

# EVOLUTIVE PARTICULARITIES OF BASAL CELL CARCINOMA – STATISTICAL ANALYSIS PERFORMED AT THE 1<sup>ST</sup> PLASTIC SURGERY DEPARTMENT WITHIN MUREȘ COUNTY EMERGENCY HOSPITAL

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**Keywords:** basal cell carcinoma, anatomical-clinical data, therapeutic effect

**Abstract:** During January 2004 – December 2009, we performed a clinical study based on the casuistry of the 1<sup>st</sup> Plastic Surgery Department, Mureș County Hospital, Targu Mureș. We analyzed the incidence of basal cell carcinoma according to age groups, gender, type of basal cell carcinoma, localization and surgical techniques used to cover skin and soft tissue defects after tumour excision. Extensive, intensive indexes and mean values were calculated. We also measured the differences between the variations of series by using Person's chi-square statistic. The F (Fisher) test was applied to check if the two distributions present significant differences. Through our research, we wished to contribute to a common understanding necessary for anatomical and surgical studies in relation to possible approaches to minimally invasive surgical techniques in the context of interdisciplinary clinical approach.

**Cuvinte cheie:** carcinom bazocelular, date anatomoclinice, eficiență terapeutică

**Rezumat:** Am realizat un studiu clinic pe perioada ianuarie 2004 - decembrie 2009 (pe cazuistica Compartimentului de Chirurgie Plastică I din cadrul Spitalului Clinic Județean de Urgență Mureș) analizând incidența carcinomului bazocelular pe grupe de vârstă, în funcție de sex, tipurile de carcinom bazocelular, localizare și tehnicile operatorii folosite pentru acoperirea defectelor tegumentare și de părți moi după excizia tumorii. Au fost calculați indici extensivi, indici intensivi, valori medii. S-a efectuat, de asemenea măsurarea diferenței dintre seriile de variație, prin metoda chi pătrat după Person. S-a aplicat testul F (FISHER) pentru a se vedea dacă cele două dispersii diferă semnificativ. Prin cercetările noastre am vrut să contribuim la un punct de vedere comun necesar pentru studii anatomice și chirurgicale în relație cu posibilitatea abordării unor rezolvări chirurgicale prin tehnici miniminvasive, în contextul unei abordări clinice interdisciplinare.

## INTRODUCTION

Basal cell carcinoma is a malignant keratinocyte, which is considered the most common skin cancer, and its incidence has increased significantly over the past 20 years. It represents 30% of all malignant skin tumours and 60-80% of all cutaneous epitheliomas (Dimitrescu). Basal cell carcinoma occurs predominantly on sun-exposed skin (mutations of the TP53 suppressor genes), in light-skinned patients and in those exposed to the risk of sunburn (Buettner, Green). The onset of basal cell carcinoma is insidious and involves several types of injuries which will mainly facilitate tumour polymorphism. Due to the nonspecific character, these primary lesions remain long time undiagnosed, attendance at consultation being determined in most cases by the growth of the tumour size, ulceration and resistance to topical medications. The most common locations are the anatomical regions exposed to solar ultraviolet and artificial radiations, approximately 80% of basal cell carcinomas are located at the level of the face, whereas approximately 10 - 15% of the cases are located at the level of the scalp, trunk and extremities.

## PURPOSE

The purpose of the study is represented by the analysis of the incidence of basal cell carcinoma according to age groups,

gender, type of basal cell carcinoma, localization and surgical techniques used to cover skin and soft tissue defects after tumour excision, between January 2004 – December 2009, on the casuistry of the 1<sup>st</sup> Plastic Surgery Department, Mureș County Hospital.

## METHODS

Clinical data of the studied group (results from case reports, surgical intervention protocols and their histopathologic processing) were the statistical basis for calculations that confer relevancy to the processed data. Calculations indices were extensive, intensive indices, averages. Extensive, intensive indexes and mean values were also calculated. We also measured the differences between variations of series by using Person's chi-square statistics. Extensive indices (prevalence) show the size ratio which comprises the component part of the phenomenon in comparison to the phenomenon considered as a whole. Intensive indices (incidence) show the frequency of a phenomenon in comparison with another phenomenon. The Chi square test helps to verify whether an empirical distribution (observed) and a theoretical one (expected, hoped) differ significantly (it verifies the hypothesis that an observed distribution is consistent with a presupposed theoretical distribution). The Chi square value is compared to the

