# A Clinicopathologic Correlation of Basal Cell Carcinoma in A Sample of Iraqi Population.

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## ABSTRACT:

**BACKGROUND:**

BCC is a malignant epithelial neoplasm constitutes 70%-75% of all skin cancers .It arises from basal cells layer of the epidermis. It has a higher degree of invasive potential with an extremely rare ability for distant metastases so the mainstay treatment is surgical excision.

**OBJECTIVE:**

To study histological types of BCC, age and gender preference, size, anatomical location and find a correlation between various clinical and histological parameters.

MATERIALS AND METHODS:

In this retrospective study all histologically proven cases of BCC during two years period, in the period from October 2014 to February 2017 (in the pathology lab of Alwasity teaching hospital for plastic and orthopedic surgery in bagdad) were collected .The microscopic features of these tumors were carefully reviewed including histological types and surgical margin status and compared with the related clinical information.

**RESULTS:**

This study enrolled ٧٦ excisional biopsies of basal cell carcinomas include 34 (44.74%) for males and 42(55.26%) for females, with mean age of 55.64 ±14.613. 63 (82.89%) were above forty years old. 72(94.73%) were located in the sun exposed areas. Regarding histological types, 64(84.21%) were mixed, 6(7.89%) were nodular, 3(3.95%) were pigmented and 3(3.95%) were superficial. According to the size of the excised tumors, those above two cm were 22(28.95%). Regarding surgical margin status, 28(36.84%) were margin positive and 48(63.16%) were margin negative. The study found that there is a significant statistical relationship between histological type and surgical margins status with P value 0.030(<0.05) .By Analyzing histological type in regard to age, gender, locations and size, the study find that there is no statistical relationship between them with P value (>0.05) , also there is no significant statistical relationship between tumor size and age ,gender , tumor location with P value (>0.05).

**CONCLUSION**:

Basal cell carcinoma is malignant skin tumors most commonly affects older population with a strong association to sun exposure. Commonly present with a size of two cm. and below .There is a significant associations between histological types and completeness of surgical excison highlighting the importance of histological sub typing for prognostic purposes and giving a clue to the surgeon about management decision since the clinical (macroscopic) and histological (microscopic) types of BCC are closely correlated. Otherwise there is no age, gender and location preference of various histological types and there is no significant relationship between tumor size and various clinical parameters.


**KEY WARDS:** basal cell carcinoma, surgical margin, sun exposure.

## INTRODUCTION:

Basal cell carcinoma(BCC) is a malignant epithelial neoplasm constitutes 70%-75% of all skin cancers [(1)].It arises from skin basal cells layer of the epidermis .Because it is main risk factor is chronic exposure to ultraviolet radiation (UV) of sunlight [(2)], so the most common location are in sun exposed areas particularly the face [(3)].The main age at diagnosis is above 50 years [(4)].Although it's a malignant neoplasm, its regarded as one of the tumor of low grade malignant potential , slow growing, extremely rare ability for metastasis but has a greater ability of local invasiveness causing extensive tissue destruction and considerable

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disabilities if it is diagnosed and treated with delay [5]

Childhood occurrence is rare and is usually associated with predisposing genetic disease such as nevoid basal cell syndrome, Bazex syndrome, sebaceous nevus, albinism, Rombo syndrome and xeroderma pigmentosum. [6,7] Sometimes application of radiotherapy to head and neck areas in childhood predispose to development of BCC [8]

The main stay treatment of bcc is surgical excision, even after radical resection there is 2–5% risk of recurrence, which increases to 32–38% if excision was not complete[9] .On average, 1 in every 10 BCCs relapses [10]. The main reason for relapse is incomplete surgical excision. Basal cell carcinoma cells present in the so-called positive margins are usually only demonstrated in the microscopic evaluation of the removed tumor. [11]

