers, is considered the one whose symptoms are the first sign of disease. It also has greater prognostic significance [4].

Despite increasing diagnostic accuracy, establishing the correct diagnosis remains a challenge. Cancer diagnostics include tissue, endoscopic, and imaging studies. The basic imaging examination is computed tomography (CT) of the chest, abdomen, and pelvis. Magnetic resonance imaging (MRI) plays an important role in diagnosing the etiology of metastatic liver lesions. Positron emission tomography (PET) is valuable in doubtful cases and in the diagnosis of distant metastases.

Case Report

In a 69-year-old female patient after left mastectomy in April 2014 (histopathologically invasive ductal carcinoma of the breast, pT1cN0M0) followed by 5 years of tamoxifen therapy, abdominal pain occurred. Colonoscopy revealed a tumor infiltration of the ascending colon (adenocarcinoma G2). On April 29, 2022, at the Department of Gastroenterological Surgery and Transplantology of the National Medical Institute of the Ministry of the Interior and Administration in Warsaw (PIM MSWiA), a right hemicolectomy was performed. Histopathological examination confirmed adenocarcinoma coli G2 pT4bN1bR0. A CT scan performed on June 2, 2022, revealed a suspected implant of 19x21 mm in the mesenteric adipose tissue.

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Upon admission to the Oncology Department of PIM MSWiA on June 17, 2022, the patient was in good general condition, with an Eastern Cooperative Oncology Group (ECOG) score of 1 (ECOG 1). The patient received the first course of postoperative chemotherapy according to the leucovorin and 5-fluorouracil (LF4) regimen. To further investigate the suspected peritoneal lesion, PET was performed on August 20, 2022, which revealed a metabolically active lesion/lymph node in the visceral adipose tissue of the mid-abdomen - metastasis from colorectal cancer [Fig. 1], metabolically active left parasternal lymph nodes, and a lesion in the sternum - breast cancer metastases[Fig. 2].

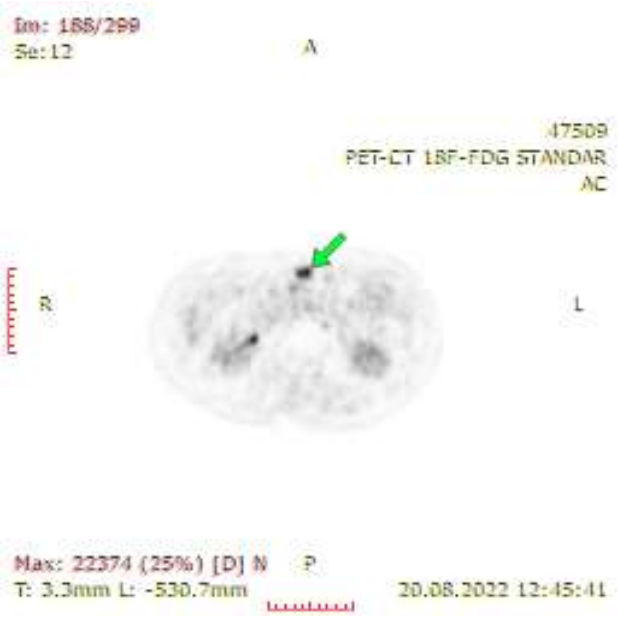

Figure 1 *Metabolically active lesion in the visceral fat of the mid-abdomen (green arrow), consistent with colorectal cancer, as seen in the PET-CT scan dated 20 August 2022.*

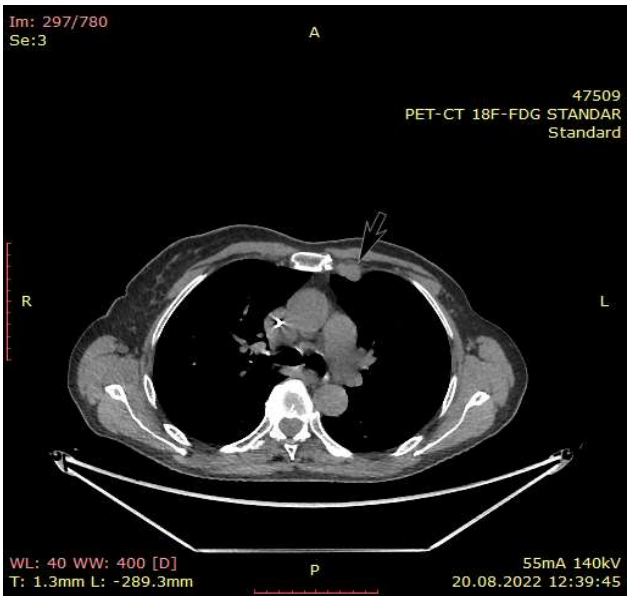

Figure 2 *Metabolically active left parasternal lymph node (black arrow) – consistent with breast cancer recurrence, as seen in the PET-CT scan dated 20 August 2022.*

