

# Massive cutaneous metastases as a first symptom of breast cancer — a case study

## Masywne przerzuty do skóry jako pierwszy objaw raka piersi — opis przypadku

Agnieszka Białecka<sup>1</sup>, Kaja Męcińska-Jundziłł<sup>1</sup>, Urszula Adamska<sup>1</sup>, Anna Kasperska<sup>2</sup>,  
Rafał Czajkowski<sup>1</sup>

<sup>1</sup>Chair of Dermatology, Sexually Transmitted Diseases and Immunodermatology, Faculty of Medicine in Bydgoszcz,  
Nicolaus Copernicus University in Toruń, Poland

<sup>2</sup>Department of Clinical Pathomorphology, Faculty of Medicine in Bydgoszcz, Nicolaus Copernicus University in Toruń,  
Poland

### ABSTRACT

**Introduction:** Metastases to the skin are relatively rare, but they are an important diagnostic and therapeutic challenge. In women skin metastases are the most commonly associated with breast cancer. In the men they are often associated with lung cancer. Skin metastasis most often are in form of blue-purple nodules and tumours with tendency of necrosis.

**Aim:** The aim of this paper is to present the case of a patient with diagnosed breast cancer with skin involvement.

**Case report:** The 48-years old female patient was admitted to The Department of Dermatology for diagnosis and treatment of dermal lesions in form of numerous blue-purple nodules and ulcerations localised on the skin of the chest. The ultrasound examination suggested a primary malignant lesion in the left breast spreading to the right side and numerous satellite nodules. A whole nodule was collected for histopathological and immunohistochemical examinations in order to make the final diagnosis. Histopathology tests confirmed the diagnosis of tumour metastases of the skin and positive immunohistochemical reactions for cytokeratin 7 (CK7) and for oestrogen receptors (ER) pointed mammary glands as the primary site. The patient was urgently referred to the Oncology Centre.

**Conclusions:** The occurrence of skin metastasis in all tumour processes significantly worsens the prognosis of the patient. These changes should be quickly recognized by the oncologist or dermatologist. Sometimes the localization of primary tumour is not possible to determine without taking the biopsy for histopathological and immunohistochemistry assays. Rapid treatment of appropriate chemotherapy or radiotherapy can prolong life and reduce pain.

Forum Derm. 2017; 3: 3, 75–78

**Key words:** skin metastases, breast cancer, satellite nodules

### STRESZCZENIE

**Wstęp:** Przerzuty nowotworów do skóry stanowią istotny problem diagnostyczny i terapeutyczny, chociaż występują stosunkowo rzadko. Przerzuty do skóry obserwowane są najczęściej w przebiegu raka sutka u kobiet i raka płuca w przypadku mężczyzn. Zazwyczaj mają one postać sinofioletowych guzków i guzów, niekiedy z tendencją do rozpadu.

**Cel pracy:** Celem pracy jest przedstawienie przypadku pacjentki z rozpoznaniem nowotworem piersi przebiegającym z zajęciem skóry.

**Opis przypadku:** 48-letnia pacjentka została przyjęta do Kliniki Dermatologii w celu diagnostyki i leczenia zmian skórnych o charakterze licznych sinofioletowych guzków z tendencją do rozpadu oraz owrzodzeń zlokalizowanych na skórze gładkiej klatki piersiowej. W badaniu USG piersi całość obrazu przemawiała za procesem nowotworowym pierwotnie wywodzącym się z piersi lewej, z progresją zmian na stronę prawą, z licznymi guzkami satelitarnymi. Pobrano w całości guzek do badania histopatologicznego oraz immunohistochemicznego w celu ustalenia rozpoznania ostatecznego. Wynik badania histopatologicznego potwierdził rozpoznanie przerzutów nowotworowych do skóry, dodatnie odczyny immunohistochemiczne dla cytokeratyny 7 (CK 7) i receptorów estrogenowych (ER) wskazywały na sutek jako miejsce guza pierwotnego. Pacjentka została w trybie pilnym skierowana do Centrum Onkologii.