## MATERIALS AND METHODS:

In this retrospective study all histopathologically proven cases of BCC in the period from October 2014 to February 2017 (in the histopathology lab of Al-Wasity teaching hospital for plastic and orthopedic surgery in Bagdad) were collected. These excisional biopsies were received in 10% buffered formalin and processed for paraffin embedding and thin sections were made. The sections then stained by routine hematoxylin and eosin (H&E) stain. The microscopic features of the tumors were carefully evaluated include histopathological type and surgical margin status, the related clinical informations including age, gender, location, size of the excised tissue, were extracted from patient reports. The aim of this study is to determine the different histological patterns, anatomical location, age and gender incidence and find a correlation between various clinical and pathological features of BCC as shown in table 1. To keep the privacy of patients, all the informations were recorded anonymously, to analyze the results we used descriptive statistics such as mean, standard deviation, frequency tables and also we performed the analytical tests of Fisher's exact test and Freeman-Halton extension of the Fisher exact probability test.

**Table 1: Clinicopathologic parameters of BCC used in the study.**

| Variable type | Variable | Recording options |
|---|---|---|
| Clinical type | Age | (40 years and below)<br>Above 40 years |
| Clinical type | Gender | Male<br>Female |
| Clinical type | Location | Sun exposed<br>Non sun exposed areas |
| Clinical type | Size of tumor | (2 cm and below)<br>Above 2cm* |
| Histopathologic type | Tumor type[12] | Nodular<br>Superficial<br>Pigmented<br>mixed |
| Histopathologic type | Surgical margin status** | Positive<br>Negative |

*we used the number 2cm as a cutoff point that divide the size of excisional biopsies because it differentiate between T1 and T2 stage according to AJCC staging system of BCC [12]

**Positive mean the presence of tumor cells in at least one surgical margin (lateral or deep) and negative mean all surgical margins were negative for tumor cells, both were seen only microscopically

## RESULTS:

This study enrolled ٧٦ exicsonal biopsies of basal cell carcinomas include 34 (44.74%) for males and 42( 55.26%) for females , their ages range from 10 to 84 years with mean age of 55.64 ±14.6 .

The mean age for male and female respectively were 57.08±15.86 and 54.47± 13.30

They were subdivided into two age groups, 13 (17.11%) were forty years old and below, 63 (82.89%) were above forty years old, 72(94.73%) were located in the sun exposed areas and only four (5.27%) in other areas of the body

Regarding histological types, 64(84.21%) were mixed, 6(7.89%) were nodular, 3(3.95%) were pigmented, 3(3.95%) were superficial. According to

the size of the tumor, samples were divided into two groups. Those of two cm and below were 54(71.05%) and those above two cm were 22(28.95%)

Regarding surgical margin status, 28(36.84%) were margin positive which is seen only microscopically, 48(63.16%) were margin negative.

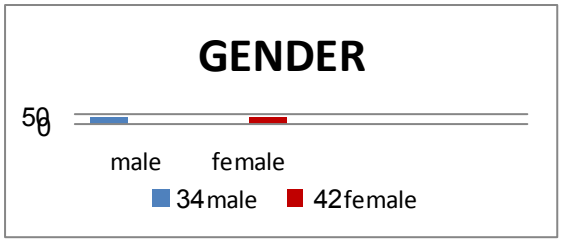


**Figure 1**: **Distribution of basal cell carcinoma according to gender.**

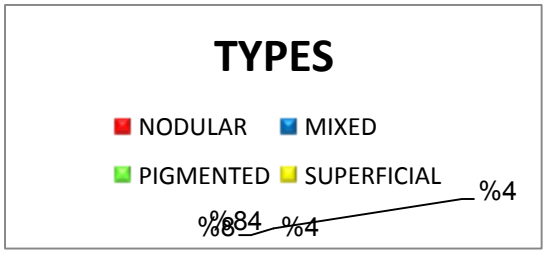


**Figure 2: Histological types of basal cell carcinoma.**

**Table 2: Comparison between histological types and age of patient with BCC.**

| | Nodular | Mixed | Pigmented | Superficial | Total |
|---|---|---|---|---|---|
| =<40 years | 2 | 10 | 1 | 0 | 13 |
| >40 years | 4 | 54 | 2 | 3 | 63 |
| Total | 6 | 64 | 3 | 3 | 76 |

There is a non significant statistical relationship between age and histological type with P value 0.354(>0.05).

