

## Histopathological Study of Basal Cell Carcinomas

CLAUDIA MATEOIU<sup>(1)</sup>, CLAUDIA-VALENTINA GEORGESCU<sup>(1)</sup>,  
GEORGIANA FOTA<sup>(1)</sup>, CRISTIANA SIMIONESCU<sup>(2)</sup>

<sup>(1)</sup> *Departament of Pathology, Clinical County Hospital of Emergency, Craiova* <sup>(2)</sup> *Departament of Pathology, Faculty of Medicine, UMF Craiova*

**ABSTRACT** In this study I have analyzed the most important parameters necessary for diagnostics of histopathological of basal cell carcinomas with the purpose of establishment of correlations between histopathological aspect, tumor localization, clinical data about patients and their ulterior evolution, for identifying new elements with prognostic level for BCC, also in reducing the number of recidivisms. **Materials and methods:** The study evolves a number of 703 cases of basal cell carcinomas diagnostics in the Pathological and Cytological Anatomy Lab of the Clinical County Hospital of Emergency of Craiova, during a 5 year period (1 January 2003 – 1 January 2008), worked by the standard paraffin inclusion and colorants with standard hematoxyline-eosin stain. **Results and discussions:** The report F/M was of 1.06 in favor of the women. The most affected group age was between 51-70 years old, with 351 patients (49.92%). Localization of the most frequent BCC was at a cephalic extremity level (89.90%). The histopathological analysis of lesions of BCC has revealed a polymorphism extremely various. The histological type most frequently met was of BCC solid. Majority of lesions, yet have presented in one or more different regions. Majority of lesions have invaded hypodermic level – 20 cases (48.78%) and only 24 cases were recurrences (3.41%). **Conclusions:** The study has underlined the importance of pathological tumor dermatological malign both by a greater number of cases studied also through incidence of growth of basal cell carcinomas.

**KEY WORDS** *basal cell carcinomas, tumor recurrences, histopathological diagnosis*

### Introduction

In present, basal cell carcinoma (BCC) is the most common cutaneous malignant tumor. The highest rates are in Australia, followed by USA, where every year are estimated over 1 million new cases diagnosed from the total of cancer diagnosed cases of other types of combined cancer (6; 10; 17). The incidence rates of a number of countries or European regions are substantially lower – 150 / 100 000 per year in Europe (7).

Data from special literature state that lower rates of metastases are of 0.028% in dermatological institutions and 0.1 in surgery departments (12; 14). BCC is aggressive firstly due to local destruction determined by tumor's invasion on profound states. Knowing that this tumor has a preferential localization for cephalic extermination, many times, the surgical excision is incomplete, for which the tumor has the possibility to invade more into surrounding tissues, destroying or canceling the patient's vital functions like hearing, seeing and smelling, for instance (16).

From this reason, the establishment of some correlations between the histopathology aspects,

stormily component, tumor's localization, clinical data about patients and their ulterior evolution should lead to the identification of some new elements with prognostic wearing for BCC and implicitly of lowering the number of recidivisms (5).

### Material and Methods

**The material** used in the hereby work has been obtained using observation notes from Dermatology Section of Clinical County Hospital of Emergency, Craiova and registries of histopathology diagnostics from Departament of Pathology, which are from the same hospital.

The study was of a retrospective type, the material was selected in a period of 5 years: 1 January 2003 – 1 January 2008 and was represented by pieces of surgical exegeses which had the general clinic diagnostic of neoplasm cutant and histopathology diagnostic finally of basal cell carcinoma.

The number of histopathology results (703 cases) is greater than the patients (647 cases), because of the fact that some patients had

presented multiple tumors, each having a different diagnostic of histopathology.

The sampled pieces of surgical exegeses had been overdone by inclusion of paraffin and colorants with standard hematoxyline-eosin stain.

## Results and Discussions

### The distribution of BCC reported according to the environment where it comes, age and sex of the patients.

The distribution according to the provenience environment has shown that from the urban environment had come 261 cases (37.13%), and from the rural environment 442 cases (62.87%), this being due to fact the patients from rural environment are exposed to long and durable solar radiation. Studies done till present time, have not found any correlation between facial regions exposed to UV and histopathology aspect of basal cell carcinoma – *Hackmann et al*, (4).

In the hereby study, it has been stated that BCC is an interesting fact for both sexes in equal quantity: 362 cases of patients of feminine sex (51.49%), and 341 cases of patients of masculine sex (48.51%). The report F/M being of 1.06 female advantage. *Scrivener Y et al*. (15) have taken to study 13.757 diagnosed cases between the years 1967-1996, and have obtained a report of M/F of 9.92. In other studies – *Nikpour HA* (13), sex repartition was of 151 men (52.61%) and 136 women (47.39%).