**Wnioski:** Wystąpienie przerzutów do skóry w przypadku wszystkich procesów nowotworowych znacznie pogarsza rokowanie pacjenta. Zmiany te powinny być szybko rozpoznane przez prowadzącego onkologa lub dermatologa. Czasem punkt wyjścia nowotworu nie jest możliwy do ustalenia bez pobrania materiału do badania histopatologicznego i immunohistochemicznego. Szybkie wdrożenie odpowiedniej chemioterapii lub radioterapii pozwala przedłużyć życie chorych oraz zmniejszyć dolegliwości bólowe.

Forum Derm. 2017; 3: 3, 75–78

**Słowa kluczowe:** przerzuty nowotworów do skóry, rak piersi, guzki satelitarne

### Corresponding author:

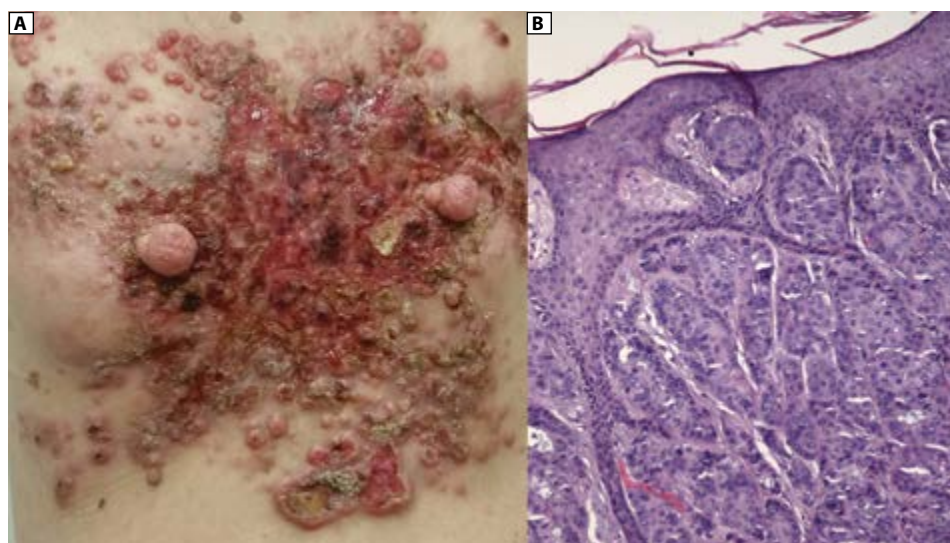
Agnieszka Białecka, Chair of Dermatology, Sexually Transmitted Diseases and Immunodermatology, Faculty of Medicine in Bydgoszcz,  
Nicolaus Copernicus University in Toruń, Skłodowskiej-Curie 9, 85–094, Bydgoszcz, Polska, e-mail: agnieszka\_bialecka@wp.pl

Cutaneous metastases originating from tumours of internal organs are relatively uncommon. They are usually a symptom of an advanced malignancy and indicate involvement of other internal organs, or may be observed in course of recurrence following an ineffective treatment. We present a case of a female patient with massive thoracic skin metastases as the first symptom of a breast cancer.

