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THE MOST COMMON HISTOPATHOLOGICAL VARIANT OF BASAL CELL CARCINOMA IN 150 IRAQI PATIENT

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ABSTRACT

Background: Basal cell carcinoma (BCC), the most common skin cancer, is rising worldwide. About 4.3 million instances occur annually in the US. BCC, once widespread among Caucasians in Europe, is currently growing in Asia and South America. This increase highlights the global importance of BCC and the need for screening and awareness. The aim of study is to determine the frequency of various type of BCC, and determine the different histopathological pattern, sex and age incidence. Method: A cross-sectional study of 150 basal cell cancer patients from 1-10-2022 to 1-10-2023, using medical city laboratory data. The patient data are: Age (years), Gender, Recurrent, BBC location, Lesion size. **Results:** The average age of patients in this study is 62, with 68% over 60 years old and 20.7% between 50-59 years. The majority are male (60%), and 14.7% have recurrent basal cell carcinoma (BCC). The most common types of BCC are nodular (26.67%), basosquamous (18.67%), and a combination of superficial and ulcerative (11.33%). The majority of BCC cases (76%) occur on the face, with no significant correlation between BCC type and patient gender, age, or cancer location. **Conclusion:** The study indicates that basal cell carcinoma (BCC) predominantly affects older males (mean age 62, 60% male), with various subtypes like nodular, basosquamous, pigmented, superficial, and ulcerative. There's no significant link between these BCC subtypes and patient demographics or tumor characteristics, including gender, age, lesion location, recurrence, or tumor size, suggesting other factors may influence BCC behavior and dimensions.

KEYWORDS: histopathological, variant, basal cell carcinoma, Iraqi, patient.

INTRODUCTION

Basal cell carcinoma (BCC) stands as the most prevalent form of skin cancer, with a steadily increasing incidence worldwide. In the United States alone, it accounts for an estimated 4.3 million cases annually. Traditionally common among Caucasians in Europe, BCC's incidence is now rising in various regions, including Asia and South America. This trend emphasizes the global relevance of BCC and the need for widespread awareness and screening.[1] BCC typically manifests in individuals with certain phenotypic characteristics, such as Fitzpatrick's skin types I and II, light eye color, freckles, and blonde or red hair. Interestingly, a study in Asian populations revealed a tendency for later development of BCC in life, with a lower lifetime incidence compared to Caucasians. This finding, however, does not diminish the potential risk of BCC in Asians and underlines the importance of early detection and knowledge of risk factors across all ethnicities.[2]

The primary risk factors for developing BCC include prolonged exposure to ultraviolet (UV) radiation, childhood sunburns, a family history of skin cancer, and the use of tanning beds. Additionally, chronic immunosuppressive conditions, photosensitizing drugs, exposure to ionizing radiation, and carcinogenic chemicals, particularly arsenic, also contribute to the increased risk of BCC.[3] At the molecular level, the pathogenesis of BCC involves the aberrant activation of the patched/hedgehog signaling pathway, which is crucial in regulating cell growth. Mutations in various genes, such as PTCH1, SMOm, SUFU, and the p53 tumor suppressor gene, particularly due to UV damage, can lead to deviations in the hedgehog pathway, culminating in tumor formation.[4] Understanding the histomorphological characteristics of BCC is pivotal in determining appropriate therapeutic interventions. The recurrence rate and morphological features of the tumor significantly influence treatment decisions, making it

crucial for ongoing research and data collection.[5] Epidemiological Research in Asia and Indonesia Despite the global prevalence of BCC, epidemiological research, particularly in Asia and Indonesia, remains limited. Studies covering extensive periods and large case numbers are scarce. There is a critical need for comprehensive data on the histomorphological aspects of BCC in these regions to enhance understanding and develop more effective treatment strategies.[6] The aim of study is to determine the frequency of various type of BCC, and determine the different histopathological pattern, sex and age incidence.