The average age of patients was of 56 years old, with a medium average of 56.6 years old for women and 55.5 years old for men.

*Nikpour HA* (13), during a study of 287 patients has observed that 45 year old patients (192 cases – 66.9%) have been affected seriously.

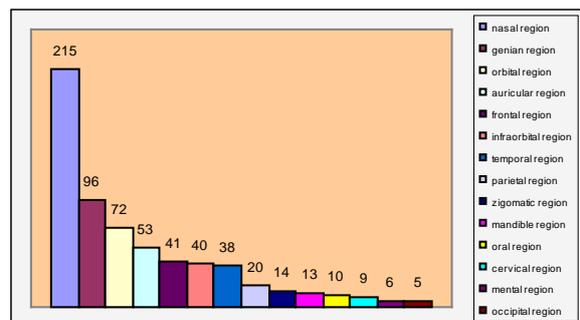
Patient repartition of basal cell carcinoma according to the group age had a maximum of frequencies in 51-70 group age, where 351 patients had been affected (49.93%), followed by over 71 year old group age (287 cases – 40.83%). The 31-50 groups had recorded a total of 57 cases (8.11%), and patients less than 30 years old had stipulated of 8 numbers (1.14%).

During *Scrivener Y et al*. (15) study, the medium average of patients was of 65 years old; and *McCormack et al*. (9) had found variations of interested ages according to the histopathology subtype, like so: 56.8 years old for superficial BCC, 62.9 years old for nodulo-superficial BCC, 63.9 years old for nodule BCC, and for nodulo-morfeic and morfeic average ages of 66.1 and 66.0 years old, respectively.

### Topographic distribution of basal cell carcinoma

After surgical exegeses, the 703 tumors had come from 647 patients, because some of the patients were presenting multiple tumor lesions on face and neck level. 632 lesions (89.90%) from head and neck and 71 lesions (10.10%) had been localized at body and member levels. These results were similar to the ones of *Nikpour HA* (13), in his study, the head and neck localization being observed in percentage of 77.70%.

In the purpose of topographic realization of BCC I have partitioned the oral-maxilla-facial territory in the following regions: *nasal region* – where nasal pyramids were included the nasal pyramid and paranasal region – 215 cases (30.58%); *genian region* – 96 cases (13.66%); *orbital region* – which includes the inferior, superior eyebrow and intern and extern angles of the orbit – 72 cases (10.24%); *auricular region* – in which side region, underside region, ear pre-auricular and retro-auricular regions – 53 cases (7.54%); *frontal region* – 41 cases (5.83%); *infra-orbital region* – 40 cases (5.69%); *temporal region* – 38 cases (5.41%); *parietal region* – 20 cases (2.84%); *zigomatic region* – 14 cases (1.99%); *mandible region* – 13 cases (1.85%); *oral region* – which includes labial-nasal margins, the labial side (superior and inferior) and labial-mental – 10 cases (1.42%); *cervical region* – 9 cases (1.28%); *mental region* – 6 cases (0.85%); *occipital region* – 5 cases (0.71%).



Graphic 1: Topographic distribution of basal cell carcinoma

In his study, effectuated on 3.065 cases of BCC from facial regions, *M. Hackmann et al*. (4) has followed the topographic distribution of BCC at different anatomic regions of face. Their results has showed, that BCC is frequently situated on the nose (1373 cases, 44.79%), followed by the orbital region (386 cases, 12.59%) and auricular regions (269 cases, 8.77%).

## BCC distribution according to histopathology clinic aspect

The macroscopic aspect was evaluated according to cumulated data from observation notes.

The studied cases were enclosed on a microscopic level due to the following: *nodule basal cell carcinoma* – 337 cases (47.94%), *ulcerative basal cell carcinoma* – 113 cases (16.07%), *pigmented basal cell carcinoma* – 43 cases (6.12%), *scar-plan basal cell carcinoma* – 38 cases (5.41%), *perlated basal cell carcinoma* – 27 cases (3.84%), *facial epitheliomatosis* – 19 cases (2.70%), *cystic basal cell carcinoma* – 14 cases (1.99%), *superficial basal cell carcinoma* – 28 cases (3.98%), *vegetated basal cell carcinoma* – 6 cases (0.85%), *terebrant basal cell carcinoma* – 3 cases (0.43%).

