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Post-treatment surveillance principles for selected skin cancers – recommendations of the Surveillance Standardization Section of the Polish Oncology Society

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The paper presents recommendations concerning the surveillance of patients after the treatment of squamous-cell carcinoma (SCC), basal-cell carcinoma (BCC) and Merkel-cell carcinoma (MCC) based on the current European and American recommendations. This overview discusses the methodology and detailed recommendations concerning the post-treatment surveillance, with special attention to the clinical examination, dermatoscopy, imaging diagnostics and patient education. The recommendations emphasise the significance of early monitoring for recurrences, and early detection of new skin cancers, adapted to individual risk factors in a patient and the characteristics of primary cancer. Also the significance of patient education, with regards to the protection against sun radiation and the role of skin self-examination are stressed.

Key words: skin cancer, carcinoma, squamous cell, basal cell, Merkel cell, skin neoplasms, follow-up, survivorship, skin self-examination

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Introduction

Squamous-cell carcinoma (SCC) and basal-cell carcinoma (BCC) are the most frequently occurring malignant tumours in Caucasians [1–3]. Merkel-cell carcinoma (MCC) is a cancer that occurs many times less frequently than the two previous types of the skin cancer, yet with respect to the aggressive course and a relatively significant incidence in the population characteristic of the residents of Poland, it also came under the spotlight of the Surveillance Standardization Section of the Polish Oncology (https://www.pto.med.pl/sekcja-standaryzacji-nadzoru-po-leczeniu-onkologicznym) [4].

In spite of the large prevalence of the above cancers in people, the existing recommendations concerning the principles of surveillance after the treatment, published so far, were significantly diversified and were based, to a large degree, on consensus conferences and opinions of expert groups appointed on an *ad hoc* basis by various organisations. However, within the two recent years, updated agreed European recommendations concerning the clinical management in SCC, BCC and MCC were published under the common banner of the European Association of Dermato-Oncology (EADO), European Dermatology Forum (EDF), European Society for Radiotherapy and Oncology (ESTRO), European Union of Medical Specialists (UEMS), European Academy of Dermatology and Venereology (EADV) and European Organization for Research and Treatment of Cancer (EORTC) and European Society for Medical Oncology (ESMO) [1–5].

The objective of this study was to work out uniform recommendations concerning the surveillance after the completion of the treatment of the patients with SCC, BCC and MCC designed for doctors of numerous specialisations, including family doctors, taking into consideration the manner of operation of the national healthcare system in Poland.

Material and methods

A critical overview of some selected guidelines for clinical management with regards to their fragments referring to the surveillance of convalescents who completed the treatment of SCC, BCC and MCC [1–8] was made. The overview did not include the skin melanoma, because, for this cancer, specific national guidelines concerning the surveillance after the treatment have recently been published [9–10].

Recommendations

The surveillance of the patients after the treatment of skin basal-cell cancer

The objective of the surveillance after the treatment of BCC is the following: local recurrence; another primary BCC, and other skin cancers with similar risk factors for development (squamous-cell carcinoma, melanoma).

The first follow-up visit after the treatment should include detailed information for the patient on the following: diagnosis and prognosis; risk factors of skin cancers; methods of protection against sun radiation; clinical signs of local recurrence which can be detected by the patients themselves;

Table I. The principles of surveillance of the patients with basal cell carcinoma of the skin without signs of an active disease [1, 5]

Intervention	Recommendation
medical examination, involving, in particular in the scar, its area and the entire skin	every 6–12 months in the first 5 years, and then at least every 12 months[#]
dermatological assessment (with dermatoscopy) of the skin in the patients with at least 1 of the additional recurrence risk factors listed below: • a planned solid organ, bone marrow or hematopoietic cells transplantation or a history of it; • the occurrence of at least 1 skin melanoma within the last 5 years; • the occurrence of at least 4 non-melanocytic skin cancers within the last 5 years	every 4–6 months for the first 5 years, then every 6–12 months (lifetime) [#]
patient self-examination of the scar and the entire skin once a month	the patients should be appropriately trained (in particular those with recurring lesions) and an immediate medical visit must be recommended in case of noticing any lesion in the place of a previous surgical intervention
skin protection against UV	sun exposure should be limited during the midday (between 10 a.m. and 4 p.m.), protective clothing must be worn, including headgear and sunglasses; regular use of broad-spectrum sunscreens is recommended on the exposed skin (especially for people with light complexion)
imaging diagnostics if, on account of initial stage/ location, physical examination might not be efficient to diagnose recurrence	imaging technique (ultrasound, CT, MRI), the target area and frequency should be defined by a multispecialist team upon the completion of the treatment, on the basis of the suspicion of the type of recurrence (i.e. local, regional, metastatic)

Note! During the first follow-up visit detailed information concerning the risk of recurrence must be communicated to the patient, which will facilitate self-diagnosis; there are data available showing that in patients with non-advanced form of BCC and whose personal characteristics make self-surveillance possible, only one follow-up visit is possible when all the information concerning the skin protection and self-examination is communicated.