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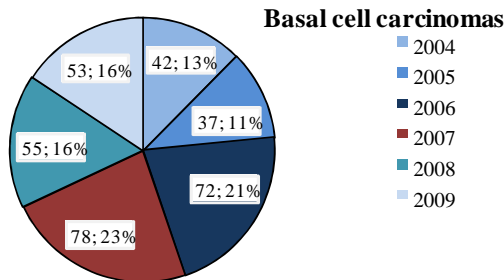
## CLINICAL ASPECTS

theoretical value with one degree of freedom and the desired level of significance (if the calculated value is less than the theoretical one, the null hypothesis is accepted, thus it is rejected). The F (Fisher) test was applied to check if the two distributions differ significantly. The purpose of this study was the correlation of the anatomical and clinical data with the therapeutic efficiency in the clinical trial.

### RESULTS

During the survey there were 337 cases of basal cell carcinomas included in the study with the following distribution:

**Figure no. 1. Frequency of basal cell carcinomas during the study**



According to gender, the distribution of patients is approximately equal; we comprised in the study 173 women (51.34%) and 164 men (48.66%) and the distribution according to years/age and gender is shown in table no. 1.

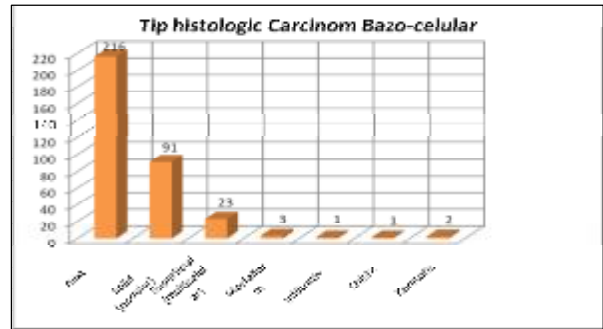
**Table no. 1. Patients' distribution according to age and gender**

Year/age	0-19 (F+B)	20-39 (F+B)	40-59 (F+B)	60-79 (F+B)	>80 (F+B)
2004	0	3 (2+1)	14 (5+9)	19 (8+11)	6(3+3)
		19%	15%	11%	13%
2005	0	0	14 (7+7)	18 (12+6)	5 (1+4)
		0%	15%	10%	11%
2006	0	3 (2+1)	20 (12+8)	39 (20+19)	10 (7+3)
		19%	21%	21%	22%
2007	0	1 (1+0)	18 (6+12)	49 (24+25)	10 (4+6)
		6%	19%	27%	22%
2008	0	9 (7+2)	17 (7+10)	25 (15+10)	4 (1+3)
		56%	18%	14%	10%
2009	0	0	12 (9+3)	31 (15+16)	10 (4+6)
		0%	12%	17%	22%
TOTAL	0	16(12+4)	95(46+49)	181(94+87)	45(20+25)
		5%	28%	54%	13%

According to its anatomical location, there is a predominance of basal cell carcinoma in areas exposed to sunlight: cephalic extremity (especially the nasal pyramid, nasogenian region, face, eyelids) and at the level of the back (agricultural workers). In the performed study the most frequent location was the cephalic extremity 254 cases (nasal pyramid - 17.45%, eyelids - 10.05%, nasogenian region - 8.30%, frontal region - 6, 80%, facial region - 6.5%) followed by the posterior thoracic region 38 cases (11.24%), frontal thoracic region 9 cases (2.66%), shoulders and abdomen - 9 cases for each of

them (2.66%), upper limbs 3 cases (0.9%) and lower limbs 5 cases (1.5%), the remaining 10 cases were situated in less frequent regions (laterocervical, axilla, lumbar region etc.). For this reason the problem of anatomical reconstruction is very important. Following excision, the samples were sent for histopathological examination, and after processing them we found that the most common carcinomas were mixed carcinomas, followed by solid (nodular), superficial (multicentric) and of morpheiform type.

