



Initial Clinical Manifestations and Early Diagnosis of Basal Cell Skin Carcinoma

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Abstract

Background/Aim: Basal cell carcinoma (BCC) is the most common cancer of the skin. It is believed that increased UV radiation from the sun accounts for almost 90 % of the risk of BCC. There is a growing trend in the incidence of BCC in a younger population. The aim of study was to analyse the initial clinical symptoms of BCC that may be important for the early detection of this skin tumour.

Method: The study was a prospective, multicentre study performed in the period from March 2017 to February 2022. A total of 69 respondents with BCC were analysed. Respondents applied for a targeted examination to examine a suspicious skin lesion (due to certain symptoms) or were diagnosed with BCC by accident, when examining other skin changes. Respondents were divided into 2 groups. The first, Group I (35 respondents), consisted of respondents with nodular BCC. The second, Group II (34 respondents), consisted of respondents with superficial spreading BCC. Initially, a careful history and data on the characteristics, shape and character of the tumour were taken from all respondents. Data on all (even the smallest) initial symptoms and relevant signs of evolution, as well as subjective problems related to the tumour were noted. All respondents underwent dermoscopy of suspected skin changes.

Results: A significant difference was found between the examined groups in the characteristics of bleeding, crust formation and tendency to injury in lesions, where they occur more often in patients with nodular BCC. Symptoms such as burning and flaking occurred significantly more often in patients with superficial spreading BCC ($p < 0.01$), as well as the diameter of lesions over 5 mm ($p < 0.05$).

Conclusion: Early clinical diagnosis of BCC is possible with a tumour diameter of only a few mm. The predominant initial (highly susceptible) symptoms of nodular BCC were initial bleeding and / or scab formation on the lesions, as well as propensity to injury. The superficial spreading form of BCC was often larger than 5 mm in diameter, with more frequent scaling of the lesion, as well as burning and stinging sensations in the tumour area. Itching was observed to be a very common previous occurrence in the BCC initial focus zone in subjects of both study groups. Dermoscopy is a highly reliable diagnostic method for early detection of BCC.

Key words: Basal cell carcinoma; Skin; Clinical diagnosis; Dermoscopy.

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Introduction

Basal cell carcinoma (BCC) of the skin is the most common skin cancer (with an incidence of about

75 % of all skin cancers). At the same time, it is the most common cancer in the human popula-

tion. The most common clinical forms of basal cell carcinoma are superficial spreading and nodular basal cell carcinoma.¹ There is consensus regarding the impact of skin damage from UV sunlight on the increased incidence of BCC. That is a reasonable explanation for why the incidence of BCC is particularly high in those parts of the world where increased UV radiation prevails. There are studies that show that the initial damage to the skin from increased UV radiation, which occurred up to the age of 20, with chronic exposure to UV radiation, is a significant risk factor in the development of BCC. At the same time, if the first skin damage from increased UV radiation occurred before the age of ten, the risk of developing BCC skin is relatively higher. There is an evident trend of increasing incidence of BCC in an ever younger population. In addition, there is a clear increased risk of BCC in people with a positive personal or family history of BCC.¹⁻⁹

Methods

This study was a prospective, multicentre study performed in the period from March 2017 to February 2022. A total of 69 respondents with BCC were analysed. Respondents applied for a targeted examination to examine a suspicious skin lesion (due to certain symptoms) or were diagnosed with BCC by accident, when examining other skin changes. Respondents were divided into 2 groups. The first, Group I (35 respondents), consisted of respondents with nodular BCC. The second, Group II (34 respondents), consisted of respondents with the superficial spreading BCC. Initially, a careful personal and family history, risk factors for malignant skin tumours and data on the characteristics, shape and character of the tumour were taken from all respondents, followed by the data that include the characteristics, forms and character of the tumour. Data on all (even the smallest) initial symptoms and relevant signs of evolution, as well as subjective problems related to the tumour were noted. All respondents underwent dermoscopy of suspected skin changes. The observed parameters were both gender and age of the respondents and the anatomical position of the skin BCC.

