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Research Article

Correlation between Clinical and Pathological Diagnosis of Eyelid Basal Cell Carcinoma

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Abstract

Background: Basal Cell Carcinoma (BCC) is the most common skin cancer. The eyelid is a common location for BCC. The match between clinical and pathological diagnoses is 65-75%. Despite known BCC risks of the Upper Galilee population, little is known regarding BCC occurrence in this population.

Objectives: (i) To evaluate the occurrence of basal cell carcinoma (BCC) of the eyelid in Upper Galilee, Israel; and (ii) to examine the correlation between the clinical and pathological diagnoses of BCC in a major hospital in the Galilee region.

Methods: This observational, retrospective study was based on a review of patients diagnosed during their hospitalization with eyelid BCC. Data were extracted from the hospital's database of 2009-2013. The eye examination-based clinical diagnoses of eyelid BCC were correlated with the pathological diagnoses.

Results: From a total of 868 eyelid biopsies, 95 (10.94%) were suspected as BCC, 72 of which (75.78%) were confirmed as BCC by the pathologist. A total of 251 eyelid biopsies were not suspected as BCC, out of which 33 (13.14%) were diagnosed as BCC by the pathologist. Total eyelid BCC occurrence was 0.253% of all cases referred to the ocular clinic, and 5.25% of all cases referred to the oculoplastic clinic. The total BCC occurrence was 0.13% of all hospital cases per year.

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Conclusion: BCC occurrence is high in the Upper Galilee. Early detection and biopsy sampling can improve cure percentage. Promotion of skin cancer awareness, especially regarding BCC, is mandated in the Upper Galilee population.

Keywords: Skin cancer; Basal cell carcinoma; Clinical diagnosis; Pathological diagnosis; eyelid surgery

Introduction

Basal Cell Carcinoma (BCC) is the most commonly occurring type of skin cancer, especially in fair-skinned populations. Dark skinned populations are rarely affected. BCC affects the basal cells of the epithelium, the bottom layer of the epidermis [1]. Visually, BCC appears as a cluster of small shiny pearls, covered with engorged blood capillaries (telangiectasia), often with a central ulcer. Sometimes the tumor presents as a cluster of red scales, or a clearly defined, shiny patch of skin.

Over 80% of BCC type tumors appear in the face and neck areas, where skin is exposed to the sun. It is more common among people that receive greater sunlight exposure, such as outdoor workers, as opposed to office workers [1-6]. The occurrence of BCC has been on the rise during the past decades, while the age of the patients decreased. The lifetime prevalence of BCC is 30% [7].

Most of the BCC patients are male, however the occurrence of BCC among females has risen over the years, with the current ratio of males to females being 2:1 in the USA [8,9]. The incidence of BCC has also risen among people over the age of 50. Geographic location also correlates with BCC incidence, where odds of diagnosis are higher in people living closer to the equator [8]. The global occurrence of BCC rises by about 2% per year. In the USA 900,000 new cases are diagnosed every year. Globally, the odds are the lowest in Africa (1/100,000) and the highest in Australia (1:100) [9]. In England, BCC is the highest occurring skin neoplasia, with 75,000 new cases every year [10].

Despite being the most common type of skin cancer, mortality is low, since BCC rarely metastasizes (<0.1%). However, if grossly neglected, it tends to spread locally and can potentially become lethal. The direct risk factor for BCC is the exposure to Ultraviolet (UV) radiation, especially in children. An Italian study which followed children and adolescents over the course of 8 years has found that those exposed to the sun more during summer vacations had a 5 times greater risk of developing BCC [3,11]. People with fair skin, hair, and eyes are at a higher risk of BCC due to higher sensitivity to UV radiation. Other risk factors include family history of skin cancers, immunosuppressive therapy, and exposure to arsenic [1].

The eyelid is a common location for skin neoplasia of various types, located in the periocular and periorbital areas. Despite rarely being life-threatening, periocular neoplasia can affect eyesight and even cause pupil deformation. The esthetic aspect is also a major Citation: Granovsky E, Yulish M, Pikkel J (2023) Correlation between Clinical and Pathological Diagnosis of Eyelid Basal Cell Carcinoma. J Ophthalmic Clin Res 10: 112.

consideration in eyelid skin neoplasia, with BCC being one of the most common types of skin tumors in the eyelid [12].