**Table 3: Comparison between histological types and gender of patient with BCC.**

| | Nodular | Mixed | Pigmented | Superficial | Total |
|---|---|---|---|---|---|
| Male | 3 | 27 | 2 | 2 | 34 |
| Female | 3 | 37 | 1 | 1 | 42 |
| Total | 6 | 64 | 3 | 3 | 76 |

There is a non significant statistical relationship between histological type and gender with P value 0.725(>0.05)

**Table 4: Comparison between histological types and location of tumors.**

| | Nodular | Mixed | Pigmented | Superficial | Total |
|---|---|---|---|---|---|
| Sun exposed areas | 5 | 61 | 3 | 3 | 72 |
| Non sun exposed areas | 1 | 3 | 0 | 0 | 4 |
| Total | 6 | 64 | 3 | 3 | 76 |

There is no significant statistical relationship between type and location with P value 0.504(>0.05)

**Table 5: Comparison between histological types and surgical margin of tumorsز**

| | Nodular | Mixed | Pigmented | Superficial | Total |
|---|---|---|---|---|---|
| Positive | 0 | 28 | 0 | 0 | 28 |
| Negative | 6 | 36 | 3 | 3 | 48 |
| Total | 6 | 64 | 3 | 3 | 76 |

There is a significant statistical relationship between histological type and surgical margin with P value 0.030(<0.05)

**Table 6: Comparison between histological types and size of tumorsز**

| | Nodular | Mixed | Pigmented | Superficial | Total |
|---|---|---|---|---|---|
| =<2 cm | 4 | 44 | 3 | 3 | 54 |
| >2cm | 2 | 20 | 0 | 0 | 22 |
| Total | 6 | 64 | 3 | 3 | 76 |

There is no significant relationship between histological type and size with P value 0.663(>0.05)

**Table 7: Comparison between size of tumors and surgical margin statusز**

| | <=2 cm | >2cm | Total |
|---|---|---|---|
| Positive | 20 | 8 | 28 |
| Negative | 34 | 16 | 48 |
| Total | 54 | 22 | 76 |

There is a non significant statistical relationship between size and surgical margin status with P value 0.803(>0.05)

**Table 8: Comparison between size of tumors and age of patientز**

| | <=2cm | >2cm | Total |
|---|---|---|---|
| =<40 | 11 | 2 | 13 |
| >40 | 43 | 20 | 63 |
| Total | 54 | 22 | 76 |

There is a non significant statistical relationship between tumor size and age with P value 0.324(>0.05)

**Table 9: Comparison between size of tumors and gender of patientز**

| | <=2cm | >2cm | Total |
|---|---|---|---|
| Male | 21 | 13 | 34 |
| Female | 33 | 9 | 42 |
| Total | 54 | 22 | |

There is a non significant relationship between tumor size and gender with P value 0.131(>0.05)