Data was analysed on IBM SPSS 18.0 software. Normality of data was analysed by Kolmogorov-Smirnov test. Based on the results of test, appropriate parametric/non-parametric test

were used. A level of statistical significance was set at $p < 0.05$.

Results

The study included 69 subjects, 35 with basal cell carcinoma of the nodular type and 34 with superficial spreading BCC. In Group I there were 22 (62.8 %) women and 13 (37.2 %) men, while in Group II there were 14 (41.1 %) women and 20 (58.9 %) men. The age of the respondents was from 41 to 90 years and the largest number was between the ages of 71 and 80. The most frequently affected skin region was on the face in both groups of subjects and nodular BCC was most common on the face and back, as shown in Table 1.

Table 1: General characteristics of the respondents and anatomical localisation of basal cell carcinoma

Variables	All patients	Group I	Group II
Number of respondents, N (%)	69 (100.00)	35 (100.00)	34 (100.00)
Gender, N (%)			
Male	27 (39.10)	13 (37.20)	14 (41.10)
Female	42 (60.90)	22 (62.80)	20 (58.90)
Age (years)			
41-50	4 (11.40)	5 (14.70)	9 (13.10)
51-60	5 (14.30)	5 (14.70)	10 (14.50)
61-70	11 (31.40)	10 (29.40)	21 (30.40)
71-80	13 (37.20)	12 (35.30)	25 (36.20)
81-90	2 (5.70)	2 (5.90)	4 (5.80)
Anatomical region of BCC (N, %)			
Head	8 (11.60)	8 (22.90)	0 (0.00)
Face	30 (43.40)	26 (74.30)	4 (11.80)
Neck	1 (1.45)	1 (2.80)	0 (0.00)
Chest	9 (13.10)	0 (0.00)	9 (26.90)
Back	16 (23.20)	0 (0.00)	16 (47.10)
Abdomen	2 (2.90)	0 (0.00)	2 (5.90)
Upper extremity	1 (1.45)	0 (0.00)	1 (2.90)
Hand	0 (0.00)	0 (0.00)	0 (0.00)
Lower extremity	1 (1.45)	0 (0.00)	1 (2.90)
Foot	1 (1.45)	0 (0.00)	1 (2.90)

N (%) – number (percentage), BCC – basal cell carcinoma; Group I consisted of respondents with nodular BCC; Group II consisted of respondents with the superficial spreading BCC;

Clinical characteristics and associated signs are shown in Table 2. Diameter over 5 mm, rapid tumour growth, tumour bleeding, scab formation flaking, itching, burning, pain and injury were monitored.

Table 2: Distribution of basal cells carcinomas (BCC) according to clinical characteristics and associated signs

Observed parameters	Group I		Group II		p-value*
	Yes	No	Yes	No	
Diameter > 5 mm	7 (20.0)	28 (80.0)	16 (47.1)	18 (52.9)	0.017
Rapid growth	0 (0.0)	35 (100.0)	0 (0.0)	34 (100.0)	
Bleeding	29 (82.8)	6 (17.2)	8 (23.5)	26 (76.5)	< 0.001
Scrab formation	29 (82.8)	6 (17.2)	8 (23.5)	26 (76.5)	< 0.001
Flaking	5 (14.2)	30 (85.8)	22 (64.7)	12 (35.3)	< 0.001
Itch	25 (71.4)	10 (28.6)	29 (85.3)	5 (14.7)	
Burning sensation	7 (20.0)	28 (80.0)	29 (85.3)	5 (14.7)	< 0.001
Twinge sensation	14 (40.0)	21 (60.0)	20 (58.8)	14 (41.2)	
Pain	2 (5.7)	33 (94.3)	1 (2.9)	33 (97.1)	
Injury	25 (71.4)	10 (28.6)	8 (23.5)	26 (76.5)	< 0.001

Values are presented as N (%) – number (percentage); * t-test of independent samples; Group I consisted of respondents with nodular BCC; Group II consisted of respondents with the superficial spreading BCC;

Bleeding and appearance of crusts (Student t test; $df = 62, p < 0.01$) was higher in patients with nodular BCC. Injuries were more often in patients with nodular BCC ($df = 67, p = 0.017$). BCC was more often over 5 mm in patients with superficial spreading BCC. Peeling and burning sensations were more often in patients with the superficial spreading BCC ($p < 0.01$ and $p < 0.01$, respectively).

