

## Profile of Skin Biopsies and Skin Cancer Subtypes in Hail Region, A Three Years Retrospective Study

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### ABSTRACT

**Objectives:** to analyze the spectrum of skin lesions at our institute, and study the age, sex and anatomic distribution pattern. We will also classify the lesions into major categories and determine the incidence of each subcategory.

**Materials and Methods:** we carried a three and half year's retrospective study of skin biopsies which were collected from King Khalid Hospital recording system in Hail region in a time period from January 2014 till April 2017. **Results:** The highest percentage was in the age group 30-39 year (25.1%) with a male preponderance of 52.8%. The head, neck and face were most frequently involved body parts (46.06%). Cysts were the most common (32.3%) which included the sub-types epidermoid cyst, ganglion, dermoid cyst, pilar cyst and brachial cleft cyst. Nevi (19.4%) including intradermal nevus, congenital nevus and blue nevus were the second most common skin lesion. Correlation with the histopathologic diagnosis was positive in 94.9% cases and negative in 5.1% cases.

**Keywords:** Biopsy, Histopathology, Dermatopathology, Skin lesions

### INTRODUCTION

The skin is the largest organ in the body, which functions as a protection for internal organs against environmental insults and regulates temperature. The skin is the most exposed organ to sunlight and other forms environmental hazards <sup>(1)</sup>. The management of skin diseases requires an accurate diagnosis, which in many instances constitutes a complex process <sup>(2)</sup>. Skin biopsy is a fundamental investigation in dermatology, where histopathologic finding assists in determining disease pattern as well as morphological correlations <sup>(1)</sup>. Skin biopsies are routinely undertaken in the outpatient dermatology setting as a tool to diagnose benign tumors, malignant cancers, and inflammatory skin lesions. They are the link that allows dermatologists and dermatopathologists to participate in the treatment of patients <sup>(3)</sup>. Dermatologists often depend on skin biopsy for finalizing their diagnostic abilities <sup>(2)</sup>. Skin diseases are common and may be the cause of considerable morbidity, especially in elderly <sup>(1)</sup>. The prevalence of skin diseases varies widely according to various geographical regions and is affected by many factors such as environmental, genetic, dietary, hygiene and others <sup>(2)</sup>. There are a few published reports on the pattern of skin disease in general, <sup>(3-6)</sup> and most, if not all studies which are

published are based on clinical studies rather than histopathological ones.

Skin cancer is the most prevalent malignancy among Caucasians. It accounts for approximately 20-30% of all malignancies in Caucasians and 1-2% among those with colored skin <sup>(7)</sup>. There are two subtypes of skin cancer: malignant melanoma, which is less common, but more aggressive; and non-melanoma type, a common, yet not so aggressive <sup>(8)</sup>. According to Skin Cancer Foundation Statistics, malignant melanoma is the 19th most common malignant in the world, with nearly 232,000 new cases diagnosed in 2012 (2% of the total) <sup>(8)</sup>.

Non melanoma skin cancer (NMSC) differs according to geographic location across the globe. Development of basal cell carcinoma (BCC) has been attributed to prolonged, intense UV exposure, occurring commonly after the fifth decade of life. BCC is the most common skin cancer among Caucasians, Chinese and Japanese <sup>(9)</sup>. Squamous cell carcinoma (SCC) in heavily pigmented skin is often associated with scarring. A myriad of chronic dermatoses have been associated with malignant potential for development of SCC <sup>(10)</sup>. Furthermore, exposure to sunlight is the major cause of NMSC. The incidence of SCC increases more with age and with growing sun exposure <sup>(11)</sup>. There are only few

reports that are focused on skin cancers in the Kingdom of Saudi Arabia (KSA) <sup>(12-16)</sup>. Many studies were done about cancer in different regions in the KSA. These Studies were about the overall pattern of cancer, or cancer in a specific gender, or cancer of a certain organ system, or cancer in a certain population group <sup>(20)</sup>. Skin biopsies are the major tool used for diagnosis of skin lesions. We, however, do not have much information about the number of times a patient undergoes biopsy or the accumulative results of biopsies in a certain period of time. Skin diseases are common among the population of Hail region and are a making a major burden for patients. This study was done to assess the number of times skin biopsy was done. We will also take a good look at the types of skin biopsies in Hail region over the period of 3 years and 4 months. King Khalid Hospital is the only hospital in the region and its peripheries which receives requests of histopathologic studies from all other hospitals in the region.

