Original Paper

Basal Cell Carcinomas – Clinical-Evolutional and Histopahotologic Aspects

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ABSTRACT Basal cell carcinoma (BCC) is the most frequent cutaneous tumour. Having as aim the identification of the clinical-evolutional and histopathologic aspects of the basal cell carcinomas, we have undertaken a retrospective study for a period of 5 years, from 1st January 2004 to 31st December 2008, on 706 patients interned in the Dermatology Clinic of Craiova, whom indicated 738 tumours. A clinical data was drawn for the patients, containing the identification data, environment, profession, cancer localisation and history of the disease, clinical and histopathologic diagnosis. *Results.* In our lot, the most numerous cases were of pearly BCC (33.6%), nodular BCC (22.2%), respectively scar plane BCC (13.1%).Regarding the histopathologic type, the repartition was as it follows: solid BCC (33.7%), polymorph (19.2%), adenoid (13.1%), keratinised (11.8%), superficial (7.0%), cystic (3.8%), pigmented (3.8%), scleroderma form (2.2%), in situ (1.4%).

KEY WORDS *basal cell carcinoma, histopathology, evolution*

Introduction

Basal cell carcinoma (BCC) is the most frequently encountered cutaneous tumour, with a local malignity, exceptionally metastazing, deriving from the basal layer of the epidermis and its annexes, consisting in cells similar to immature cells of these structures and surrounded by characteristic stroma [1,2].

Basal cell carcinomas are undoubtedly the most frequent malign tumours of the skin, being in a ratio of 3:1 – 4:1 to the squamous cell carcinomas. The carcinoma can start at any age, having however a maximum of incidence between 60 and 80. Nevertheless, the increase of incidence also occurs at younger ages (below 40). Their frequency seems to be equal for both sexes. [3,4]

They appear preferentially on areas exposed to sun rays, where the sebaceous glands are abundant, having a preference for the nose, cheeks, forehead, ear, sides of the neck [5]. They are rare on the trunk, head skin and at the level of the extremities. The lesions may be unique or multiple [6]. On almost 50% of the subjects, it represents the carcinomatous transformation of an existing preblastomatous lesion.

Starting from these data, we have submitted to perform a retrospective study for a period of 5 years, from 1st January 2004 to 31st December 2008, on 706 patients interned in the Dermatology Clinic of Craiova, whom indicated 738 basal cell carcinomas. The number of the tumours was higher than that of the patients, as some of the patients indicated multiple tumours, each having a different histopathologic diagnosis.

Patients and method

For each of the cases taken for research, an individual data was drawn up, by also stating besides the personal data (such as age, sex, profession), a series of other observations regarding:

- The state of the cutaneous organ;
- The existence of some preliminary or concomitant troubles, facilitating the development of a carcinoma;
- Its starting manner;
- The evolution in time, until the specialised examination;
- Current state;
- Clinical diagnosis;
- The result of the histopathologic examination
- The result of the immunohistochemical examination

The data have been statistically processed, taking into account the following objectives:

1. The clinical-statistical study aimed to:
   A. State the territorial repartition of the cutaneous carcinomas bearers;
   B. Set the distribution by age and profession;
   C. Surveillance in time in relation to the spontaneous progress of the lesion or by start.
2. The clinical study has tried:
   A. Determine the encountered clinical typology;
   B. Starting manner;

C. Evolutional particularities connected to localisation, clinical form and state of the cutaneous organ where the tumour is developed.

3. Histological study. After the local anaesthesia with lydocaine 1%, fragments of the biopsy were sampled from the cutaneous lesions, processed according to the conventional techniques and coloured with hematoxyline -eosine.

Results

Sex ratio is 1.10 in favour for women. It may be noticed that these tumours have indicated a relatively equal frequency for the two sexes, with a slight predominance for the feminine sex in 371 cases, respectively 52.5% compared to the masculine sex, which indicated 335 cases, respectively 47.5%.