Discussion

There are various data on the more frequent incidence of BCC in the female or male population. Namely, there are some reports that BCC is more common in male, but also that BCC is more common in women, too.¹ The distribution of presented respondents by gender showed that BCC was more often diagnosed in females, ie in 42 of them (60 %). In general, BCC is more common in people aged 50-70, but there is a visible trend that younger people are also becoming more affected.¹⁻⁹ During analysis, the youngest respondent was 40 years old. The youngest female was also 40 years old.

BCC of the skin is more often diagnosed on the face, head, back and pectoral region. Of course, this is not the rule, as it is known that BCC can occur in any anatomical region. The superficial spreading BCC predominantly occurs on the body and back. At the same time, predilection sites for nodular BCC predominantly represent the face and head.¹⁰ There are available reports presenting that the formation of skin BCC tumour foci is associated with immature hair follicle envelope cells.¹¹ BCC skin formation in anatomical regions

covered with hair supports this thesis. Presented research is in terms of the distribution of BCC by anatomical regions in accordance with similar data from the literature.

On the other hand, there is evidence that the formation of BCC of skin is correlated with defects at the level of the sonic hedgehog gene (SHH gene). This thesis is supported by the fact that BCC (true rarely) can also appear as acral BCC of the skin, on the palms or soles and then on the mucous membranes. This favours the thesis of SHH gene abnormalities, because then BCCs do not correlate with hair follicles.¹²

During this research, no BCC was recorded on the acral regions or mucous membranes. Nodular BCC is initially most often diagnosed in the form of a discrete nodule. It is more often described as “mother-of-pearl”, almost shiny and small telangiectasias can be seen on it, which is one of the important characteristics of this tumour. Progression is accompanied by small erosions, bleeding and the formation of irritable scabs. After some time, a central ulceration is formed, which is preceded by vascular dilatation. Also, BCC is observed with discrete or quite clear pigmentation. Unpigmented nodular BCCs of the skin are very rare. Tumour progression can take years.^{1,4}

The superficial spreading BCC is also a common skin tumour. This form of BCC can only be diagnosed as a discrete erythematous spot or a vague scaly change. Over time, it expands marginally, forming a rampant edge. Sometimes minor erosions and discrete transient bleeding occur. This form of BCC can also be found in younger people.^{1,4}

Presented research, which focused on the early specifics and symptoms of BCC, showed several important discrete symptoms leading to the formation of a very obvious focus of BCC. Namely, it has been shown that BCC can initially look so uncharacteristic that it too often causes almost no patient attention. In contrast, in a larger number of respondents, in both study groups, BCC was identified with a trivial pimple or other harmless change in the skin.

It has been noticed that careful skin inspection with a careful anamnesis can be of great importance for timely suspicion and early detection of BCC foci. This research has shown that the tendency to bleed and / or scab formation of the initial tumour focus is one of the first highly suspicious symptoms. It turned out that the majority of Group I respondents (29 or 82.8 %) had “unexplained” bleeding in the zone of “harmless, trivial” changes in the skin, which did not deserve the attention of the respondents. However, it was noticed that many respondents rationalised this symptom and diminished its significance. In fact, respondents often associated this significant symptom (diagnosed in both groups in a total of 37, ie 53 % of cases) with previous injuries (which were understood as the cause). Previous injuries were often described by respondents in almost bizarre circumstances, denying that bleeding from the skin change is the result of a possible disease. At the same time, irritation and injury of formed, analysed skin lesions in Group I (observed in 25 or 71.4 % of them) were significantly more common compared to subjects in Group II. This can be explained by the nodular form of the tumour itself.