[#] – the definite frequency of the interventions undertaken within the surveillance process depends first of all, on individual characteristics of the disease and treatment response; more intensive schedule of visits should apply to convalescents after treatment with primarily local advancement of BCC or BCC with regional/systemic dissemination

Table II. Recommended surveillance principles after the treatment of patients with squamous-cell carcinoma of the skin without the signs of an active disease [2, 3, 6]

Disease stage upon diagnosis	Medical examination of the skin and regional lymph nodes	Regional lymph nodes ultrasound	Other imaging procedures (CT, MRI, PET-CT)	Other interventions
low risk	every 12 months for the first 2 years	not necessary if the lymph nodes are not palpable during physical examination	not necessary without clinical indications	• patient self-examination of the regional lymph nodes and the entire skin to be made once per month[a] • skin protection against sun (SPF 30–50)[b]
high risk*	every 3–6 months for the first 2 years, then every 12 months	every 3–6 months for the first 2 years	not necessary without clinical indications	
very high risk**	every 3 months for the first 5 years and then every 6–12 months	every 3–6 for the first 5 years and then every 6–12 months	every 3–6 for the first 3 years and then depending on the clinical situation	
all convalescents after SCC, who are at the same time transplant recipients or have a chronic lymphatic leukaemia	every 3–6 months for a lifetime	in accordance with the classification to the risk group	in accordance with the classification to the risk group	

Note! The definite frequency of the interventions undertaken within the surveillance process depends first of all, on individual characteristics of the disease and treatment response.

[a] – the patients should be appropriately trained (in particular those with recurring lesions) and an immediate medical visit must be recommended in case of noticing any lesion in the place of a previous surgical intervention; [b] – sun exposure should be limited between 10 a.m. and 4 p.m., protective clothing, including headgear and sunglasses, should be worn. Regular use of broad-spectrum sunscreens is recommended on the exposed skin (especially for people with light complexion); * – squamous-cell carcinoma without *in-transit*, regional or distant metastases (i.e. N0 M0) with accompanying high risk factors of local or distant recurrence (see table IV); ** – squamous-cell carcinoma with regional (i.e. N+) or systemic (i.e. M1) dissemination

the necessity of self-examination of the patient's skin on connection with an increased risk of developing new primary cancer [1].

Overall cumulative risk of BCC recurrence is low, yet the risk of developing a subsequent basal-cell carcinoma is approx. 30–50% within 5 years [9]. On account of the BCC prevalence and a large number of convalescents, the manner of surveillance must be adapted to the risk of recurrence. A large BCC recurrence risk group is made up by the patients with a history of a previous BCC recurrence and patients with a history of numerous BCCs. BCC tumors with a high risk of recurrence are most often located on the face and characterized by an aggressive course with perineural and perivascular infiltration [1]. Moreover, the process of individualisation of the surveillance must include the histopathological variants of BCC burdened with a high risk of recurrence. The recent WHO classification of skin tumors introduced the distinction into BCC subtypes connected with a low risk (superficial, nodular, with adnexal differentiation and fibroepithelial) and with a high risk (micronodular, infiltrating, sclerosing, basosquamous carcinoma and BCC with sarcomatoid differentiation) of recurrence [10]. In the case of patients with a history of irradiation (especially with the use of older techniques) in the therapy of BCC or other cancers, the surveillance must also include the risk of development of post-irradiation cancer within the irradiated field. On the basis of the collected date, the guidelines were formulated, as presented in table I.