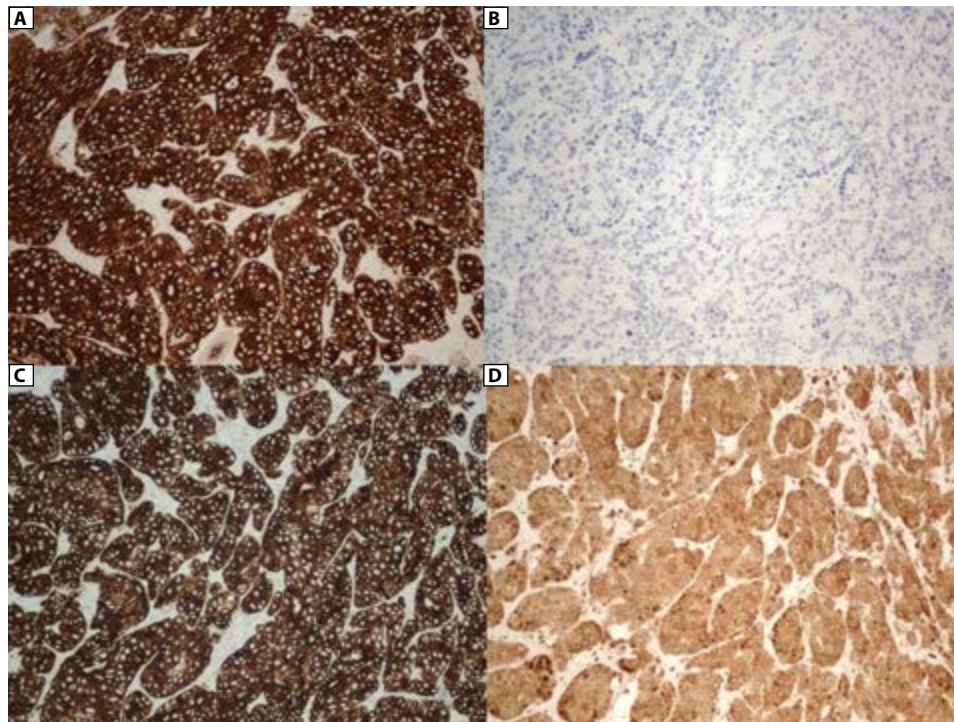
The 48-years old female patient was admitted to The Department of Dermatology for diagnosis and treatment of dermal lesions in form of numerous blue-purple nodules and ulcerations localised on the skin of the chest (Fig. 1 A). The patient noticed first dermal eruption just 2 months before the admission and in this period of time she observed development of new nodular lesions and growth of existing ones. The patient reported also a body weight loss of approximately 2 kg over the past year and an excessive sweating at night with no other relevant symptoms. There were no abnormalities in the basic laboratory tests. *Staphylococcus aureus* was cultured from ulceration swabs. Ultrasound examination of breasts demonstrated a proliferative lesion qualified as BI-RADS (*Breast Imaging-Reporting and Data System*) 5, suggesting highly probable malignant lesion requiring further diagnostic procedures. The overall ultrasound examination suggested a primary malignant lesion in the left breast spreading to the right side, causing ulcerations, skin eruptions with tendency to necrosis and numerous satellite nodules. Ultrasound examination of peripheral lymph nodes revealed pathological packs of lymph nodes within axillary fossae and within supra- and infraclavicular fossae suggesting an active proliferative process. Other lymph nodes available for examination demonstrated no typical metastatic changes. Ultrasound examination of the

abdomen showed no pathologies. X-ray of the chest revealed two symmetrical, round-shaped shadows in the area of pulmonary hili. Subsequent scopy indicated that they corresponded to shadows of nipples. Performed imaging diagnostics did not reveal any metastatic changes within internal organs. A whole nodule was collected for histopathological and immunohistochemical examinations in order to make the final diagnosis. Histopathology tests confirmed the diagnosis of tumour metastases of the skin (Fig. 1 B) and positive immunohistochemical reactions for cytokeratin 7 (CK7) and for oestrogen receptors (ER) pointed mammary glands as the primary site (Fig. 2 A, C, D). A negative reaction was obtained for human melanoma black 45 (HMB 45), thyroid transcription factor 1 (TTF 1), cytokeratin 20 (CK20) (Fig. 2 B), and caudal-related homeobox gene 2 (CDX2). Additional immunohistochemical tests demonstrated a positive reaction for cytokeratin AE/AE3 (CKAE1/AE3) and epithelial membrane antigen (EMA), and negative IHC reactions for cluster of differentiation 20, 3 and 68 (CD20, CD3, CD68). The patient was urgently referred to the Oncology Centre. The patient wasn't present at the scheduled control visit in the Dermatology Clinic. Therefore, there are no data regarding her further therapeutic process.

Depending on a source it is estimated that cutaneous metastases develop in 0.6 to 10.4% of cancer patients [1–4]. Therefore, they are relatively uncommon. That broad range of data may be a result of the fact that some classifications exclude metastatic lesions associated with haematological cancers and skin metastases secondary to melanomas. Cutaneous metastases may occur in a patient already diagnosed with cancer, may appear as a first symptom of the disease or may be a manifestation of recurrence following



**Figure 1.** A. Extensive skin lesions on the chest. B. HE  $\times$  10 in the dermis visible slot tumour cells, focally forming glandular structures



