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Lumbar Melanoma with Sentinel Lymph Nodes in Multiple Basins - Case Report and Review of the Literature

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Rezumat

Melanom lombar cu ganglioni santinelă în bazine limfatice multiple

Introducere: Melanomul reprezintă o forma extrem de agresivă a neoplaziilor cutanate, o etapă importantă în schema de diagnostic şi tratament fiind determinarea diseminarii la nivel limfatic. Pentru o stadializare cât mai corectă, se efectuează tehnica de identificare a ganglionului santinelă, care în cele mai multe dintre cazuri abordează una, respectiv 2 localizări, însă rareori au fost descrise cazuri cu ganglioni santinelă in 3 bazine limfatice.
Prezentare de caz: Prezentăm un caz de melanom situat la nivelul regiunii lombare dreapta, care din punct de vedere al particularităților histopatologice prezintă indice Breslow 4.2 mm, încadrat în stadiul pT4b. După evaluarea imagistică s-a decis ca are indicație pentru efectuarea tehnicii de identificare a ganglionului santinelă şi reexcizie cu margine de siguranță. La examenul scintigrafic au fost identificați ganglioni santinelă în 3 regiuni diferite, respectiv axila dreaptă şi inghinal bilateral.
Concluzii: Melanomul situat la nivelul trunchiului poate prezenta diferite trasee limfatice pentru ganglionii santinelă, spre deosebire de cel de la nivelul membrelor unde sunt prezente anumite patternuri. Determinarea ganglionilor santinelă in aceste cazuri presupune o provocare atât din punct de vedere diagnostic, cât şi chirurgical.

Cuvinte cheie: melanom, indice Breslow, chirurgie, ganglion santinelă, scintigrafie

Abstract

Introduction: Melanoma is an extremely aggressive form of skin neoplasia, an important stage in the diagnostic and treatment is identifying the dissemination at the lymphatic level. For a more accurate staging, the sentinel lymph node biopsy technique is performed, which in most of the time addresses one, respectively 2 locations, but cases with sentinel nodes in 3 lymphatic basins have rarely been described.

Case report: We present a case of melanoma located in the right lumbar region, which from the point of view of histopathological features has a Breslow index of 4.2 mm, classified in the pT4b stage. After the CT evaluation was performed, it was decided that there is indication for performing the sentinel lymph node technique and excision with a margin of safety. Scintigraphy revealed that sentinel lymph nodes were identified in 3 different regions, respectively the right axilla and bilateral inguinal.

Conclusions: Melanoma located on the trunk can present different lymphatic routes for the sentinel lymph nodes, unlike that on the limbs where certain patterns are present. Identifying these lymph nodes in cases like this involves a challenge both from a diagnostic and surgical point of view.

Key words: melanoma, Breslow index, surgery, sentinel lymph node, scintigraphy

Introduction

Cutaneous melanoma (CM) has shown an extremely dynamic evolution of epidemiology in the last decades, in the 70s the incidence in the USA was less than 8 per 100,000 inhabitants, in 2018 it reaches more than 25 per 100,000 inhabitants, signaling an increase of over 300% (1).

Annually, more than 97.000 new cases are diagnosed in the USA, while the number of deaths due to melanoma stands at 7.990 in 2023, representing more than 80% of deaths caused by skin tumors, uveal melanoma having even poorer prognosis (2). However, the change in the diagnostic and therapeutic algorithm regarding this pathology led to a considerable decrease in mortality (3,4). After the approval of innovative oncological treatments, such as targeted therapy and immunotherapy, mortality in the case of this pathology decreased by 17.9% (5). Some of the mechanisms underlying the development of new treatments were represented by the BRAF V600 mutation (6,7).