The average age of patients was of 67.54, with a limit within 26 and 94 years.

The repartition of patients with basal cell carcinoma of the studied lot, according to age groups, indicated that BCC has a maximum frequency for the age group of 79-79, where it affects 256 patients (36.26%).

The repartition of the cases according to the background environment indicates a predominance of patients originating from rural environment, representing 58.8% of the cases (415 cases), a possible explanation being that most of them had professions involving an extended exposure to actinic rays (agriculturists, gardeners, mechanisers).

The results of the BCC repartition by localisation into the studied lot is thusly: nasal area – 144 cases; genian - 102 cases; thorax - 92 cases; temporal - 63 cases; auricular area - 63 cases; nasal-genian – 61 cases; orbitary – 44 cases; followed by the remaining areas with a lower number of cases.

On the casuistic study, we have encountered a number of 628 BCC out of the 738, that were placed on the exposed surfaces of the face and neck. We state that only 110 cases indicated lesions localised on the unexposed cutaneous surfaces (92 on the thorax and 18 on the limbs), an observation likely to underline the concept of causal interrelation between the exposure to sun light and apparition of the BCC.

The start of the disease was in between 6 months and 15 years.

We have also found the same morpho-clinical forms already signalled in literature, which we mention in sequence of frequency encountered (Chart 1):

– Pearly - 248 cases (33.6%);
– Nodular - 164 cases (22.2%);
– Scar plane - 97 cases (13.1%);
– Ulcerated - 76 cases (10.3%);
– Pigmented - 72 cases (9.8%);
– Vegetant - 25 cases (3.4%);
– Cystic - 22 cases (3.0%);
– Pagetoid - 16 cases (2.2%);
– Scleroderma form - 11 cases (1.5%);
– Terebrant - 7 cases (0.9%);

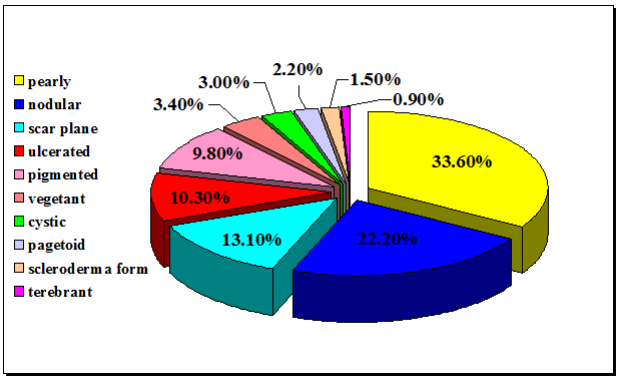

Chart 1 – Clinical forms of BCC – percentual values

As it results from all what was presented, the highest ratio was that of the pearly basal cell carcinoma, indicating 33.6% of the total number of cases, followed by the nodular form of approximately 1.5 times numerically lower compared to the pearly form, followed by the other forms: scar plane, ulcerated, pigmented, vegetant, cystic.

The distribution of tumours according to the time elapsed since their start is presented thusly: evolution of up to one year in 174 cases; between 1 and 3 years – 368 cases; between 3 and 5 years – 69 cases; between 5 and 7 years – 51 cases; between 7 and 10 years – 45 cases; over 10 years – 31 cases.

As it is noticed, 73.4% of our patients have had a tumour evolutional time of less than one year or between 1 and 3 years, meaning that by the stage where this would become sensitive to own observations, and the remaining 26.6% had let the tumour progress for 3 to 10 years and over 10 years.

The repartition according to the **histopathologic forms** was as it follows:

Solid BCC was encountered in 278 cases (37.7%). This type of carcinoma presented tumorous masses of various sizes, localised in the derma, separated by a low quantity of stroma. In these cases, we have identified a connection between the formation of tumoral cells and surface epidermis (fig. 1).