**Figure 2.** Immunohistochemistry showed positive reactions for CKPan (A), CK7 (C) and ER (D) and negative for CK20 (B), which indicates the breast as a source of skin metastases

an ineffective treatment. In women skin metastases are the most commonly associated with mammary, ovary, oral, lung and colonic cancers. In men they are often associated with lung, colonic, oral, renal, mammary, oesophageal, pancreatic, stomach and liver cancers [1]. Eventually in children cutaneous metastases are most commonly observed secondary to neuroblastoma and leukaemia [3, 5]. Cutaneous metastases may form papules, scales and blisters. However, the most common are metastatic lesions in form of blue-purple nodules and tumours, sometimes with a tendency to necrosis and formation of extensive ulcerations. In some cases the diagnosis of metastatic skin eruptions involves dermatoscopic examination demonstrating a pathological vascular pattern of a nodular lesion [6]. The examination is particularly applicable to patients with metastatic lesions in form of single tumours, to be differentiated with primary cutaneous tumours, including melanoma, basal cell carcinoma, squamous cell carcinoma, Merkel cell carcinoma, or cutaneous lymphoma, and with benign dermal lesions, including angiomas, granulomas or keloids [6, 7]. In the case of our patient the clinical presentation clearly indicated metastatic cutaneous changes and suggested breast cancer which is the most common female cancer, constituting over 1/5 of all cases of tumours. Moreover, it is most commonly associated with skin metastases. Metastases usually occur within skin of the chest, but they may also develop on extremities or within scalp what is probably associated with presence of

low-pressure and valveless venous vessels in this area [3]. Dermal symptoms secondary to breast cancer most often involve skin retraction over a tumour, orange skin, infiltration, ulceration or satellite nodules. Those symptoms were present in the discussed case. Presence of satellite nodules indicates a significant advancement of cancer or is a sign of post-treatment recurrence. It is estimated that skin metastases secondary to breast cancer are present in approximately 23.9% of patients [4]. Histopathological and immunohistochemical examinations of skin biopsies play a crucial role in the diagnosis. In the discussed case, positive reactions for CK7, ER, CKAE1/AE3, EMA, and negative for HMB 45, TTF, CK20, CDX2, CD20, CD3, CD68 could indicate lobular breast cancer [1], but further studies would be required. Despite the recommended preventive examinations, in some cases, including ours, only occurrence of visible breast skin lesions leads patients to visit a doctor, and constitutes as the first symptom of cancer [8]. The diagnosis of cutaneous metastases indicates usually a high stage of disease advancement and is a poor prognostic sign [1]. However, there are cases in which cutaneous metastases secondary to mammary cancer were isolated [9], or long-term survival was achieved [10]. No internal organ lesions were detected in imaging diagnostics procedures in the discussed case. However, some more detailed examinations would be required. Considering that breast cancer most commonly causes metastases to liver, bones, lungs and brain, a CT (computed tomography)

scanning of the chest, abdomen, head, and scintiscanning are recommended. The treatment of breast cancer patients with cutaneous metastases is determined according to the Classification of Malignant Tumours (TNM) clinical staging of the tumour. Presence of cutaneous metastases indicates a poor prognosis. However, it seems not highly significant for survival, because it is not associated with major clinical complications, as it is in the case for metastases to a central nervous system or liver. On the other hand extensive tumours and numerous skin nodules with tendency to necrosis may be a source of serious infections, bleeding or other complaints, including pruritus and burning sensation. There are reports of necessary amputation of an extremity affected by metastases due to severe and life-threatening bleeding [11]. The sole mental encounter of skin metastases is challenging for the patient. Treatment of skin metastases involves a systemic approach — chemotherapy, intratumour chemotherapy, radiotherapy or surgical excision of the most troublesome skin lesions. A growing collection of evidences is recently gathered regarding to applicability of electrochemotherapy in patients with advanced breast cancer with concomitant cutaneous metastases [12]. Each therapeutic approach provides a chance for extended survival and improves quality of life. Early diagnosis of the disease is crucial for selection of the best therapeutic option. Currently, considering advances in oncotherapy, a dermatologist may be the first specialist encountered by a patient with skin changes. It is crucial that each suspected lesion, especially occurring in a patient whose medical history is burdened with cancer, was histopathologically verified.

