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Evaluation of skin biopsies in Al-Yarmouk teaching hospital

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***Abstract*---**Background: Skin biopsy is an essential investigation for dermatologists. Histopathological findings in skin biopsies frequently assist dermatologist in the diagnosis and management of skin diseases. Objective: The study conducted to determine the types and reasons for biopsies & correlate the dermatologist diagnosis with that of histopathologist. Patients and Method: This is a descriptive case-series two-year study of the dermato-pathological lesions encountered in the Al-Yarmouk Teaching Hospital. One year comprised the file based part and the second year follow-up part of the study. The study started in October 2008 to October 2010. Three hundred cases formed the total sample studied, 19 of them were defaulted from the study for unknown cause. A total of 281 patients completed the study out of which 102 cases comprised the file based part and 179 cases were the followed-up. Biopsy specimens were immediately placed in 10% buffered formalin. Routine sections were 3-5 µm thick. They were stained with routine Hematoxylin and eosin stains and special stains and cell Markers like Verhoeff von Gieson, Giems; CD1a, CD3, CD19, CD20, Bcl-2, S-100 protein, MART-1/MelanA, EMA when necessary. Results: The anatomic distribution pattern revealed that the head and neck were involved in the maximum number of case 107(38.07%) table 1. A positive correlation between clinical and pathological diagnosis noted in 218 (77.58%). The correlations between the pathologist and the dermatologist was in 206 (73.3%).Regarding the type of biopsy, excisional biopsy was account maximum number 171(60.85%), while shave biopsy was the least 27(9.6%). An analysis of the broad spectrum of the lesions revealed that the maximum number of cases were tumors and cysts of epidermis 56(19.92%) The next most frequently encountered broad group was noninfectious erythematous, papular, and squamous

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diseases 25(8.89%). Conclusions: Skin biopsies constituted (5.98%) of patients that examined, also account (5.19%) of total surgical pathology load. A high clinicopathologic correlation, histopathology contributed to the diagnosis in a significant number of cases. Tumors and cysts of epidermis were account maximum number of diagnosed biopsies.

***Keywords*---**Al-Yarmouk, teaching hospital, skin biopsies.

Introduction

The word biopsy came from the Greek *bios* meaning 'life' and *opsis* 'sight'. [1] Skin biopsy is an essential investigation for dermatologists. Histopathological findings in skin biopsies frequently assist dermatologist in the diagnosis and management of skin diseases. [2] It has been said that more errors are made from failing to biopsy properly than from performing unnecessary biopsies. [3] Commonly Used Skin Biopsy Techniques [10,11,12,13,14,15,16,17,18,19,20,21),(4,5,6,7,8,9,10,11,12,13,14,15] like Punch biopsy, Superficial and deep shave biopsy, Deep incisional biopsy, Complete excision, Curettage biopsy, Snip biopsy, Needle biopsy of skin, were used as diagnostic tools and some therapeutic [4,5,6,7,8,9] [16,17,18,19,20,21] purposes.

Patients and Method

This is a descriptive case-series two-year study of the dermato-pathological lesions encountered in the Al-Yarmouk Teaching Hospital. One year comprised the file based part and the second year follow-up part of the study. The study started in October 2008 to October 2010. Three hundred cases formed the total sample studied, 19 of them were defaulted from the study for unknown cause. A total of 281 patients completed the study out of which 102 cases comprised the file based part and 179 cases were the followed-up. A detailed clinical history was recorded with particular reference to age, sex, duration of symptoms, mode of onset, characteristics and anatomic distribution of the lesions and associated symptomatology and this information was recorded in a proforma prepared for the purpose.

Gross photographs, by using Sony optical steady shot DSC-H55 were taken of some of the lesions and then the biopsy was taken after receiving the guardian's consent. The site for the biopsy was cleaned and draped and the subcutaneous tissue infiltrated with 2 ml of 2% Lignocaine. Biopsy specimens were immediately placed in 10% buffered formalin. Punch biopsies larger than 3 mm in diameter were bisected for optimal fixation as well as for appropriate plane of sectioning. Routine sections were 3-5 μm thick. They were stained with routine hematoxylin and eosin stains and special stains and cell Markers like Verhoeff von Gieson, Giems; CD1a, CD3, CD19, CD20, Bcl-2, S-100 protein, MART-1/MelanA, EMA when necessary. In the retrospective part of the study the slides were re-evaluated; blocks were retrieved, recut, restained, and reviewed when necessary.

Statistical Analysis

Statistical analyses were done through descriptive statistics.