There are several types of BCC lesions. Nodular/cyst carcinoma is

the most common form, which appears as a round or oval lump that

is shiny or transparent, sometimes pinkish-red in colour, with raised

borders, sometimes with an ulcer. Superficial carcinoma is charac-

terized by a macula or a layer with raised borders, possibly scabbed

over; it commonly appears on the back or shoulders as spots, and is

sometimes mistaken for fungal inflammations, eczema or psoriasis.

Pigmented carcinoma is a rare BCC form, which can appear brown or

black-blue, depending on the person's hair colour; it is often mistaken

for melanoma. A differential diagnosis is performed if telangiectasia is detected, typical to nodular BCC, to tell apart from melanoma. The last type is sclerotic or fibrotic carcinoma, which is the rarest and most aggressive type; it appears as a stiff layer, white or yellow in

BCC requires a full-body dermatologist examination, during a regular follow-up. The frequency of the follow up is set with the physician based on the skin type and risk groups. While initial check-up

is visual, final diagnosis is given based on a biopsy sample of a suspicious skin area. Upon detection, the treatment is usually a surgical removal of the lesion. Studies have found that the match between the clinical diagnosis and the pathological analysis is 65-75% [10] and the clinical sensitivity of BCC diagnosis is 89-98% [16-18]. Moreover, the match between the clinical and pathological eyelid BCC diagnoses is 59-70%, when the clinical diagnosis is performed by a dermatologist [19]. The choice of treatment eventually depends on

colour, with unclear borders [13-15].

Results

The total number of patients referred to the clinic during the period of 2009-2013 was 44,528. The total number of patients referred to the oculoplastic clinic during the period of 2009-2013 was 2,113.

Eyelid surgery referrals are described in table 1. Out of 868 eyelid surgeries, 346 (39.9%) were conducted due to eyelid neoplasia. The total number of BCC diagnosed was 105. The average age of patients diagnosed with eyelid BCC was 57.8 (range: 38.2-75.4). A total of 73 patients (69.5%) were males, and 32 patients (30.2%) were females. Annual eyelid BCC occurrence of all cases was 0.013% on average. BCC referrals comprised 0.253% of the total clinic referrals and 5.25% of total oculoplastic referrals. The number of cases diagnosed per year is listed in table 2.

Year	N (%)
2009	139 (16%)
2010	158 (18.2%)
2011	177 (20.4%)
2012	193 (22.2%)
2013	201 (23.2%)

Table 1: Number of eyelid surgery cases per year (N=868).

Year	N		
2009	19		
2010	17		
2011	23		
2012	24		
2013	22		
Table 2: Number of BCC cases per year (N=105).			

The number of cases suspected as BCC from the total number of eyelid surgeries was 95 (10.94%). From those, positive BCC pathological diagnosis was found in 72 cases (75.78%). Diagnosed cases per year are listed in table 3.

Year	N Suspected BCC	Diagnosed BCC	% Suspected and diagnosed
2009	16	13	81%
2010	14	10	71.4%
2011	21	17	80.1%
2012	23	17	73.9%
2013	21	15	71.4%
Table 2. Number of sease sugrested and discressed as DCC (N=05)			

 Table 3: Number of cases suspected and diagnosed as BCC (N=95).

The total number of eyelid neoplasia surgeries not suspected as BCC was 251 of total eyelid surgeries (28.9%), with 33 (13.14%) being proven as BCC in pathologically. The results per year are described in table 4.

Year	Unsuspected BCC	Diagnosed BCC	% Suspected and diagnosed
2009	40	6	15%
2010	43	7	16.3%
2011	51	6	11.7%
2012	53	7	13.2%
2013	64	7	10.9%

Table 4: Number of cases unsuspected, but diagnosed as BCC (N=251).

the BCC type, size, location and depth, as well as the age and general health of the patient. Early diagnosis and early treatment have higher curative outcomes. Despite the importance of high BCC detection rates and the known BCC risks of the Upper Galilee population, such as high proportion of agricultural workers, little studies have been conducted regarding BCC occurrence in this population. "Rivka Ziv" is the main hospital

BCC occurrence in this population. "Rivka Ziv" is the main hospital serving this population, with most of the known BCC cases expected to be treated in therein, thus being a convenient study field for BCC occurrence in the Upper Galilee. The importance of this study lies in the fact that early BCC detection is a known predictor of higher curative outcomes.