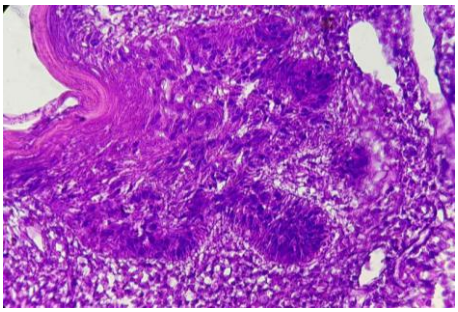

**Figure 3 :(X100) Hematoxyline and eosin stained slide demonstrate superficial type of BCC.**

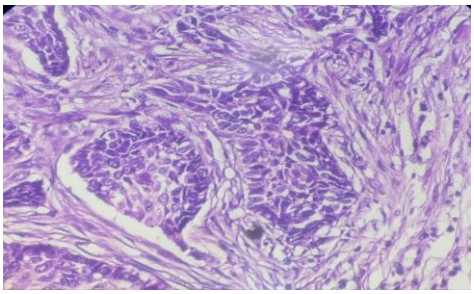

**Figure 4A: ( X400)**

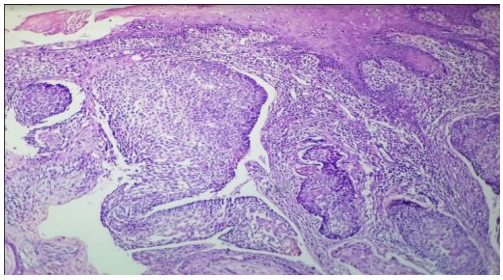

**Figure 4B : (X100)**

**Figure 4 A&B : Hematoxyline and eosin stained slide demonstrate mixed type of BCC.**

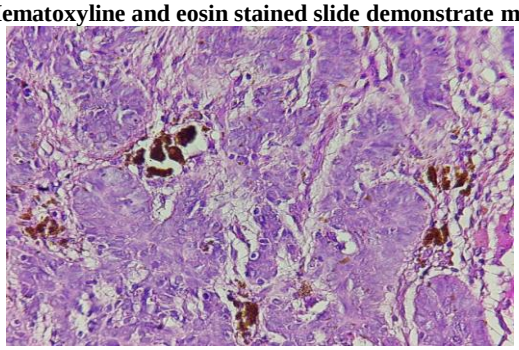

**Figure 5: X400 Hematoxyline and eosin stained slide demonstrate Pigmented type of BCC.**

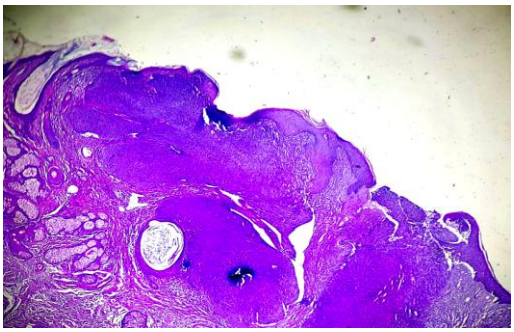

**Figure 6:x100 Hematoxyline and eosin stained slide demonstrate nodular type of BCC.**

## DISCUSSION:

Jacob Arthurin 1827 first used the term "rodent ulcer" to what we now know as a basal cell carcinoma (BCC) to describe its higher degree of invasive potential. However it has an extremely rare ability for distant metastases. Most BCCs are treated by surgical excision. Factors that influence the choice of one treatment over another include patient age, tumor location, histologic subtype, and tumor status as a primary or recurrent BC[13]. So it's important to study this type of skin cancer from clinicopathological point of view

This study showed that BCC is slightly more common in female, this results disagree with one Iraqi and two other studies [15,16,17] ,but agree with another studies [14,18,19] and this could be attributed to the fact that women are more cosmetically conscious and consult a specialist much earlier than men since the hospital in which this study performed was for plastic surgery. The ages for both sexes range from 10 to 84 years with mean age of 55.64 ±14.6 which is lower than the mean age in other studies worldwide [14,15,16,19] .The latter studies showed that the mean age was in the the sixth and seventh decade of life .However another Iraqi study[20] showed a mean age of patients with BCC was in the fifth decade , the above results may indicate a decrease in the age incidence of BCC among Iraqi population which need additional education programs and early application of protective measures.

The patient were subdivided into two age groups (above 40 years) and (equal - below 40 years).The higher percentage of cases (82.89%) were over forty years old this results agree with two studies [14,16] due to increase exposure to sun light as the age increases. Regarding location, (94.73%) were located in the sun exposed areas and only (5.27%) in other areas of the body this results agree with Iraqi and another four studies [15,16,17,18,19] and with the well known fact that documented in the literatures of pathology ,which state that BCC mainly caused by chronic exposure to ultraviolet radiation (UV) of sunlight.