On the other hand, symptom such as flaking and burning sensation were significantly more frequently reported from Group II respondents. Group II respondents, who described the BCC lesion as a “harmless red spot” after noticing it, were more likely to report flaking in the area of BCC.

Presented analysis showed that BCC at first glance, macroscopically, may indeed look quite harmless and uncharacteristic, but with a precise examination that includes dermoscopy, the BCC tumour focus can be detected at the earliest stage, when it is only a few mm in diameter. Neglected forms can be much larger and of course do not present a diagnostic challenge. During this analysis in Group I, BCC foci were diagnosed in

diameters that were more often up to 5 mm in diameter. On the contrary, in Group II, BCC lesions were more often diagnosed in diameter over 5 mm. The reason for this is probably the anatomical distribution of the superficial spreading BCC, as well as the inconspicuous appearance of this form of BCC in the initial phase.

Both groups (without statistical difference) had a frequent itching sensation in the lesion area. Itching was reported in a total of 54 (78 %) respondents. Attempts to eliminate itching with light scratching resulted in petechiae short-term bleeding. Several respondents from Group II noticed traces of blood on their clothes after lightly scratching the BCC lesion during the night, so that was the motive for coming for the examination.

In all cases of BCC, when tumour is detected and removed in a timely manner, the treatment has a very good prognosis. On the other hand, when BCC skin is not recognised in time and the patient is not adequately treated BCC skin easily becomes a big problem. At the same time, frustration with the treatment of BCC patients is the knowledge that, despite proper treatment in a significant number of patients (30-50 %) BCC of skin may reappear.¹ Due to this nature of the disease, BCC can be described as a low or high risk tumour. This assessment is based on the characteristics of each BCC which include: tumour size and type, anatomical position, tumour borderline condition, growth factor and histopathological character, principle of treatment from previous BCC as well as possible existence of immunosuppression. Otherwise, BCC skin can be very slow and last for years but also it can be locally very aggressive.^{1, 13-16}

Presented analysis showed that both analysed types of BCC of the skin can be diagnosed at the earliest stage, provided that early manifestations and symptoms are recognised, which often act extremely discreetly. This means that the treatment undertaken in such an early phase of tumour detection offers the possibility of timely, optimal treatment and allows local removal of the tumour in its entirety without functional, aesthetic and mental comorbidity.

In all cases of discrete skin changes of a macroscopically debatable nature, dermoscopy is available today. It is a non-invasive, *in vivo* microscopy of skin changes, very effective and

welcome for early detection of BCC. Dermoscopy is primarily intended for the analysis and diagnosis of pigmented skin changes and melanoma. Dermoscopy visualises details, in suspicious skin lesions, that are macroscopically inaccessible. Dermoscopic examination is a highly reliable diagnostic method for BCC.¹⁷⁻²⁶

This research confirmed the importance and reliability of dermoscopy because it was shown that it was in full correlation with the pathohistological findings of the analysed respondents. Several of respondents applied antibiotics to the initial BCC outbreak on their own initiative, which partially masked the lesions and made the diagnosis more difficult. This is a detail that should be considered in anamnestic interview in patients with suspected BCC lesions.

Conclusion

Early clinical diagnosis of BCC is possible with a tumour diameter of only a few mm. The predominant initial (highly susceptible) symptoms of nodular BCC were initial bleeding and / or scab formation on the lesions, as well as propensity to injury. The superficial spreading form of BCC was often larger than 5 mm in diameter, with more frequent scaling of the lesion, as well as burning and stinging sensations in the tumour area. Itching was observed to be a very common previous occurrence in the BCC initial focus zone in subjects of both study groups. Dermoscopy is a highly reliable diagnostic method for early detection of BCC.

Ethics

The protocol of this study was approved by the Ethics Committee of the University Clinical Centre of the Republic of Srpska, decision No 01-19-57-2/24, dated 14 February 2024.

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Conflicts of interest

The authors declare that there is no conflict of interest.

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Data access

The data that support the findings of this study are available from the corresponding author upon reasonable individual request.

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