Similar results were found also by *Ceyan C et al.* (2), in a study made in Izmir, Turkey, on a 10 year duration, which observed from a microscopic point of view, the nodule and ulcer lesions were dominating (69.8%).

From 703 cases of BCC, only 24 were recidivisms (3.41%), and in 61 cases (8.68%), internment diagnostics was not in accordance with the histological diagnostics.

### The microscopic aspect

I have studied all 703 tumor lesions which came from the 647 patients on standard coloration of eosin-hematoxyline.

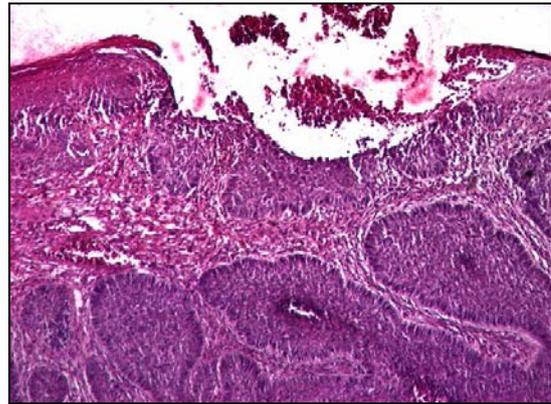
Numeric and percentage value distribution of BCC from the study lot of the histopathology aspect was: *solid basal cell carcinoma* – 316 cases (44.95%); *adenoid basal cell carcinoma* – 147 cases (20.91%); *keratotic basal cell carcinoma* – 64 cases (9.10%); *pigmented basal cell carcinoma* – 59 cases (8.39%); *Carcinoma meta-typical* - 48 cases ( 6.83%); *superficial basal cell carcinoma* – 37 cases (5.26%); *cystic basal cell carcinoma* – 21 cases (2.99%); *sclerosing basal cell carcinoma* – 11 cases (1.56%).

*Scrivener Y et al.* (15) has observed a grater frequency of nodule BCC, whom registered a percentage of 78.7%, superficial BCC – 15.1%, and BCC morpheic – 6.2%; nodule forms and morpheic ones, are dominates the extreme cephalic level (89.6%, respectively 94.8%). *Ceyan C et al.* (2) also observed that the microscopic aspect is the most frequent to BCC which was the solid one (50.74%).

Usually, I have met associated forms. The microscopic aspect, whom represented more than 50% from tumor mass, was the one who lead to the inclusion of tumors in one of the histological

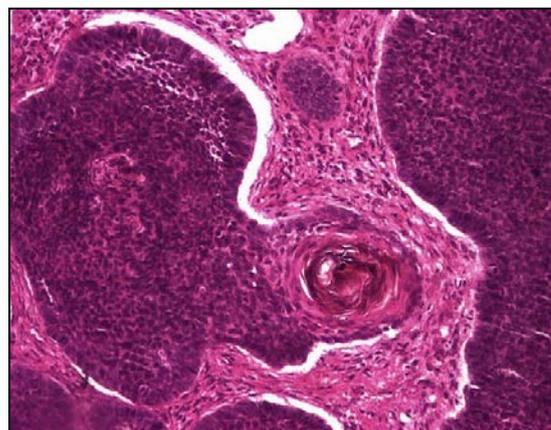
subtypes. The epidermis supra-adjacent was many times ulcerated, and sometimes atrophic.

*Solid basal cell carcinoma* represented at the external cell tissue level, an arrangement in palisades of the cells, perpendicular on a basal membrane, by contrast of the ones from the interior, which were disposed differently. The center of tumor mass can disintegrate leading to cysts formation (12). Some BCC, with or without weak differences, have presented two types of cells: a big cell with the pale oval nucleus and a small cell with darken nucleus, longed.



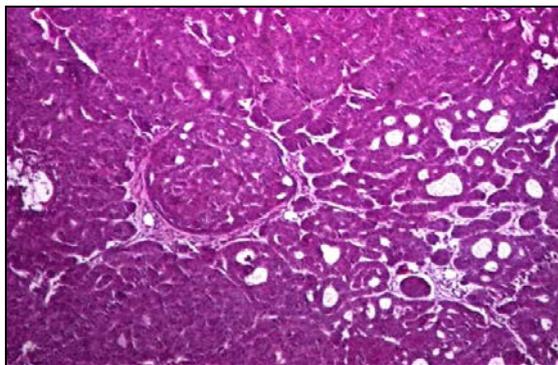
**Fig.1: Solid and ulcerated basal cell carcinoma, Ob. x40, HE stain**

In *keratotic basal cell carcinoma*, some tumor islands were centered by horned cysts typical that constitutes from keratin nucleated cells. The keratin makes itself suddenly by a similar process which happens on the pilose follicle level (12).