METHOD

Cross sectional study of 150 patients with basal cell carcinoma, the data collected from medical city laboratory from period 1-10-2022 to 1-10-2023. The data collected from patients are: Age groups (years), Gender, Recurrent, site of BBC, size of lesion and Types of BCC consist of:

1. Nodular group: adenoid cystic BCC, nodular BCC, nondulocystic BCC
2. Aggressive group: infiltrative BCC, micro nodular BCC
3. Basosquamous: basosquamous BCC.
4. Other: pigmented BCC, superficial BCC, ulcerative BCC.

Statistical analysis was conducted using SPSS version 22. For categorical data, frequency and percentage calculations were utilized, while mean, median, and standard deviation (SD) were applied to continuous data. The Chi-square test was employed to evaluate the association between different categorical variables. The Anova test was utilized to analyze the differences between the means and medians of continuous variables. A p-value of 0.05 or less was considered statistically significant.

RESULTS

Mean age 62 ± 12years old. 68% of patients at age group 60 years and more, 20.7% of patients at age group 50-59 years old. 60% of patients are males and 40% of them are females, only 14.7% of patients have recurrent BCC, 35.3% of patients in nodular group and 33.3% in other group that consist of (pigmented BCC, superficial BCC, ulcerative BCC). As shown in table 1.

Table 1: Distribution of patients according to age groups and gender.

Variables		Frequency	Percentage
Age groups (years)	***20-29***	1	0.7
	30-39	4	2.6
	40-49	12	8.0
	50-59	31	20.7
	≥60	102	68.0
Gender	***Female***	60	40.0
	Male	90	60.0
Recurrent types	***Not***	128	85.3
	Yes	22	14.7
Types of BBC	**Nodular group**	53	35.3
	Aggressive group	19	12.7
	Basosquamous	28	18.7
	Other	50	33.3

As shown in fig 1; 26.67% of patients have nodular BCC, 18.67% of them have basosquamous and 11.33% of them have superficial and ulcerative BCC. As shown in fig 2114 (76%) of BCC occur in face and other distributed in other site.

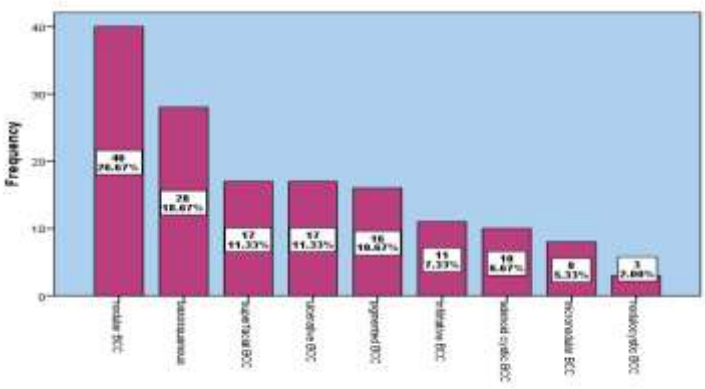

Fig 1: Distribution of patients according to diagnosis.

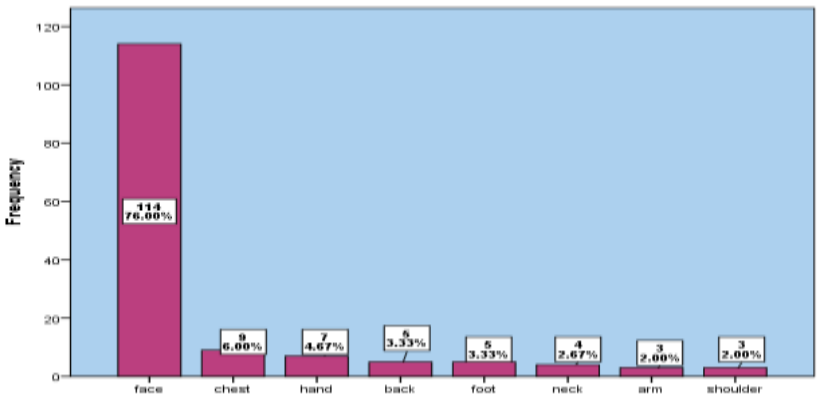

Fig. 2: Distribution of patients according to site.

As shown in table 2, there is no association between histopathological diagnosis and (gender, age groups, site and recurrent).