Results

From 300 cases that involved in the study, however 19 of them were defaulted from the study for unknown cause. A total of 281 patients completed the study, 138 (49.11%) patients were females and 143 (50.88%) patients were males (Table1). Patients ages ranged from 1-95 years, with the maximum number of biopsies 50 (17.79%) were of patient in the 51-60 year age range (Table1). The anatomic distribution pattern revealed that the head and neck were involved in the maximum number of case 107(38.07%), followed by the upper limbs 74 (26.33%). Genital area was the least 7(2.49%).A positive clinicopathological correlation was noted in 218 (77.58%).The correlations between the pathologist and the dermatologist was 206, at 73.3% agreement. Regarding the type of biopsy, excisional biopsy was account maximum number 171(60.85%) while shave biopsy was the least 27(9.6%) (table1). An analysis of the broad spectrum of the lesions revealed that the maximum number of cases were tumors and cysts of epidermis 56(19.92%) The next most frequently encountered broad group was noninfectious erythematous, papular, and squamous diseases 25(8.89%) (Table2).

Table 1
Case demographic of 281 studied patients

Category		Number	%
Patients age			
	1-10 year	19	6,76
	11-20 year	29	10,32
	21-30 year	41	14,59
	31-40 year	43	15,3
	41-50 year	44	15,65
	51-60 year	50	17,79
	61-70 year	37	13,16
	71-80 year	15	5,33
	81-90 year	2	0,71
	91-100 year	1	0,35
	TOTAL	281	100
Patient sex			
	Male	143	50,88
	Female	138	49,11
	TOTAL	281	100
Anatomical site of biopsy			
	Head	107	38,07
&neck		74	26,33
	Upper limb	52	18,5
	Lower limb	41	14,59

	Trunk	7	2,49
	Genital area	281	100
	TOTAL		
Type of biopsy			
	Excisional biopsy	171	60,85
		54	19,21
	Incisional biopsy	29	10,32
		27	9,6
	Punch biopsy	281	100
	Shave biopsy		
	TOTAL		

Table 2
Classification of histopathological skin lesions in to broad categories [22]

Lesion	No. of cases	%
Genodermatoses	5	1.77
Noninfectious Erythematous, Papular, and Squamous Diseases	25	
Vascular Diseases	9	3.2
Noninfectious Vesiculobullous and Vesiculopustular Diseases	14	4.98
Connective Tissue Diseases	7	2.49
The Photosensitivity Disorders	1	0.35
Noninfectious Granulomas	3	1.06
Degenerative Diseases and Perforating Disorder	2	0.71
Metabolic Diseases of the Skin	4	1.42
Inflammatory Diseases of Hair follicles	1	0.35
Inflammatory Diseases of the Subcutaneous Fat	6	2.13
Infectious diseases	13	4.62
The Histiocytoses	1	0.35
Benign Pigmented Lesions and Malignant Melanoma	18	6.4
Tumors and Cysts of the Epidermis	56	19.92
Tumors of Epidermal Appendages	17	6.04
Cutaneous pseudolymphomas ,lymphoma and Leukemias	9	3.2
Tumors of Fibrous Tissue Involving the Skin	25	8.89
Tumors and Tumor-Like Conditions of Blood Vessels and Lymphatics	23	8.18
Tumors with Fatty, Muscular, Osseous, and Cartilagenous Differentiation	9	3.2
Tumors of Neural Tissue	7	2.49
Miscellaneous	2	0.71
Non specific	24	8.54

Total	281	100

A further analysis and split up of the broad categories revealed that basal cell carcinoma 24 (8.54%), followed by Common melanocytic nevus 13 (4.62%), followed by lichen planus 11(3.91%) and seborrheic keratosis 10(3.55%) (Table 3). Both basal cell carcinoma and seborrheic keratosis belonging to the broad category of tumers and cysts of epidermis (Table 2). Skin biopsies constituted (5.98%) of patients that examined, also account (5.19%) of total surgical pathology load.