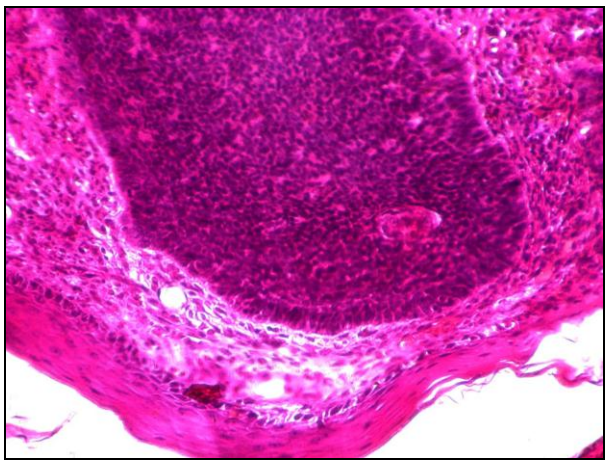

Figure 1 – Solid BCC, col. HE, x100

We have noticed a tendency of invasion in depth, being able to reach the muscular layer, with perivascular and perineural infiltration. Thusly, we gave encountered 11 cases of invasive BCC in the striated muscle tissues, 9 cases of invasive BCC in the hypoderm and 3 invasive BCC cases each in the cartilaginous tissue or with perineural invasion.

Out of the 278 solid BCC's, 122 were pure solid forms, and the rest have indicated various areas of differentiation, such as: adenoid areas – 61 cases, areas with keratinisation – 58 cases, cystic areas – 14 cases, pigmentation areas – 13 cases and scleroderma areas – 10 cases. Out of the total cases of solid BCC's, 136 cases have also indicated epidermis ulceration areas.

Polymorph BCC was encountered in 142 cases (19.2%). This has a complex structure due to the association of several histopathologic forms within the same tumour.

Adenoid BCC was diagnosed in 97 cases (13.1%) and was featured by the presence of formations which suggested tubular and glandular structures. We have noticed the radiary, interlacing network of bands of basaloid cells, in the form of thin trabeculae, consisting in 1-2 rows of cells. The trabeculae are inter-anastomized, containing inside the conjunctive stroma, resulting an interlaced pattern of the tumour (fig. 2).

Out of the 97 adenoid BCC's, 59 were pure adenoid forms, and the rest have indicated various areas of differentiation, such as: keratinising areas – 13 cases, scleroderma areas – 8 cases, pigmentation areas – 5 cases, cystic and solid areas, 2 cases each. Out of the total cases of adenoid BCC's, 11 cases have also indicated ulceration areas. Regarding the tendency of invasion in depth, we have encountered 12 cases with invasion at the level of the hypodermis.

Keratinised BCC, also called the *pillar* type (Foot), was present in 87 cases (11.8%), the tumour indicating more parakeratotic cells and cornus cysts than the undifferentiated cells. The parakerototic cells had elongated nuclei and a slightly eosinophil cytoplasm, unlike the cytoplasm intensely basophil of the undifferentiated cells. The parakeratotic cells were disposed in concentric bands or in fascicles around the cornus cysts.

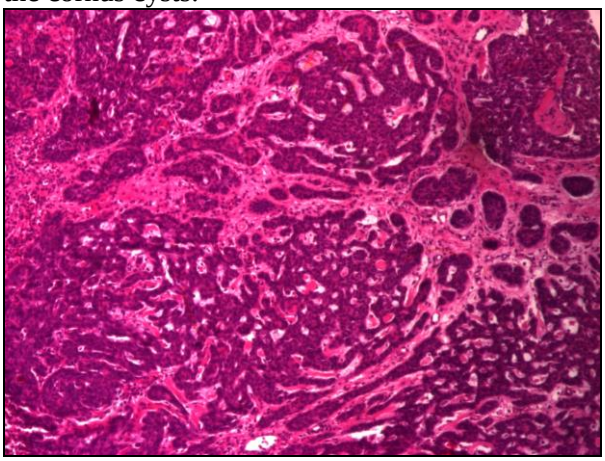

Figure 2– Adenoid BCC, col. HE, x40

Superficial BCC was encountered in 52 cases (7.0%). This type of carcinoma was featured by the presence of small epitheliomatous sprouts and irregular proliferations of tumoral tissue (composed of basal elements) attached at the level of the lower surface of the atrophic epidermis.