However, an important aspect regarding the staging and before the initiation of oncological treatments is the verification of lymph nodes dissemination. For this purpose, in the case of melanoma, the sentinel lymph node biopsy (SLNB) has been introduced since 1992 by Morton and Cochran (8). Through this, it is possible to differentiate if the malignant cells remained strictly at the melanoma site, or if they started to migrate along the lymphatic pathway, the intervention assuming the excision of the first lymphatic stations that drain the lymph from the level of the primary tumor (9). Although the concept was first described in parotid tumors, (10) it is currently used in the staging of melanoma, respectively breast cancer (11). SLNB can also be discussed in certain digestive cancers, but the evaluation of the diagnostic value in these pathologies is still a subject of debate (12). In most cases, through the SLNB technique, one or two lymphatic channels are highlighted through which the drainage path can be observed with the help of scintigraphy, but there are also fewer cases that can present even 3 lymphatic drainages. In the case of melanomas located on the limbs, the sentinel lymph nodes are usually found in a single lymphatic basin, but multiple locations have been described even in these cases (13). However, if we discuss about a tumor located in the trunk, whether abdomen or chest, things can vary, especially since we can think of several locations of the sentinel lymph nodes (14,15).

Case Report

A 44-year-old woman, diagnosed with cutaneous melanoma located at the right lumbar region, presents for the evaluation and staging of the disease. The tumor shows histological characteristics of cutaneous melanoma with multiple factors of aggressiveness, ulceration, Breslow index 4.2 mm, with mitotic index > 1 /mm^2, Clark level IV, being classified in stage pT4b.

The patient has no associated pathologies and the laboratory analyzes are within normal limits. Computed tomography with contrast was performed in the cerebral, thoracic, abdomen and pelvis regions and did not reveal any pathological changes. The ultrasound was performed at the right inguinal and right axillary regions, where lymph nodes with dimensions of 0.8 x 0.5 cm, respectively 1.0 x 0.6 cm, without signs of malignancy were detected (*Fig. 1*).

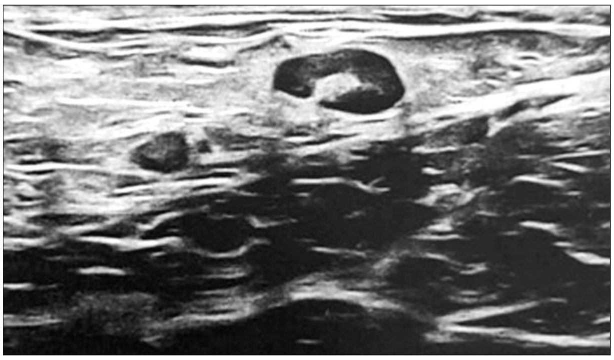

Figure 1. Ultrasound axillary region

The investigations were completed by performing a PET-CT which did not reveal metabolically active lesions or any other suspicious characteristics (*Fig. 2*).

Figure 2. PET – CT scan

The patient was thus proposed for sentinel lymph node biopsy (SLNB). On the morning of the intervention, scintigraphy was performed with injection of radioactive Technetium 99mTC and the result was that sentinel lymph nodes were located in right axilla, inguinal bilateral regions and a lymphatic lake to be checked in the proximity of the melanoma scar *(Fig. 3)*.

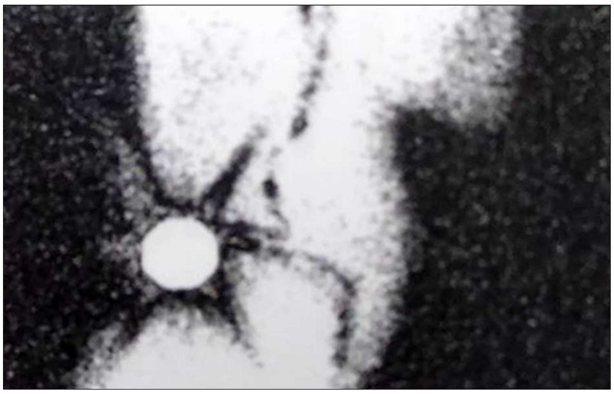

Figure 3. Lymphoscintigraphy – site of the injection

Intraoperatively, the melanoma scar was excised with a safety margin of 2 cm (according to the NCCN guideline for pT4b), while the number of sentinel lymph nodes was 4: two in the right axilla, one each at the right and left inguinal region respectively, and near the melanoma scar, the supposed region of the lymphatic lake did not have any lymph nodes. It is worth mentioning that the highest level of radioactive loading in the sentinel nodes was