Table 3
Classification of individual skin lesions

Broad categories	No. of Cases total	% of total	Individual lesions in respective to broad categories	No. of lesions	Row %	Column %	Special Stain or Markers
Genodermatoses	5	1.77	Erythrokeratodermia Porokeratosis Hailey-Hailey diseas Darier's diseas Urticaria Pigmentosa	1 1 1 1 1	20 20 20 20 20	0.35 0.35 0.35 0.35 0.35	 Giemsa +
Noninfectious Erythematous, Papular, and Squamous Diseases	25	8.89	Erythema annulare centerfugum Prurigo simplex Prurigo nodularis Psoriasis Pityriasis rosea Lichen planus Lichen striatus Pityriasis lichenoid chronica	1 2 1 3 2 11 1 4	4 8 4 12 8 44 4 16	0.35 0.71 0.35 1.06 0.71 3.91 0.35 1.42	
Vascular Diseases	9	3.2	Vasculitis Granuloma faciale Sweet syndrome Pigmented purpuric dermatitis	3 1 2 3	33.33 11.11 22.22 33.33	1.06 0.35 0.71 1.06	
Noninfectious Vesiculobullous and Vesiculopustular Diseases	14	4.98	Dermatitis Lichen simplex chronicus Pemphigus vulgaris Pemphigus foliaceus Bullous pemphigoid Dermatitis herpetiformis Erythema multiforme	3 1 2 2 3 2	21.42 7.14 7.14 14.28 14.28 21.42 14.28	1.06 0.35 0.35 0.71 0.71 1.06 0.71	
Connective Tissue Diseases	7	2.49	Discoid lupus erythematosus	4 2	57.14 28.57	1.42 0.71	

			Morphea Lichen sclerosus et atrophicus	1	14.28	0.35	
The Photosensitivity Disorders	1	0.35	Chronic actinic dermatitis	1	100	0.35	
Noninfectious Granulomas	3	1.06	Granuloma annulare Tattoo Sarcoidosis	1 1 1	33.33 33.33 33.33	0.35 0.35 0.35	
Degenerative Diseases and Perforating Disorder	2	0.71	Perforating collagenosis Perifollicular elastosis (popular acne scar)	1 1	50 50	0.35 0.35	
Metabolic Diseases of the Skin	4	1.42	Lichen amyloidosis Calcinosis cutis	2 2	50 50	0.71 0.71	
Inflammatory Diseases of Hair follicles	1	0.35	Follicular mucinosis	1	100	0.35	
Inflammatory Diseases of the Subcutaneous Fat	6	2.13	Erythema nodosum Lupus erythematosus paniculitis	3 3	50 50	1.06 1.06	
Infectious diseases	13	4.62	Lupus vulgaris Cutaneous leishmaniasis Scabies Molluscum cotagiosum wart	5 2 1 2 3	38.46 15.38 7.69 15.38 23.07	1.77 0.71 0.35 0.71 1.06	Giemsa +
The Histiocytoses	1	0.35	Eosinophilic granuloma	1	100	0.35	S-100, CD1a positive

Table 3 continued

Broad categories	No. of Cases total	% of total	Individual lesions in respective to broad Categories	No. of lesions	Row %	Column %	Special Stain or Markers
Benign Pigmented Lesions and Malignant Melanoma	18	6.4	Blue nevi Lentigo maligna Common melanocytic nevus Spitz nevus Malignant melanoma	2 1 13 1 1	11.11 5.55 72.22 5.55 5.55	0.71 0.35 4.62 0.35 0.35	MelanA/MART-1 positive
Tumors and	56	19.92	Linear epidermal	7	12.5	2.49	

Cysts of the Epidermis			nevus Seborrheic keratosis Epidermal cyst Milia Actinic keratosis Cutaneous horn Bowen's disease Squamous cell carcinoma Basal cell carcinoma Keratoakanthoma Paget's disease	10 1 1 5 2 1 3 24 1 1	17.85 1.78 1.78 8.92 3.57 1.78 5.35 42.85 1.78 1.78	3.55 0.35 0.35 1.77 0.71 0.35 1.06 8.54 0.35 0.35	EMA +
Tumors of Epidermal Appendages	17	6.04	Trichoepithelioma Pilomatricoma Nevus sebaceous Apocrin hidrocystoma Syringocystoadenoma papiliferum Hidradenoma Malignant appendageal tumer	3 5 4 1 1 1 2	17.64 29.41 23.52 5.88 5.88 5.88 11.76	1.06 1.77 1.42 0.35 0.35 0.35 0.71	
Cutaneous pseudo lymphomas ,lymphoma and Leukemias	9	3.2	Pseudolymphoma B-cell lymphoma Mycosis fungoides Leukemia cutis	3 1 4 1	33.33 11.11 44.44 11.11	1.06 0.35 1.42 0.35	CD20, CD19+ CD4+
Tumors of Fibrous Tissue Involving the Skin	25	8.89	Dermatofibroma Mucocel Gaint cell tumer of tendon sheath Keloid Subcutaneous fibroma Scar Angiofibroma Skin tag	8 1 2 4 1 1 1 7	32 4 8 16 4 4 4 28	2.84 0.35 0.71 1.42 0.35 0.35 0.35 2.49	
Tumors and Tumor-Like Conditions of Blood Vessels and Lymphatics	23	8.18	Lobular capillary hemangioma Hemangioma Cavernous hemangioma Verrucous hemangioma Kaposi's sarcoma Lymphangioma cicumscriptum Glomus tumer Sclerosing hemangioma	6 4 2 1 2 2 2 4	26.08 17.39 8.69 4.34 8.69 8.69 8.69 17.39	2.13 1.42 0.71 0.35 0.71 0.71 0.71 1.42	CD31 +
Tumors with	9	3.2	Lipoma	4	44.44	1.42	