**Fig.2: Keratotic basal cell carcinoma, Ob. x100, HE stain**

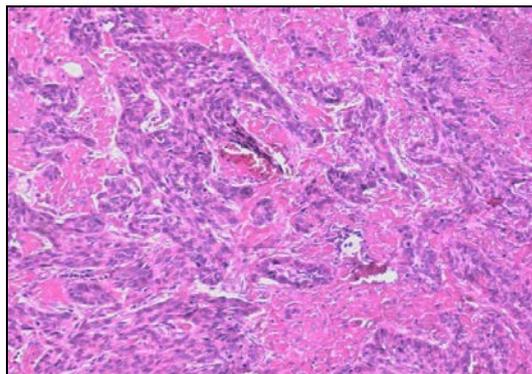
*Adenoid basal cell carcinoma (pseudo glandular)* consists in cells with difference oviparous disposed in thin rarefied and anatomizes cordons of epithelial level. In other words it is just a particular disposal of tumor mass, imitating a glandular aspect.



**Fig.3: Adenoid basal cell carcinoma, Ob. x40, HE stain**

*Cystic basal cell carcinoma* has kept in general, the architecture of the solid basal cell carcinoma, yet, some tumor masses had contained filled cavities with necrotic material, result of the disintegration of neoplasm cells or of degeneration sectioning of the mass tumor or a result of sebaceous differences (unproven fact).

*Sclerosing basal cell carcinoma* has constituted in thin tumor coordinates, surrounded by dense masses of conjunctivitis.

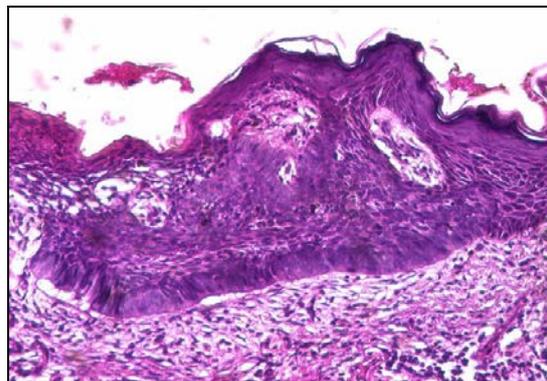


**Fig.4: Sclerosing and keratotic basal cell carcinoma, Ob. x100, HE stain**

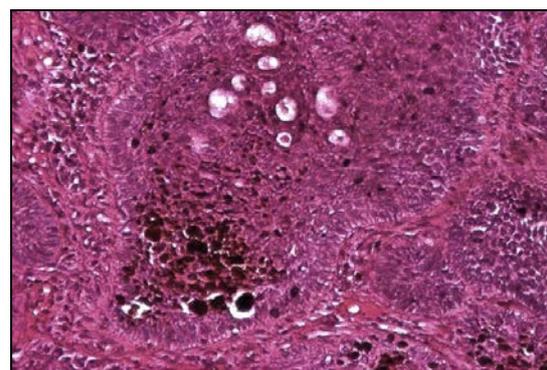
*Superficial basal cell carcinoma* in tumor proliferation has remained in epidermis and did not invade the derma.

*Pigmented basal cell carcinoma* presented inclusion of melanin pigment both in neoplastic cells and melanoma of the tumor.

*Metatypical carcinoma (bazoscuamous)* had characteristics which came both from BCC and spine-cellular carcinoma. Microscopically, it has been presented under the form of proliferation tumor basal cell and spine-cellular tumor islands, on margins with keratin under the form of pearls of small epithelial plus nodules spine-cellular in the interior of some proliferation basal cells.



**Fig.5: Superficial basal cell carcinoma, Ob. x100, HE stain**



**Fig.6: Adenoid and pigmented basal cell carcinoma, Ob. x100, HE stain**

Regarding to the **degree of profound invasion** of lesions of basal cell carcinoma I obtained obtain the following results: invasion of the derma – 2 cases (4.88%); invasion of cutaneous appendages – 2 cases (4.88%); hypodermic invasion – 20 cases (48.78%); striated muscle fiber – 11 cases (26.83%); invasion of the adipose tissue – 2 cases (4.88%); cartilaginous tissue invasion – 3 cases (7.32%); perineurial invasion – 1 case (2.44%).