**Figure no. 2. Histological data**



The histopathological examination can assess whether surgical excision was within safe limits or not, and according to our study based on the casuistry of the 1<sup>st</sup> Plastic Surgery Department most carcinomas were excised within safe limits. In some of them, especially in the superficial ones, the resection margins can not be appreciated due to their multicentric character, meaning that the presence of tumor cells can not be excluded outside the resection margins. Thus out of the 337 basal cell carcinoma cases 235 (73%) were removed within safe limits; in 47 (14%) cases resection margins could not be appreciated. Only 55 (12%) of the cases were not removed within safe limits due the late addressability of the Plastic Surgery Department, most of these formations being in the at-stage when undergoing surgical excision. According to year and gender distribution the results of the evaluated histopathological data were as follows:

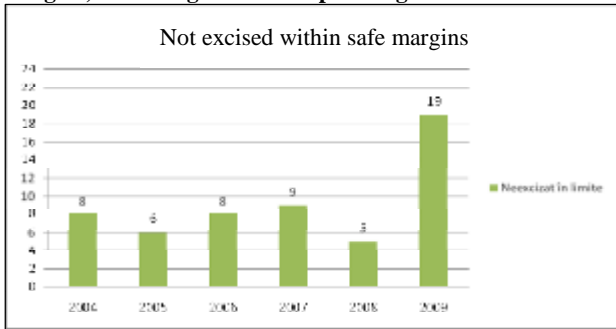
**Table no. 2. Results of the histopathological data evaluation**

Year	Excision within safe margins (F+B)	Resection margins could not be assessed (F+B)	Excision beyond safe margins (F+B)
2004	27 (11+16)	7 (4+3)	8 (3+5)
2005	28 (16+12)	3 (2+1)	6 (2+4)
2006	54 (31+23)	10 (7+3)	8 (3+5)
2007	59 (24+35)	10 (6+4)	9 (5+4)
2008	40 (22+18)	10 (5+5)	5 (3+2)
2009	27 (13+14)	7 (7+0)	19 (10+9)
TOTAL	235 (131+128)	47 (31+16)	55(26+29)

Accurate evaluations of cases which were not excised within safe resection margins and their consequences, including relapses and reinterventions and subsequent corrections are important in correlation with the physicians' experience from the department and their intensified scientific and clinical preoccupations in the studied period

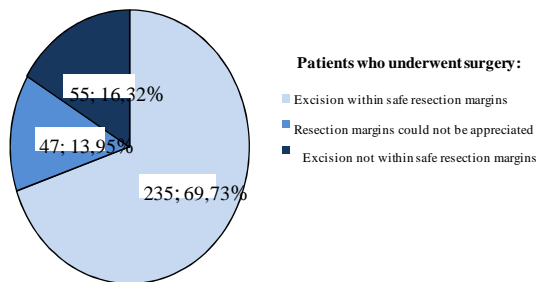
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**Figure no. 3. Basal cell carcinoma not excised within safe margins, according to the histopathologic evaluation**



Regarding these representations, it should be mentioned that the number of cases not excised within safe margins decreased at the same time with the physicians' experience and with an increase of these cases when a well trained physician with experience in this pathology appears. This draws the attention upon the level of professional experience so important in approaching this pathology.

**Figure no. 4. Frequency of the excision types in the case of operated patients**



### DISCUSSIONS

Distribution by gender was almost equal: 51.3% females and 48.7% males, contrary to the specialty literature which considers that male patients are more frequently affected; we found the highest frequency in the age group of 60-79 years old and the lowest in the age group of 20-39 years old. There were no cases of basal cell carcinoma under the age of 20.

These observations have generated the idea to evaluate the healing process correlated with the histological study of skin characteristics in patients belonging to the age group of 60-79 years old, study which will be performed next in order to establish conclusions and correlations between the occurrence of basal cell carcinoma, its evolution and histological characteristics of the skin at this age.

Reconstructive techniques in reconstructive plastic surgery require trained personnel and special instruments, including certain functional and clinical-anatomical knowledge. These techniques present adequate surgical safety if specific surgical rules are observed based on anatomical studies and applied only under the conditions of strict oncological security.

### CONCLUSIONS

1. Histological examinations revealed mixed type basal cell carcinoma, which appeared most frequently in 64%, followed by nodular BCC 27%, superficial BCC 7%, morpheaform BCC 1%, the rest of them occurring in less than 1% the cases.
2. Out of the total 337 cases, there was no recurrence after complete excision. There were patients in whom the excision was not performed within resection margins and

after wound healing the tumour recurred at an interval of 4 months to 2 years. There are completely excised cases, when the skin lesion recurred but in another location.

3. Most often, the reason why excision was not within the resection margins was because of the presence of extensive tumours that invaded anatomical regions (eyelid, orbit, nasal pyramid), where reconstruction was not possible otherwise.
4. The idea that basal cell carcinomas recur only in case of lesions excised beyond safe margins requires further study.

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