Fatty, Muscular, Osseous, and Cartilagenous Differentiation			Piezogenic papules Angioleiomyoma Leiomyoma	1 1 3	11.11 11.11 33.33	0.35 0.35 1.06	
Tumors of Neural Tissue	7	2.49	Neurofibroma Cutaneous meningioma	6 1	85.71 14.28	2.13 0.35	
Miscellaneous	2	0.71	Accessary tragus Ductal adenosis	1 1	50 50	0.35 0.35	
Non specific	24	8.54	Non informative findings	24	100	8.54	
Total	281	100					

During the practicing of punch biopsy, the usage of syringe needle that was used for injection of the local anesthetic, for speared the specimen may also induce artefactual change (Figure1).

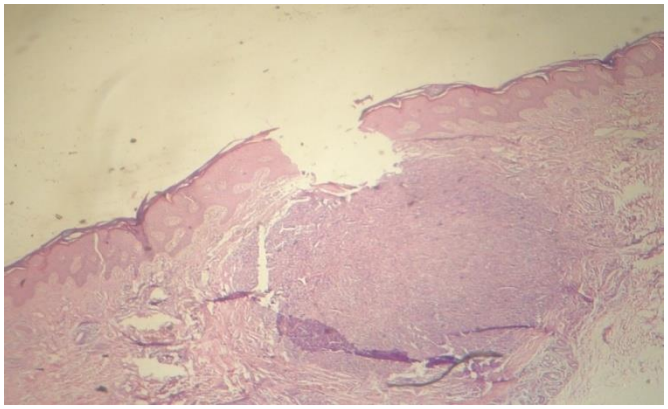

Figure 1. Artefactual change produced by syringe needle that use for separation of biopsy

So, some recommended that Terson lens capsule forceps be used when performing punch biopsy of the skin as an aid to avoid crush artifact and that artifact caused by insertion of needle into tissue.[6]

Discussion

In the Department of Dermatology and Venereology in Al-Yermouk Teaching Hospital, skin biopsies constituted (5.98%) of patients that examined, also account (5.19%) of total surgical pathology load. Comparative data is not available in the literature. Regarding the type of biopsy, excisional biopsy was account maximum number 171(60.85%) because it is reasonable for diagnosis and treatment of skin lesions, particularly malignant neoplasm that account the maximum number of cases. Curettage biopsy was avoided because it is more useful as a therapeutic procedure than as a technique for providing ideal specimens for histopathological diagnosis. The age-distribution pattern revealed

that the maximum number of cases 50 (17.79%) were patients in the 51-60 year age range, this can be explained by that facial epidermal neoplasm and pigmented lesions-which expected to seen in this age group-revealed maximum account of biopsies.

Comparative data is not available in the literature; however regarding to frequencies of skin malignancies, basal cell carcinoma account 24(8.54%) followed by mycosis fungoides 4(1.42%) then squamous cell carcinoma 3(1.06%);while each of malignant melanoma, bowen's disease, keratoakanthoma, paget's disease, B-cell lymphoma, leukemia cutis account 1(0.35%). Felix Boon Bin Yap [2] found that Cutaneous lymphoma was seen as the third most common malignancy constituting 3 (11.1%) of the 27 cases of cutaneous malignancies. It ranked behind basal cell carcinoma with 14 (51.9%) and squamous cell carcinoma with 9 (33.3%). Malignant melanoma was seen in only 1 (3.7%) of cases. Koh *et al.*[23] noted that basal cell carcinoma make up (55.6%) of the 4765 skin cancer cases seen from 1968 to 1997 followed by squamous cell carcinoma with (29.5%) and malignant melanoma with (5.9%). A positive clinicopathological correlation was noted in 218 (77.58%).The correlations between the pathologist and the dermatologist was 206, at (73.3%) agreement. Felix Boon Bin Yap [2] found the correlation between the pathologist and the dermatologist was high at 92% agreement. Other study found a clinicopathologic correlation of up to (75%) by the treating dermatologists. [24] The high correlation seen here might be due to the active participation of the treating dermatologist in reviewing the dermatohistopathological slides and the open discussion between the dermatologist and pathologist.

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