## REFERENCES

1. Alcaraz I, Cerroni L, Rütten A, et al. Cutaneous metastases from internal malignancies: a clinicopathologic and immunohistochemical review. *Am J Dermatopathol.* 2012; 34(4): 347–393, doi: [10.1097/DAD.0b013e31823069cf](https://doi.org/10.1097/DAD.0b013e31823069cf), indexed in Pubmed: [22617133](https://pubmed.ncbi.nlm.nih.gov/22617133/).
2. Brownstein MH, Helwig EB. Metastatic tumors of the skin. *Cancer.* 1972; 29(5): 1298–1307, doi: [10.1002/1097-0142\(197205\)29:5<1298::aid-cncr2820290526>3.0.co;2-6](https://doi.org/10.1002/1097-0142(197205)29:5<1298::aid-cncr2820290526>3.0.co;2-6), indexed in Pubmed: [4336632](https://pubmed.ncbi.nlm.nih.gov/4336632/).
3. Schwartz RA. Cutaneous metastatic disease. *J Am Acad Dermatol.* 1995; 33(2): 161–185, doi: [10.1016/0190-9622\(95\)90231-7](https://doi.org/10.1016/0190-9622(95)90231-7), indexed in Pubmed: [7622642](https://pubmed.ncbi.nlm.nih.gov/7622642/).
4. Lookingbill DP, Spangler N, Helm KF. Cutaneous metastases in patients with metastatic carcinoma: a retrospective study of 4020 patients. *J Am Acad Dermatol.* 1993; 29(2 Pt 1): 228–236, doi: [10.1016/0190-9622\(93\)70173-q](https://doi.org/10.1016/0190-9622(93)70173-q), indexed in Pubmed: [8335743](https://pubmed.ncbi.nlm.nih.gov/8335743/).
5. Strohl RA. Cutaneous manifestations of malignant disease. *Dermatol Nurs.* 1998; 10(1): 23–25, indexed in Pubmed: [9526319](https://pubmed.ncbi.nlm.nih.gov/9526319/).
6. Kamińska-Winciorek G, Wydmański J, Januszewski K, et al. Dermoscopy of nodular skin metastases from the gastrointestinal primary cancer. *Postepy Dermatol Alergol.* 2015; 32(4): 312–316, doi: [10.5114/pdia.2015.48043](https://doi.org/10.5114/pdia.2015.48043), indexed in Pubmed: [26366159](https://pubmed.ncbi.nlm.nih.gov/26366159/).
7. Kamińska-Winciorek G, Wydmański J. Dermoscopy of skin metastases from breast cancer and of the orange peel type ("peau d'orange"): a report of two cases. *Int J Dermatol.* 2015; 54(3): 343–346, doi: [10.1111/jjd.12094](https://doi.org/10.1111/jjd.12094), indexed in Pubmed: [24372008](https://pubmed.ncbi.nlm.nih.gov/24372008/).
8. Weimann ET, Botero EB, Mendes C, et al. Cutaneous metastasis as the first manifestation of occult malignant breast neoplasia. *An Bras Dermatol.* 2016; 91(5 suppl 1): 105–107, doi: [10.1590/abd1806-4841.20164572](https://doi.org/10.1590/abd1806-4841.20164572), indexed in Pubmed: [28300911](https://pubmed.ncbi.nlm.nih.gov/28300911/).
9. Tazbir M, Broniarczyk-Dyła G, Pluta P. Massive isolated breast carcinoma metastases to the skin. A case report. *Post Dermatol Alergol.* 2009; XXVI. ; 6: 547–549.
10. Zygulska AL, Krzemieniecki K. Długoletnie leczenie trastuzumabem chorej na raka piersi z przerzutami do skóry – opis przypadku. *Onkol Prak Klin.* 2010; 6. ; 3: 113–115.
11. Fidler S, Kaj J, Płochocki M, et al. Upper limb amputation in the course of skin metastases of rectal cancer. *Onkol Prak Klin.* 2007; 3(5): 259–262.
12. Wichtowski M, Potocki P, Kufel-Grabowska J, et al. Electrochemotherapy in the Treatment of Massive, Multisite Breast Cancer Metastasis to the Skin and Subcutaneous Tissue: A Case Report. *Breast Care (Basel).* 2016; 11(5): 353–355, doi: [10.1159/000450869](https://doi.org/10.1159/000450869), indexed in Pubmed: [27920629](https://pubmed.ncbi.nlm.nih.gov/27920629/).