Regarding histological types, the most common type in this study is mixed type in which there is a combination in microscopic pictures of nodular and other type [12] which agree with one Turkish study [21] ,but disagree with one Iraqi study[15] which may be due to small sample size used in the latter. and also disagree with other studies worldwide [14,16] .While the least common histological types found in this study were superficial and pigmented BCC.

Superficial BCC consists of superficial lobules of basaloid cells extending from the epidermis or from follicles or eccrine ducts into dermis and surrounded by a loose myxoid stroma[12] represent 3.95% of samples in this study which agree with one study [14] Pigmented BCC has the same morphology with other types except the presence of pigmentatio[ 12] represent 3.95%. One study [16] stated that pigmented BCC represent 0.2% but still agrees with this study in that it constitute the least common type of BCC. According to an electron microscopic features, the presence of melanin is due to presence of melanocytes and melanin containing macrophages within the tumor stroma. This is due to the fact that melanocytes are not only present in the surface epithelium, but also in hair matri [ 20].

Pure Nodular BCC shows massive lobules of basaloid cells with peripheral palisading of nuclei that extend into the deeper dermis or further[12] represent 7.89% ,this results disagree with three other studies worldwide [16,17,18] which showed that pure nodular type was the most common histological type. Thus in this study nodular type usually present as a none pure (mixed with other types) this is probably due to environmental and geographical factors which may influence the incidence and histological type of BCC.

According to the size of the excised tumors, the samples were divided into two groups depending on TNM staging system of BCC to differentiate between T1 (low risk) and T2(high risk) stage [12].Those of two cm and below belong to T1 which were (71.05%) and those above two cm belong to stage higher than T1 which were (28.95%) .This results totally agree with one study [14] .This study also showed (36.84%) were margins positive (mean incomplete excision done) which is seen only microscopically, (63.16%) were margins negative (complete excision) ,the results disagree with two studies [22,23],in which tumors with negative margins were 6% only. The difference may be due to the effect of other factors that may influence the surgical excision of tumor as age, tumor location, histologic subtype, and tumor status as a primary or recurrent BCC .

By Analyzing histological type in regard to surgical margin status this study showed a significant statistical relationship with P value 0.030(<0.05),which agree with two studies [24,25] ,but disagree with another study [20]. Accordingly in this study nodular type usually associated with negative margin therefore low recurrent risk and superficial

type usually associated with positive margins and high recurrent risk, this results highlight the importance of describing the histological type in the pathology report which may give an idea about subclinical infiltrations in case of missing the the labeled margins or any mistakes in tissue sectioning and aid the surgeon in surgical decision because the different histologic types have their specific clinical correlates that aid in predicting the histology for example nodular type usually present with nodule grossly and superficial variant presents as a reddish plaque with various depigmented areas and a spreading peripheral margins and/or an atrophic or scar-like peripheral margins .[26]

By Analyzing histological type in regard to age ,gender, location and size, the study found that there is no significant statistical relationship between them with P value (>0.05)This mean that at least among Iraqi population there is no gender or age or location or size preference for each histological type of BCC.

By Analyzing the size of tumor and age ,gender and tumor location there is no significant statistical relationship with P value(>0.05) this results disagree with one study [17] probably because the latter study used a much larger samples than this study( 921 over eight years period ).This mean that this study found there is no difference in tumor size( therefore low and high risk stages) among gender , age and and among sun exposed and non sun exposed areas.

## CONCLUSION:

Basal cell carcinoma is a malignant skin tumors most commonly affects older population with a strong association to sun exposure. Commonly present with a size of two cm. and below .There is a significant associations between histological types and completeness of surgical excison highlighting the importance of histological sub typing for prognostic purposes and giving a clue to the surgeon about management decision since the clinical (macroscopic) and histological (microscopic) types of BCC are closely correlated. Otherwise there is no age, gender and location preference of various histological types and there is no significant relationship between tumor size and various clinical parameters

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