Table 2: Association between histopathological diagnosis and (gender, age groups, site and recurrent).

Variables		Diagnosis				P-value
		Other	Aggressive	Nodular	Basosquamous	
Gender	*Females*	19 38.0%	8 42.1%	22 41.5%	11 39.3%	0.98
	Males	31 62.0%	11 57.9%	31 58.5%	17 60.7%	
	Total	50 100.0%	19 100.0%	53 100.0%	28 100.0%	
Age groups (years)	*20-29*	0 0.0%	1 5.3%	0 0.0%	0 0.0%	0.24
	30-39	3 6.0%	0 0.0%	0 0.0%	1 3.6%	
	40-49	2 4.0%	3 15.8%	4 7.5%	3 10.7%	
	50-59	12 24.0%	4 21.1%	11 20.8%	4 14.3%	
	60	33 66.0%	11 57.9%	38 71.7%	20 71.4%	
	Total	50 100.0%	19 100.0%	53 100.0%	28 100.0%	
Site	*arm*	1 2.0%	0 0.0%	2 3.8%	0 0.0%	0.6
	back	1 2.0%	1 5.3%	3 5.7%	0 0.0%	
	chest	1 2.0%	2 10.5%	3 5.7%	3 10.7%	
	face	39 78.0%	16 84.2%	36 67.9%	23 82.1%	
	foot	3 6.0%	0 0.0%	1 1.9%	1 3.6%	
	hand	4 8.0%	0 0.0%	3 5.7%	0 0.0%	

	neck	0	0	3	1	
		0.0%	0.0%	5.7%	3.6%	
	shoulder	1	0	2	0	
		2.0%	0.0%	3.8%	0.0%	
	Total	50	19	53	28	
		100.0%	100.0%	100.0%	100.0%	
Recurrent	***No***	41	18	43	26	0.28
		82.0%	94.7%	81.1%	92.9%	
	Yes	9	1	10	2	
		18.0%	5.3%	18.9%	7.1%	
	Total	50	19	53	28	
		100.0%	100.0%	100.0%	100.0%	

P-value ≤ 0.05 (significant).

There is no difference mean of size of cancer and histopathological diagnosis. As shown in table 3.

Table 3: Difference mean of size of cancer and histopathological diagnosis.

Diagnosis groups	N	Mean of size	Std. Deviation	P-value
Group 1	50	13.66	10.44	
Group 2	19	10.73	5.85	
Group 3	53	11.90	7.08	0.3
Group 4	28	10.35	5.91	

P-value ≤ 0.05 (significant).

DISCUSSION

In this study, the mean age of the patients diagnosed with basal cell carcinoma (BCC) was 62 years, with a standard deviation of 12 years. This is consistent with the findings of similar studies that suggest BCC is more prevalent in older populations. For instance, a study by Rubin et al. (2010) also noted that the mean age for BCC diagnosis was in the early 60s, highlighting age as a significant risk factor for BCC.[7] The age distribution in our study showed that 68% of patients were 60 years or older, and 20.7% were between the ages of 50-59. This distribution aligns with the general consensus in dermatological research that the risk of BCC increases with age, as supported by Flohil et al. (2013) in their extensive epidemiological analysis.[8] Gender distribution in our cohort revealed that 60% of the patients were male, and 40% were female. This male predominance in BCC cases is a well-documented phenomenon, as stated by Christenson et al. (2005), and suggests potential gender-related biological differences in susceptibility or exposure to risk factors.[9] Interestingly, only 14.7% of patients in our study had recurrent BCC, which is relatively low compared to the recurrence rates reported in some literature, such as in a study by Wehner et al. (2012), where recurrence rates were higher. This could be attributed to various factors, including differences in patient demographics, treatment modalities, and follow-up durations.[10] Regarding the types of BCC, 35.3% of our patients fell into the nodular BCC category, while 33.3% were classified under other types, including pigmented, superficial, and ulcerative BCC. The prevalence of nodular BCC in our study is comparable to the findings of Cameron et al. (2014), which indicated that nodular BCC is one of the most common subtypes. The distribution of BCC subtypes underscores the heterogeneity of this condition and the importance of understanding its different clinical presentations for effective management.[11] In this study, the distribution of basal cell carcinoma (BCC) subtypes presents a compelling overview of the prevalence of different forms of this common skin malignancy. Notably, 26.67% of patients were diagnosed with nodular BCC, a subtype characterized by its nodular growth pattern and often found on the face, as highlighted by Lomas et al. (2012). This subtype is frequently noted for its relatively more aggressive nature compared to other BCC variants.[12] Additionally, 18.67% of patients had basosquamous BCC, a less common but more aggressive form of BCC that exhibits features of both basal cell and squamous cell carcinomas, as discussed by Smith et al. (2015). This subtype is often associated with a higher risk of metastasis and recurrence, making early detection and treatment crucial.[13] The study also found that 11.33% of patients had superficial and ulcerative BCC. Superficial BCC, known for its shallow growth pattern, typically affects the trunk and limbs and is considered one of the least aggressive forms, as per the findings of Crowson (2006). Ulcerative BCC, on the other hand, is characterized by its erosive and destructive nature, often leading to more significant tissue damage.[14] Furthermore, a significant majority (76%) of BCC cases occurred on the face, aligning with the findings of Wu et