## MATERIALS AND METHODS

A total of 467 skin biopsies were collected from King Khalid Hospital recording system using OASIS in Hail region. The study spanned over a period of three years and four months (from January 2014 till April 2017). All files of patients who were biopsied or whose lesion had been excised and submitted for histopathological examination were retrieved. A structured data collection tool was used to extract the data. The structured tool contained demographic data (Age, gender, nationality), date of biopsy, patients' medical record number, location of biopsy, type of biopsy, department which ordered the biopsy, deferential diagnosis, and pathological diagnosis. Ethical clearance was waived by the Saudi Ethical Committee. All slides were examined by a dermato-pathologist. The figures were compared with those from the rest of Saudi Arabia and also with other regions in the world.

Statistical analysis: SPSS statistical package version 16-0 was used. The data was analyzed with descriptive statistics. **The study was done after approval of ethical board of Hail university.**

## RESULTS

### *Gender and Age*

Out of 458 patients that underwent skin biopsy, 52.8% (n = 242) were males and 47.2% (n = 216)

females. The mean age was  $34.29 \pm 17.5$  and the median was 32 years. The mean age for males was  $36 \pm 18.9$  (median 33.5 years) and for females  $32.3 \pm 15.6$  (median 32 years). The distribution of cases according to age is displayed in **(table 1)**.

### *Site of Biopsy*

The site of each biopsy was studied regarding both anatomic regions and specific locations. Regarding anatomic regions, the respective frequencies were found to be the head and neck 46.34% (n = 211), the pelvis 2.4% (n = 11), the upper extremities 10.5% (n = 50), and the lower extremities 7.5% (n = 36). The most common specific locations were the back 6.65% (n = 31), the scalp 7.49% (n = 35), the nose 1.07% (n = 5), the abdomen (umbilical) 0.4% (n = 2), the chest 3.21% (n=15), and the non-specific 21.84% (n= 102) . After performing the chi-square test, the differences in the frequencies were found to be statistically significant ( $\chi^2 = 2434.521$ ,  $P < 0.001$ ).

### **Histological diagnosis**

The study of the histological diagnoses that were produced by the pathologists included 458 skin biopsies. Their distinctive pathology was previously diagnosed clinically by the dermatologists. Four Hundred thirty-one (431) specific histological diagnoses were suggested (94.9%). A classification of 19 categories of all histological diagnoses is presented in **(Figure 1)**. The frequencies and percentages were "cysts" n = 148 (32.3%) comprising epidermoid cyst, ganglion, dermoid cyst, pilar cyst and brachial cleft cyst, "nevi" n = 89 (19.4%) including intradermal nevus, congenital nevus and blue nevus, "lipoma" n = 62 (13.5%), "benign tumors excluding lipoma" n = 36 (7.8%), "keloid" n = 17 (3.7%), "malignant tumors" n = 14 (3%) including basal cell carcinoma, squamous cell carcinoma and mycosis fungoides, "papulosquamous dermatoses" n = 12 (2.6%), "eczema" n = 12 (2.6%), "infections" n = 9 (1.9%), "pigmentary diseases" n = 8 (1.7%), "noninfectious granuloma" n = 7 (1.5%), "connective tissue disease" n = 5 (1%), "lichenoid eruptions" n = 3 (0.6%), "drug eruptions" n = 3 (0.6%), "pre-malignant skin lesions" n = 2 (0.4%), "conditions of the skin appendages" n = 2 (0.4%), "blistering diseases" n = 1 (0.2%), "infiltrative diseases" n = 1 (0.1%), and "others" n = 27 (5.9%).

After performing the chi-square test, the differences in the frequencies were found to be statistically significant ( $\chi^2 = 5150.109$ ,  $P < 0.001$ ). Also, by applying the test for contingency tables, the site of biopsy and histological diagnosis were found to be dependent ( $\chi^2 = 2917.638$ ,  $P < 0.001$ ) with the most important associations, which are between epitheliomas followed by conditions of the skin appendages in the head and neck region, cutaneous vasculitides of the lower extremities, melanocytic nevi on the posterior tegument, and dermatitis on the anterolateral tegument. (not sure what this is?)