Cystic BCC was encountered in 28 cases (3.8%) and has indicated one or more cystic gaps situated inside the tumoral lobs. In most cases, the cysts are formed as a result of the necrobiotic changes in the tumoral cells placed centrally.

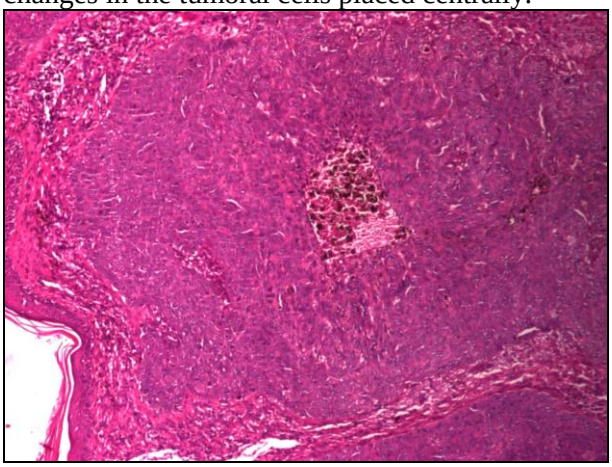

Figure 3 – Pigmented BCC, col. HE, x40

Pigmented BCC was encountered in 28 cases (3.8%), although many of the studied basal cell carcinomas have indicated small quantities of melanic pigment. The tumoral cells contained melanin, and among the tumoral cells, the intercalated melanocytes were highlighted. This

morphoclinical type is not not distinct, any of the other forms may be pigmented during the development (fig.3).

Scleroderma form BCC (morpheiform) was encountered in 16 cases (2.2%) and is featured by an abundance of the conjunctive tissue compared to the tumour living cell islands. We have found out that the presence of numerous groups of tumoral cells disposed in elongated bands enclosed in a dense, fibrous stroma (fig.4).

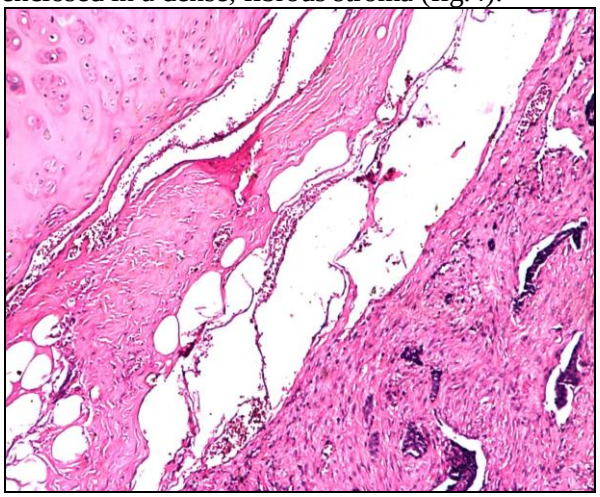

Figure 4 – Scleroderma form BCC, col. HE, x100

Intraepidermic BCC (*in situ* carcinoma, the Borst-Jadassohn carcinoma) was encountered in 10 cases (1.4%).

The above data confirm the marked tendency towards a polymorphism of BCC not only clinically but also histologically, many of them showing a trend of differentiation to BCC cystic, adenoid, sclerodermaform, keratotic.

Discussions

Clinical-evolutional aspects

In our study, we have encountered all clinical forms described in the medical literature. The most numerous cases were of pearly BCC (33.6%), nodular BCC (22.2%), respectively scar plane BCC (13.1%).