al. (2013), who noted the face as the most common site for BCC due to higher sun exposure. This emphasizes the importance of sun protection and regular dermatological check-ups, especially for facial skin [(15)]. The distribution of other BCC subtypes and their respective percentages, as depicted in Figure 1 of the study, provides additional insight into the heterogeneity of BCC. Each subtype presents unique clinical and histological challenges, necessitating tailored approaches to management and treatment. The findings of this study indicate no significant association between the histopathological diagnosis of basal cell carcinoma (BCC) and variables such as gender, age groups, site of the lesion, and recurrence. Additionally, no difference was observed in the mean size of the cancer across different histopathological diagnoses. **Lack of Association with Gender and Age** The absence of a significant association between histopathological types of BCC and gender or age contradicts some earlier research. For instance, studies like those by Flohil et al. (2013) suggested potential gender-based differences in the prevalence of certain BCC subtypes. However, our findings align with the perspective that while the overall incidence of BCC may vary with age and gender, the histopathological types of BCC might not necessarily follow these demographic patterns. This could be due to the multifactorial etiology of BCC, where environmental factors, genetic predisposition, and lifestyle choices collectively influence the development of different subtypes.[16] **Site of Lesion and Recurrence** Similarly, the study's results show no significant link between the histopathological diagnosis and the site of the lesion or its recurrence. This is somewhat unexpected, as research like that by Wu s et al. (2016) indicated a predilection for certain BCC subtypes to occur more frequently in specific body locations, often related to sun exposure. The lack of association with recurrence is also noteworthy, that have highlighted differences in recurrence rates among BCC subtypes. These discrepancies could be attributed to variations in patient populations, environmental factors, or methodological differences in the studies.[17] **Size of Cancer and Histopathological Diagnosis** The absence of a difference in the mean size of cancer across histopathological diagnoses in this study suggests that factors other than the histopathological type might influence tumor size. This finding is important because it suggests that the aggressiveness or potential for growth of BCC may not be solely dependent on the histopathological type. This could have implications for the clinical management of BCC, where factors such as tumor location, patient's overall health, and treatment modalities might play more critical roles in determining outcomes.[18]

CONCLUSION

In conclusion, this study found that the majority of basal cell carcinoma (BCC) cases occurred in older adults, with a mean age of 62 years and a notable predominance in males (60%). Despite the diverse histopathological subtypes of BCC, including nodular, basosquamous, pigmented, superficial, and ulcerative, no significant association was observed between these subtypes and patient gender, age group, lesion site, or recurrence. Additionally, the study revealed no difference in the mean size of BCC across different histopathological diagnoses, suggesting that factors other than histopathology might influence tumor size and behavior. It is recommended to focus future research on factors beyond histopathology that influence basal cell carcinoma size and behavior, and to develop targeted screening and treatment strategies for older adults, particularly males, who are most affected by BCC.

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