## Conclusions

The clinical-histological study involves 647 patients, from which 703 lesions of BCC shown. The majority cases had come from the rural level (62.87%). The pathological tumor malign cutant studied, was in equal measure for both males and females: the report F/M being of 1.06 in Female favor. The most affected age group was between 51-70 years old. The localization of the most frequent of neoplasm cutant is at the cephalic extremity level, BCC localization most often in the nasal region. From 703 cases of BCC, only 24 were recurrences (3.41%).

Histological analysis of lesion of BCC has elevated a polymorphism extremely various, being presented so many undifferentiated forms, as

different forms also. The majority of lesions have presented one or more regions of differences. The histological aspect dominated of solid BCC (44.95%), followed by adenoid BCC (20.91%), the most rare met being sclerosing BCC (1.56%).

The study underlined the importance of tumor pathology malign dermatological studied both through the big number of cases also through incidence of growth of basal cell carcinomas.

## References

1. Ardeleanu Carmen, Ceaușu M.- (2005), Breviar de histopatologie, Editura Universitară "Carol Davila", București , p: 37;
2. Ceylan C, Oztürk G, Alper S.- (2003), Non-melanoma skin cancers between the years of 1990 and 1999 in Izmir, Turkey: demographic and clinicopathological characteristics. *J Dermatol.* 2003, 30(2):123-131;
3. Dimitrescu Alex., Trifu P.- (1992), Precancere și cancere cutanate, vol. I, Ed. Medicală, București , p: 10-24; 149-179;
4. Heckmann M, Zogelmeier F., Konz B.- (2002), Frequency of facial basal cell carcinoma does not correlate with site specific UV exposure. *Arch Dermatol.*, 138(11):1494-1497
5. Irina Tudose, R Andrei, Alexandra Bastian, Nina Micu, Florica Stăniceanu - (2008), Recidivele în carcinomul bazocelular, *Rev. de Medicină și Farmacie UMF Târgu Mureș*, 54:518-520;
6. Jemal A, Siegel R, Ward, et al. *Cancer Statistics, 2006.* CA: A Cancer Journal for Clinicians, xxx: ACS Publication;
7. Jorg Reichrath- (2006), *Molecular Mechanisms of Basal Cell and Squamous Cell Carcinomas*, edited by Landes Bioscience and Springer Science+Business Media, USA;
8. McCormarck CJ, Kelly JW, Dorevitch AP- (1997), Difference in age and body site distribution of the histological subtypes of basal cell carcinoma. A possible indicator of differing causes, *Arch Dermatol.* May, 133(5):593-596;
9. Miller DL, Weinstock MA. Nonmelanoma skin cancer in the United States: incidence-(1994) *J Am Acad Dermatol* , 30(5 Pt 1):774-778;
10. Mogoantă L., Georgescu CV, Popescu CF., Pirici D. - (2007), *Ghid de tehnici de histologie, citologie și imunohistochimie*, Editura Medicala Universitara Craiova;
11. Nigel Kirkham - (1997), *Tumors and cystis of the Epidermis, Lever's histopathology of the skin*, Lippincott - Raven , p:719 – 731;
12. Nigel Kirkham - (2005), *Tumors and Cysts of the Epidermis*, in Elder, David E.; Elenitsas, Rosalie; Johnson, Bennett L.; Murphy, George F. (eds): *Lever's Histopathology of the Skin*, 9th Edition, Philadelphia, JB Lippincott Williams & Wilkins, p:836-849;
13. Nikpour HA. - (2005), Does basal cell carcinoma arising in younger patients have a more invasive behavior than that arising in older population? *Acta Medica Iranica*, 43(1):11-14;
14. S. Boulinguez, C. Grisson, Tabone - (2004), Histological evolution of recurrent basal cell carcinoma and therapeutic implications of incompletely excised lesions, p: 623-626;
15. Scrivener Y, Grosshans E, Cribier B.- (2002), Variations of basal cell carcinoma according to gender, age, location and histopathological subtype, *Br J Dermatol*, 147(1):41-47;
16. Shanna B Meads, Hubert T Greenway - (2006), Basal cell carcinoma associated with orbital invasion, p: 442-445;
17. Staples M, Marks R, Giles G.- (1998), Trends in the incidence of non-melanocytic skin cancer (NMSC) treated in Australia 1985-1995: are primary prevention programs starting to have an effect? *Int J Cancer*; 78(2): 144-148;

---

*Corresponding Adress: PhD Student Claudia Mateoiu, email-drclauda2005@yahoo.com*