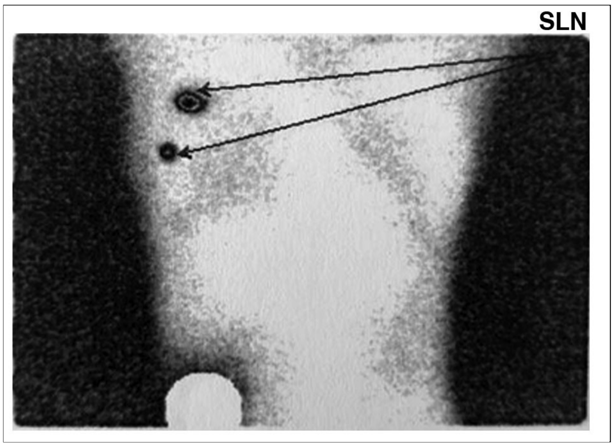

Figure 4. Lymphoscintigraphy – sentinel lymph node in the right axilla

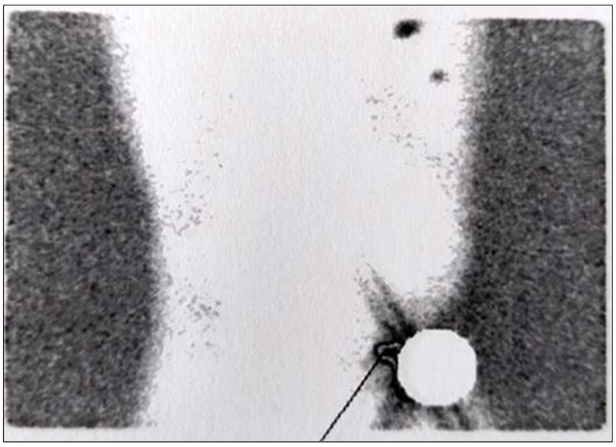

Figure 5. Lymphoscintigraphy – lymphatic lake near site of the injection

in the right inguinal region (*Figs. 4, 5, 6*). Post-operatively, the threads were suppressed at 7 days, with the exception of those at the right inguinal region, where the only complication worth mentioning was represented by seroma, which required puncture, at 5 days and at 10 days postoperatively.

The histopathology report released that the right inguinal sentinel lymph node had melanoma metastases, and the patient was classified as stage IIIC. Also, the case was redirected to the oncology department in order to initiate targeted immunotherapy treatment.

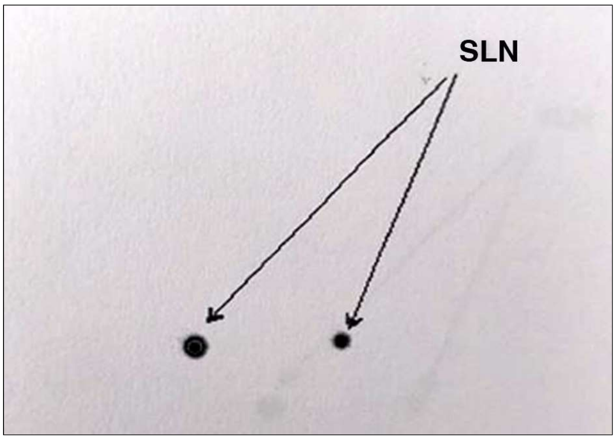

Figure 6. Lymphoscintigraphy – SLN in the inguinal regions

Discussion

In the therapeutic management of melanoma, it is a well-known fact that lymph node involvement is the most important prognostic and recurrence factor of the disease. The methods of detection within the SLNB are various, but they are not the subject of this work, the current case using the double technique with Technetium and blue dye. Melanomas located on the trunk have long been of interest from the point of view of the lymphatic pathways, as there is no consensus regarding the association between the location of the melanoma on the trunk and a possible location of the sentinel node in a predictable way.