## DISCUSSION

Skin biopsy is one of the most commonly used diagnostic tests in dermatology. In order to achieve accurate and rapid diagnosis, it is important to incorporate clinical knowledge of the disease. Skin diseases in general population varies from 6.3% to 11.16%<sup>(21)</sup> in various studies. The pattern of skin diseases in Hail region is influenced by the difficult climatic conditions, social backwardness, access to dermatology clinic, and different ritual and cultural factors. The present study was a retrospective type which was carried out on 458 cases of skin biopsies presenting in outpatient and inpatient department of King Khaled Hospital, Hail. Maximum number of cases were found in the age group of 30-39 years, which equals to 115 patients (25.1%), followed by 20-29 years, which is 111 cases (24.2%). That goes with what Rajput *et al.*<sup>(21)</sup> found in his study. Aslan<sup>(22)</sup> in their study, in 2010, found the mean age of their patients to be  $46 \pm 20$  years. In this study, we found that the mean age of our patients was  $34.29 \pm 17.5$ . In the present series there were 242 males (52.8%) and 216 females (47.2%). Similarly D'Costa<sup>(23)</sup> also found a male predominance in their study. They found that males constituted 60.25%, while females were 39.75% of total cases. The anatomical distribution pattern of the lesions revealed that most of the cases were in head, neck and face (46.06%), followed by the limbs (14.63%). Meanwhile, D'Costa<sup>(23)</sup> found that the limbs were involved in the maximum number of cases (67.79%), followed by the trunk (19.94%), and head, neck and face 12.27%. An analysis of the broad categories revealed that the most frequently encountered lesion was cysts (32.31%), followed by nevus (19.43%). Rajput<sup>(21)</sup> found that maximum number of lesions were of infectious nature

constituting 23 cases (38.33%) of all the cases, followed by non-infectious papulosquamous disorders constituting 15 cases (25%). D'Costa<sup>(24)</sup> also found results similar to Rajput<sup>(21)</sup>, however, we found that the infectious diseases constituted only 1.9% (n=9) of the patients. We also found that the papulosquamous diseases comprised 2.6% (n=12). Similarly Bin Yap<sup>(26)</sup> found that papulosquamous disorders not very common, it constituted only 7.7% of total cases.

The third largest group of skin disorders in the present study was of lipoma comprising of 62 cases constituting 13.53% on the other side Rajput<sup>(21)</sup> and D'Costa<sup>(24)</sup> had results of the third most common disorder to be the connective tissue diseases. In our study connective tissue diseases only compromised 1% (n=5) of our patients while Bin Yap<sup>(27)</sup> found them to constitute 6.0 % of their total cases. Drug eruptions were one of the least frequently encountered disorders in our study constituting only 0.6% of our patients. Similarly Bin Yap<sup>(26)</sup> also found drug eruptions forming only 1.7%. Overall in 94.9% of cases, the histopathological examination was able to give diagnosis in the present series. However, D'Costa<sup>(24)</sup> in their study found that histopathology was able to give diagnosis in 82.33% of cases. Rajaratnam<sup>(27)</sup> was able to give a working diagnosis in 78% of cases when detailed clinical information was available to them. Bin Yap<sup>(26)</sup> was able to achieve overall correlation in 92% cases. Thus, a high level of clinicopathological correlation can be achieved when detailed clinical examination, along with clinical diagnosis is available to the pathologist.

## CONCLUSION

Our study was conducted on skin biopsies of 467 pathologically diagnosed cases of skin disorder. Males constituted 52.8% of the total patients. Maximum number of cases was found in the age group of 30-39 years. The anatomical distribution pattern of the lesions revealed that most of the cases were in head, neck and face constituting 46.06%. The most frequently encountered lesion was cysts making it 32.31%, followed by nevus forming 19.43% of cases. It was followed by lipoma comprising of 13.53% of cases. Connective tissue diseases and drug eruptions were one of the least frequently encountered disorders in our study constituting only 1% and 0.6%, respectively, of our patients.

## LIMITATION

- 1- The samples obtained were only of three years and four months because the old data was not included in the data base.
- 2- Not all the samples had a specific diagnosis.
- 3- Cases were not limited to dermatological diseases only, but included various surgical cases.
- 4- All samples were pathologically diagnosed by a general pathologist on account of not having a dermatopathologist.

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