The surveillance of patients after the completion of treatment of skin squamous-cell carcinoma

The objective of the surveillance after the treatment of BCC is the following: local, regional and distant recurrence; another SCC; diagnosis of other skin cancers with similar risk factors for development (basal-cell carcinoma, melanoma); clinical and radiological assessment of the treatment efficiency and adverse effects; education of the patient and their carers about the risk of recurrence [2, 6]. Additionally, follow-up visits allow to treat the precancerous skin lesions, which is especially important

Table III. High risk factors of local or distant recurrence in skin squamous-cell carcinoma [2, 3]

Risk factor	Characteristic
diameter	>20 mm
location	lips, ears, temples
thickness	>6 mm or infiltration outside subcutaneous adipose tissue
histological differentiation	low (poorly differentiated)
desmoplasia	present
infiltration of peripheral nerve fibres	present (microscopic, symptomatic or radiological)
bone infiltration	present
immunosuppression	present
surgical margin	positive

in the case of the patients with an increased field of carcinogenesis, patients with immunosuppression and numerous primary SCCs [3].

Squamous-cell carcinoma of the skin occurs primarily in elderly persons with numerous comorbidities. This leads to the necessity of adaptation of the surveillance principles to an individual situation of the patient and involvement of the closest caring persons to the surveillance process (e.g. family members of the nursing facility staff) [2, 3].

In the case of patients with a history of SCC therapy involving irradiation, the surveillance should include the risk of development of post-irradiation cancers within the irradiation field. The recommendations, based on the collected data, are summarized in tables II and III.

The surveillance of patients after the treatment of Merkel-cell carcinoma of the skin

The objective of the surveillance after the treatment of MCC includes the following: diagnosing the recurrence at an early stage; diagnosis of other skin cancers with similar risk factors for development (SCC, BCC, skin melanoma); clinical and radiological assessment of the treatment efficiency and adverse effects; increasing the awareness of the risk of recurrence in the patient and their carers [2, 4].

The website of an international organisation dedicated to patients with MCC presents a Recurrence Risk Calculator, which might be helpful to individualise the surveillance program after the treatment (https://merkelcell.org/prognosis/recur/) (fig. 1). Based on the collected data, the recommendations were formulated as presented in the table IV.

Conclusions

Based on the overview of the European and American recommendations concerning the principles of patient surveillance after the treatment of skin cancers, some cardinal rules may be defined in this respect:

1. The fundamental method of patient surveillance after the treatment of these skin cancers involves regular clinical assessment (initially every 3–6 months, then every 6–12 months), possibly supplemented by dermatoscopic assessment of the entire skin. Special attention should be given to the area of the scar, regional lymph nodes and the skin areas exposed to the same risk factors.
2. The selection of imaging diagnostic procedures within the surveillance process should be based on the initial stage of the skin cancer, its location and the presence of additional risk factors (first of all chronic immunosuppression) and the findings of an interdisciplinary team after the treatment is completed; the selection of imaging diagnostic procedures should follow the principle of using the basic and easily accessible procedures first (such as ultrasound), followed by other imaging methods (i.e. CT, MRI or PET) as needed.