The lymphatic pathway of the sentinel lymph node is closely related to the site of the primary melanoma, especially in the case of melanomas located on the limbs. If melanomas from the lower limbs mostly drain to the inguinal region, and those from the upper limbs drain to the axilla, atypical locations have also been described in the literature, sometimes being intrathoracic, respectively intra-abdominal (16).

An extremely important aspect is the association between the Breslow thickness and the positivity of the sentinel lymph node (p=0.012). A study conducted in Latvia demonstrating that it is one of the main characteristics associated with the occurrence of metastases. Also, the same study reveals the fact that aggressiveness factors from the histopathological examination, such as ulceration, are associated with a faster dissemination of melanocytes in the lymph nodes (p=0.033) (17).

At the same time, another study carried out in the USA reiterated the fact that the multiple drainage of the sentinel lymph nodes has no effect on distant micrometastases (p=0.84), on the disease-specific interval (DSS) (p=0.53) or on the recurrence of the disease (p=0.65), in these cases being involved as in the previous example, the histopathological characteristics of aggressiveness of the tumor, respectively the thickness of the Breslow index (18).

On the other hand, a Spanish study shows that both the Breslow thickness and multiple sentinel lymph nodes can be associated with worse disease-free survival rate both in the case of positive nodes for metastasis ($p<0.01$ and p=0.047) and in the case of negative ones ($p <0.011$ and p=0.019) (19).

Also, considering the location of melanoma on the trunk and the histopathological characteristics of aggressiveness, another study reveals that patients with tumors located on the trunk and presenting with ulceration are more likely to present sentinel lymph nodes with multiple locations. ($p<0.0001$ and $p<0.045$) (20).

Nevertheless, another study that had a cohort of 274 patients with multiple SLN drainages and 1413 patients with a single SLN concluded that there is no significant difference in the lymphatic metastases (p=0.84), overall survival (OS) (p=0.23), disease-specific survival (DSS) (p=0.53), or locoregional recurrence (p=0.58) between the 2 groups. The main characteristics that presuppose the differentiation in the case of DSS and DFS are the T stage of the tumor, the presence of ulceration, older age or lymph node metastases (18).

The increase in the incidence of melanomas of the trunk in young women (category 40 years old) is underlined by another study, which shows that within the distribution by sex and location of the tumor, this category suffered the greatest increase in relation to melanomas in the limbs or those in the head and neck area (net drift, 3.8%/year of calendar time; 95% confidence interval, 3.5-4.0%) (21).

Conclusions

Cutaneous melanoma still requires a complex therapeutic algorithm both in terms of staging and treatment. If the melanoma is localized at the upper or lower limbs, the detection of the sentinel lymph nodes in a predictable location, the melanoma located on the trunk can have quite a large variability regarding the detection of the sentinel lymph nodes.

Although we can think that the lower half of the trunk can present an anatomy that favors lymphatic drainage at the inguinal level, respectively the upper half has lymphatic drainage towards the axilla, there are many cases in which the location of the sentinel nodes contradicts this prediction.

Although there are studies in the literature that reveal that multiple drainages can be an additional risk factor, or not, in the case of the occurrence of lymph node metastases or the recurrence of the disease, it must be taken into account that the most important characteristics are those related to the primary tumor, especially the Breslow index but also the aggressiveness factors described in the histopathological report such as ulceration or the mitotic index.

In conclusion, melanomas of the trunk with multiple drainage of the SLN represent a diagnostic and treatment challenge, which still requires studies to bring new information about the drainage pattern and the comparison with other tumor locations regarding lymphatic metastasis.

Conflict of Interests

There is no conflict of interest between authors.

Ethical Statement

The patient gave the informed consent and the

the study was conducted in accordance with the Declaration of Helsinki.

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