Although the interest for the histopathologic examination is indubitable, the epitheliomatosis pearls at the periphery of the tumour (fig. 5,6) are suggestive for the BCC, also the presence of a globulous tumoral formation of renitent consistency, with a diameter of 0.5-2 cm and smooth, glossy, translucent surface, with slow evolution creating the clinical picture of a nodular BCC (fig.7) To retain that the long-term evolution (in years) and localisation of the tumour in the higher 2/3 of the facies also pleads for BCC [7,8].

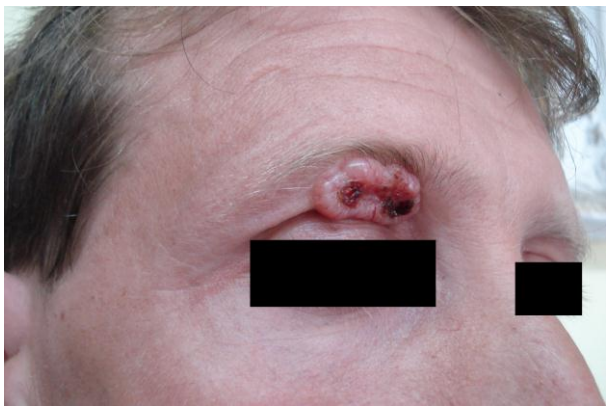

Figure 5 – Pearly ulcerated BCC

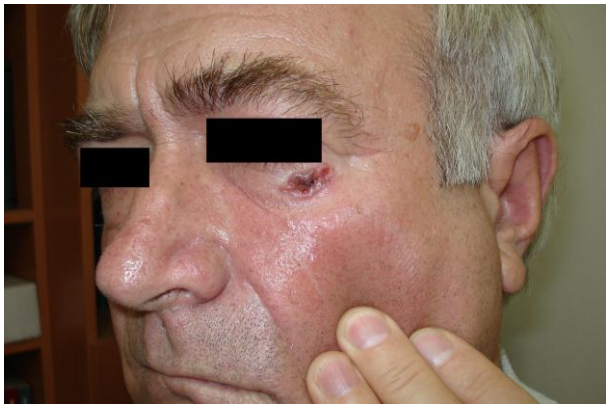

Figure 6 – Pearly ulcerated BCC

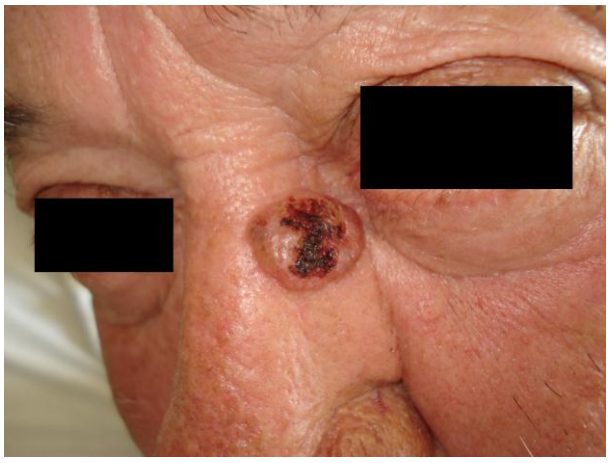

Figure 7 – Nodular BCC

A few morphoclinic particularities are worth signalling, especially for their significances of clinical and diagnostic order, meaning they can sometimes create difficulties in recognising the carcinomatous nature of lesions.

The ulcerated pearly carcinoma remains most of the time at small sizes, with superficial ulcerations, not taken into account by the subject for a long time, having a characteristic aspect easy to be diagnosed. The form d'emblee of the ulcerated basalioma consists in the fact that the passing from the pearly stage to the ulcerating one

is not operated anymore in time, therefore the pearly incipient formation is not recognised anymore. The rapid necrosis of the tumoral parenchyma makes the lesion practically have the aspect of ulceration, since the beginning.

The BCC evolution is very slow. A minimum of 2 years is admitted until the subject's attention is drawn by their appearance and size, to determine one to request a medical check-up.