On October 4, 2022, at the Institute of Tuberculosis and Lung Diseases in Warsaw, a core needle biopsy of the parasternal chest wall mass was performed. Histopathological examination confirmed metastasis of breast cancer ER(+)100% PgR(+) HER2(0). The diagnosis was simultaneous dissemination of colorectal cancer and breast cancer. Due to the absence of mutations in exons 2–4 of KRAS and NRAS genes as well as BRAF V600E, the patient was qualified on November 22, 2022, for first-line treatment according to the Ministry of Health (MH) drug program with panitumumab in combination with FOLFOX6 chemotherapy. Because of confirmed breast cancer progression, an aromatase inhibitor (letrozole) combined with zoledronic acid was added. After six courses of chemotherapy, CT showed a partial response (PR) according to the Response Evaluation Criteria for Solid Tumours (RECIST) 1.1. [Fig. 3]. PET-CT after 12 courses revealed significant morphological and metabolic regression of left parasternal lymph nodes, the mid-abdomen implant, and the sternum lesion. Treatment was complicated by grade 2 peripheral polyneuropathy, grade 2 thrombocytopenia, and grade 2 weakness and skin changes according to Common Terminology Criteria for Adverse Events (CTCAE) version 5.0.

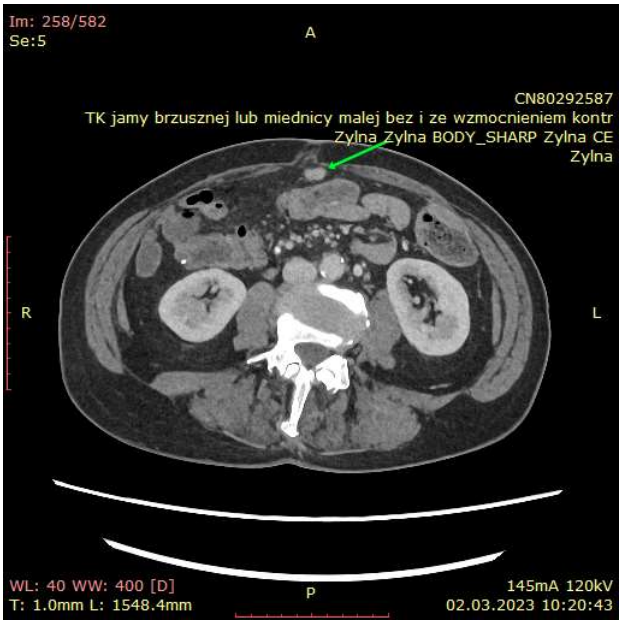

Figure 3 *Regression of implants located at the anterior abdominal wall (green arrow), consistent with metastatic colorectal cancer, as observed in the follow-up CT scan dated 02 March 2023.*

Due to observed toxicity and two consecutive CT scans showing PR, discontinuation of FOLFOX6 chemotherapy was decided, with continuation of panitumumab monotherapy. After de-escalation, the patient reported improved well-being, less fatigue, and gradual resolution of polyneuropathy symptoms. Laboratory tests showed resolution of thrombocytopenia.

Discussion

In patients after resection of the primary tumor, imaging diagnostics should be performed before qualification for oncological treatment. They play a key role in determining the stage of disease and differentiating metastatic lesions from a second primary cancer. CT of the chest, abdomen, and pelvis is most commonly performed. PET is not routinely used in initial diagnostics and may yield false

positives in cases of diverticulosis or inflammatory bowel diseases. It is gaining importance in doubtful cases in CT or MRI, or when recurrence is suspected with elevated CEA marker levels without recurrence features in other imaging studies. It should be emphasized that imaging studies are minimally invasive, yet they allow for accurate diagnosis and rapid initiation of appropriate treatment. In the discussed case, more detailed imaging allowed not only to clarify the etiology of the abdominal implant but also revealed other lesions, which turned out to be metastases of a second cancer - breast cancer. To definitively determine the nature of the lesions, histopathological verification is valuable. Extended follow-up should also be considered in patients after radical breast cancer treatment, as recurrences are possible even after more than ten years. Early detection of recurrence or second cancer determines the possibility of radical treatment. The coexistence of several cancers in one patient is increasingly common. Changes introduced in September 2023 to the Ministry of Health drug programs allow for modern treatment also in patients with multiple cancers.

Conclusions

Lesions appearing during or after treatment may be benign, but they often prove to be metastases, and sometimes metastases of another cancer. Diagnostics are based on imaging studies, which together with histopathological verification, make it possible to determine the stage of the disease and implement appropriate treatment.

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