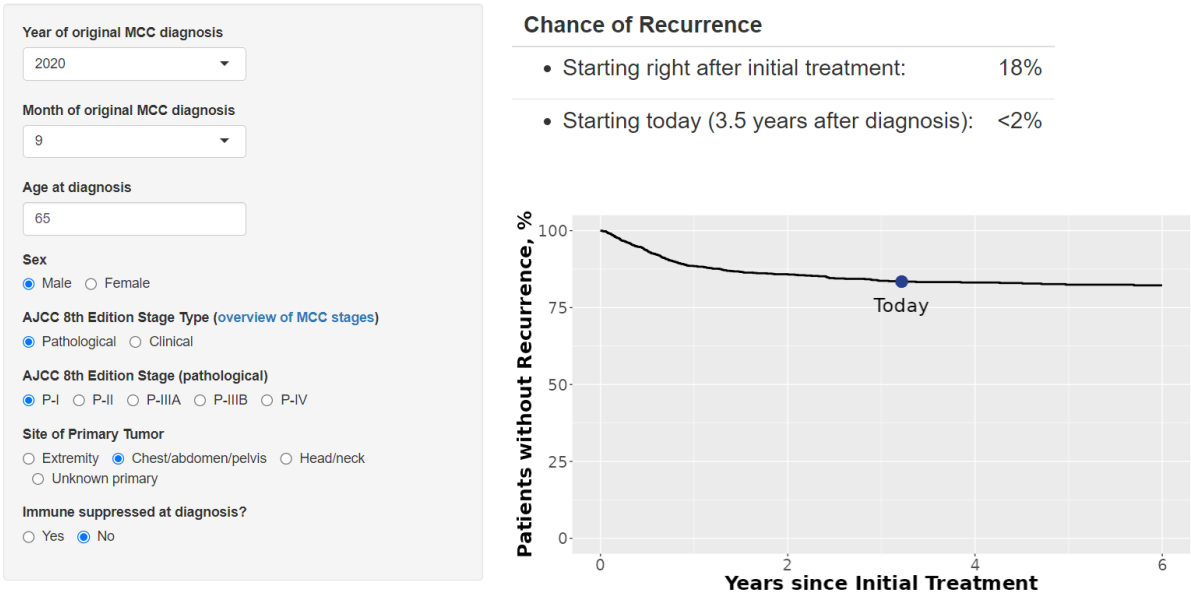

Figure 1. MCC Recurrence Risk Calculator available at: https://merkelcell.org/

Table IV. Recommended surveillance principles after the treatment of patients with Merkel-cell carcinoma of the skin without the signs of an active disease [4, 7]

Disease stage upon diagnosis	Interventions undertaken in patients without the signs of active disease	Frequency of interventions	Additional remarks
stage 0–II without high risk factors*	physical examination and interview with dermatoscopic assessment of the whole body, palpation of the scar and surrounding skin and lymph nodes	every 3–6 months for the first 3 years, then every 12 months up to 5 years	in the case of primary location of the tumour within the head or neck: the recommended imaging diagnostics as in the case of patients with higher disease stages (i.e. ^{18}F-FDG PET/CT of the whole body or contrast enhanced neck/chest/ abdominal/ pelvis CT and head MRI or CT)
	ultrasound assessment of the scar, lymph nodes and lymphatic drainage	every 3–6 months for the first 3 years, then every 12 months up to 5 years	
stage III, in good clinical condition and not in immunosuppression	physical examination and interview with dermatoscopic assessment of the whole body, palpation of the scar and surrounding skin and lymph nodes	every 3 months for the first 3 years, then every 6 months up to 5 years, then once per year	
	ultrasound assessment of the scar, lymphatic drainage or the area and lymph nodes	every 3 months for the first 3 years, then every 6 months up to 5 years	
	^{18}F-FDG PET/CT of the whole body (if accessible) or contrast enhanced neck/chest/ abdominal/ pelvis CT and head MRI or CT	every 3–6 months for the first 3 years, then every 6–12 months up to 5 years	
stage IV and lower stages with a bad clinical condition	individual follow-up program for a specific patient		
patients in immunosuppression, irrespectively of the MCC stage	physical examination and interview with dermatoscopic assessment of the whole body, palpation of the scar and surrounding skin and lymph nodes	every 3 months for the first 3 years, then every 6 months	in the case of lack of recurrence or any other primary tumour, after 5 years, follow-up visits can be made once per year
	ultrasound assessment of the scar, lymphatic drainage or the area and lymph nodes	every 3 months for the first 3 years, then every 6 months up to 5 years	
	^{18}F-FDG PET/CT of the whole body (if accessible) or contrast enhanced neck/chest/ abdominal/ pelvis CT and head MRI or CT	Every 3–6 months for the first 3 years, then every 6–12 months up to 5 years	

* – high risk factors in Merkel-cell carcinoma: tumour diameter ⩾2 cm, chronic immunosuppression, primary location of the tumour within the head or neck, lymph nodes involvement or the lack of correct specification of the condition of the lymph nodes (Nx), infiltration of the lymphatic or blood vessels; ^{18}F-FDG PET – positron emission tomography with the use of ^{18}F-fluorodeoxyglucose; CT – computed tomography; MR – magnetic resonance

3. On account of the easiness of identification of the majority of recurrences by the patient themselves as well as continual impact of the main factors of risk of recurrence, a significant role in the surveillance process is played by the education of a patient (or their carers) concerning clinical signs of skin cancer recurrences and protection UV radiation (i.e. avoiding sun exposure between 10 a.m. and 4 p.m.; wearing protective clothing, including headgear and sunglasses; regularly using of broad-spectrum sunscreens on the exposed skin (especially for people with light complexion) and self-examination of the skin.

Article information and declarations

Author contributions

Wojciech M. Wysocki – conceptualization, writing – review and editing.
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Elżbieta Wójtowicz – writing – original draft preparation.
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Ethics statement

No ethical issues or concerns were applicable to this research.

Conflict of interest

Piotr Rutkowski has received honoraria for lectures and advisory boards from MSD, BMS, Novartis, Pierre Fabre, Sanofi, Madison Pharma, Genesis, Astra Zeneca outside of the scope of this paper.

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