The basal cell carcinoma is the less invasive cutaneous tumour, its developed malignity being strictly local, due to the fact that the proliferated basal cells depend on the neighbouring conjunctive stroma.

The evolution of the cancer was evaluated by our subjects as being between 6 months and 15 years. As it may also be noticed in the chart (Chart 2), 73.4% of our patients have had a tumour evolutional time of less than one year or between 1 and 3 years, meaning that by the stage where this would become sensitive to own observations, and the remaining 26.6% had let the tumour progress for 3 to 10 years and over 10 years.

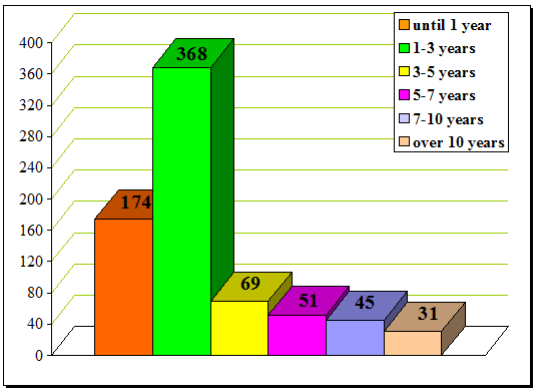

Chart 2 – BCC distribution after the time of evolution

The statistic data in older literature have shown that a number of subjects, who went to the doctor in a period shorter than 1 year since the apparition of the tumour has increased as years passed by, which proves an emancipation of the population, which does not neglect the minor pathology either.

Histopathologic aspects

Regarding the *BCC*, our study has highlighted a histopathologic polymorphism of this type of cancer, a fact however noted in the specialised literature [1,9].

The diversity of the histological images of BCC would look justified if we took into account the multiple clinical varieties which this tumour arrays. In reality, not all histological forms have a clinical correspondent. Only the pagetoid and sclerodermaform carcinomas have their own histological structure. All other histopathologic aspects do not correspond to a defined clinical type. If we added to them those presenting associated, complex structures, that cannot be enclosed into histological types, we understand why the attempts of systematising them have been so many and all classifications by suggested histological criteria can only be partly correlated with the clinical classification.

In our study we have found the following histopathologic forms, in decreasing order of frequency: solid BCC (33.7%), polymorph (19.2%), adenoid (13.1%), keratinised (11.8%), superficial (7.0%), cystic (3.8%), pigmented (3.8%), scleroderma form (2.2%), in situ (1.4%).

McCormack et al. [10], in a study which has taken into account a number of 3885 BCC regarding patients' ages, whom underwent the excision of the tumoral formations, oscillations were discovered, depending on the histological sub-type, thusly: for superficical BCC, the average age was 56.8, for nodular BCC – 63.9 and morpheic BCC, the average ages were of 66.0

Another study aiming to investigate the BCC oscillations depending on age, sex, localisation and histological subtype was that of *Scrivener Y et al.* [11]. They have taken into study 13457 cases diagnosed in between 1967-1996. The M/F report was of 0.92, and the average age on excision was 65 years. Nodular BCC has recorded a percentage of 78.7%, superficial BCC – 15.1% and morpheaform BCC – 6.2%. The nodular and morpheaform forms predominated at the level of the cephalic extremity (89.6% and 94.8%).

Conclusions

The basal cell carcinoma placed at the border between the cutaneous malign and benign tumours may start at any age, being however encountered normally after the age of 50. For these reasons, it is deemed as a buffer of the cutaneous organ senescence.

From the point of view of the clinical aspects, it is featured by a important degree of clinical polymorphism.

The most frequent clinical forms are pearly BCC, nodular BCC and scar plane BCC. Under histopathological aspect predomined the solid, polymorph and keratinised forms.

The basal cell carcinomas continue to trigger the researchers' interests by the diverse questionability it raises, as well as due to the increased morbidity because of these tumours.

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