Methods

This study included all cases of patients diagnosed during hospitalization with eyelid BCC during the years 2009-2013 at "Rivka Ziv" hospital, Israel. This study covered the population of the Upper Galilee, of all ages, genders, races and occupation types. Prior to initiation, the study was approved by the Rivka Ziv Helsinki committee. An observation retrospective study was conducted based on a review of medical cases from the hospital database. Cases of eyelid BCC were examined in more detail regarding the initial clinical diagnosis compared to the pathological one. The collected data included age, sex, initial clinical diagnosis, and pathological diagnosis results.

The study hypothesis was that BCC rates in this study will be equal or higher compared to the Mediterranean levels.

Data were analyzed using SPSS version 20.

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Discussion

Basal cell carcinoma is one of the most common cancerous malignancies among the world's fair-skinned population. Often located on the eyelid, it is a significant health challenge for the patients [7,8]. In Israel, the occurrences of BCC needs to be assessed carefully due to the lack of available data on the subject. Statistically, cases of BCC are rare in children, uncommon in those under the age of 40, but become more common over the age of 50. Older age and male gender are known risk factors for developing BCC skin cancer [19].

In this study we have found higher occurrence of BCC in men (69% of all cases), with the average age of 57.8. Those findings match the literature, which lists the male sex and older age as risk factors for BCC [19-21].

In this study, BCC occurrence was 0.013% of the examined population, much lower compared to the literature. Prior studies suggested a BCC occurrence of 0.5-3.0% in the general population. Therefore the first hypothesis, that BCC levels in this study will be equal or higher compared to the Mediterranean levels, was rejected. There are two possible explanations. First, "Rivka Ziv" is not the only hospital in the area, therefore other BCC cases could have been referred elsewhere. Second, this study has focused on BCC of the eyelid; while the entire face is commonly affected [1-3], other parts of the face and neck could have been affected, but not assessed in the current study. Further research on BCC occurrence with higher detection is recommended.

Our findings suggest that a match between a positive clinical diagnosis of BCC and a positive pathological diagnosis of BCC was evident in 75.78% of all cases. The correlation of clinical and pathological diagnosis of BCC in "Rivka Ziv" hospital is 75% or higher, which matches and surpasses the occurrences described in the literature [15,16,19]. However, 13.14% of the cases clinically diagnosed as not BCC were pathologically found to be BCC, meaning that many cases were misdiagnosed as false negatives for BCC, with further biopsy sampling required. Further studies are needed on the occurrence of clinically diagnosed BCC false negatives in order to increase the compatibility between the physical and the pathological diagnoses, and to improve BCC diagnosis and treatment.

Several limitations of the current study are to be addressed. First, this study was conducted in a single medical center, focusing on a single anatomical are for BCC detection.

While sample-wise this study was inclusive, further studies are needed on the wider population and in additional medical centers. In addition, more body areas affected by BCC need to be included in order to verify the findings of this study and to gather more data on BCC occurrence.

Hundreds of cases of BCC are diagnosed every year, dozens in every medical center. Further epidemiological studies are needed to identify at-risk populations, and to provide screening and education of those populations regarding early diagnosis and treatment of BCC.

Moreover, the current study has demonstrated a high correlation between the physical and pathological methods of BCC detection. The number of false positive cases (>13%) suggest that further improvement of matching diagnostic methods is needed in order to improve the diagnosis and treatment of BCC.

J Ophthalmic Clin Res ISSN:2378-8887, OpenAccess Journal DOI: 10.24966/OCR-8887/100112 In terms of implications for future practice and research, dermatologists rely strongly on the clinical diagnosis of BCC, which correlates highly with their pathological testing. However, the match is only 75%, leaving much space for improvement. In addition, there is a high percentage of false negatives in clinical diagnosis, which attests to the need for further research and physician training in the clinical diagnosis of BCC. This is important since early clinical diagnosis allows earlier treatment, which assures better curative outcomes for BCC patients.

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