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Histopathological patterns of cutaneous malignant melanoma in Sudan

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Abstract:
Objectives: *To determine the histopathological patterns of cutaneous malignant melanoma in Sudanese patients.*
Methods: *This is a cross sectional laboratory based descriptive study that included all tissue slides presented during the study period. The tissue blocks and the slides of 55 cases were collected and re-examined by the principal investigator.*
Results: *Males represented 57.1% of the cases. The majority of lesions (81.6%) were found in the lower limbs. The major clinic-pathological feature was the acrallentiginus type (in 75.5%). Microscopy showed epithelioid cell type (61.2%), spindle cell type (32.7%), extremely bizarre cells (4.1%), and mixed cell types (spindle and epithelioid) in 2.0% of all cases.*
Conclusion: *The histo-pathological features of cutaneous malignant melanoma in Sudan are similar to previous findings in black people.*

I. Introduction

Malignant melanoma is an aggressive malignancy of melanocytes. Its incidence has been steadily increasing in many countries worldwide. Incidence and mortality rates are generally high in white population and low in Asian and African populations (1). Its prognosis depends on many factors like depth of invasion, presence or absence of ulceration, and nodal status at the time of diagnosis. In general, the lesion used to have very poor prognosis in the past, but during the new millennium, the mortality rates have been stabilized in many high risk populations (2).

One of the major determinants of melanoma development is increased exposure to ultraviolet light (UVR). This can be assessed indirectly by history of sun-burns whereas non-melanomatous skin cancers are more linked to cumulative sun exposure (3). The risk of melanoma varies on the basis of type, size, number and location of melanocytic nevi. In about one quarter of cases, melanoma occurs in conjunction with a preexisting nevus (4). Previously reportedrisk factors included estrogen, progesterone, obesity, congenital nevus, and use of immunosuppressant drugs (5). A patient with a family history of melanoma in a first degree relative has higher risk of developing melanoma than those with negative family history(6).

Histologic examination of tissue biopsy is the best way to diagnose melanoma. Major histologic types of cutaneous malignant melanoma are superficial spreading melanoma (SSM), nodular melanoma (NM), lentigomaligna (LM), and acral-lentiginous melanoma (ALM). SSM is the most common histological pattern of malignant melanoma. It can occur at any surface of the body and represents about 75% of all melanomas. It typically develops after a long-standing stable nevus changes. Changes include ulceration, increase in size, or change in color. NM is the second most common subtype of MM, and accounts for 10-15% of all melanomas in Caucasian people. It occurs most commonly in middle-aged adults with predilection for the trunk, head and neck, and lower legs. LM also known as Hutchinson melanotic freckle, is a form of melanoma in situ that occurs on the sun exposed skin of elderly people; mainly on the face, but also in neck,upper back and forearm. ALM occurs in palms, soles and subungual sites and has a characteristic histologic picture. It comprises 80% of cutaneous melanomas in dark-skinned patients.Surgery is the definitive treatment for early stages of melanoma. Medical management is reserved for patients with advanced disease. It is worth mentioning that the Food and Drug Administration (FDA) has recently approved the first combination therapy for treatment of patients with unresectable melanoma (7).

Over the past few decades, reports from many countries around the world described annual increase in cutaneous malignant melanoma; however, there is paucity of data from the Sudan. The aim of this study is to

determine the differenthistopathological patterns of cutaneous malignant melanoma and to investigate their relations to age and sex distribution in Sudanese patients.

II. Materials And Methods

This is a cross sectional laboratory based descriptive study conducted in the National Health Laboratory (NHL) and Soba University Hospital (SUH) in Khartoum- Sudan, during the period from January 2006 to December 2010. The study included tissue slides from 55 cases of malignant melanoma presented to the NHL and SUH during the study period. All histopathological reports issued during the five years of the study period were revised to identify the cases. Then tissue blocks and slides of all identified cases were collected. Additional new slides were prepared and stained by routine haematoxyline-eosin stain. All slides were re-examined by the principal investigator. Data were analyzed using Statistical Package for Social Sciences (SPSS) version 18.

III. Results

Fifty five cases of malignant melanoma were identified. Six cases (10.9%) with inadequate specimens were excluded from this study. The remaining 49 cases were re-examined. Table 1 shows general characteristics of cases in the study group. More than one half of cases (57.1%)were males.Ages ranged from 30 to 94 years old. Table 2 shows distribution of malignant melanoma in different sites of the body. The majority of lesions (81.6%) were found in the lower limbs. Other sites were the trunk (6.1%), upper limbs (4.1%) and lower limbs with lymph node invasion (4.1%). Clinico-pathological features and cell types are presented in table 3. About three quarters of cases (75.5%) were of the acrallentiginus type and all the remaining cases were of the nodular type. Pigmentation was found in 83.7% of all cases. Microscopy showed epithelioidcell type (61.2%), spindle cell type (32.7%), extremely bizarre cells (4.1%), and mixed cell types (spindle and epithelioid) in 2.0% of all cases (table 3).Table 4 shows frequency of invasion, ulceration and lymphocyte infiltration in the lesions.

Table 1: Gender and age distribution of the study group

Character	No.	%
Gender		
Males	28	57.1
Females	21	42.9
Age		
30-45	12	24.5
46-61	20	40.8
62-77	14	28.6
78-90	3	6.1

Table 2: Locations of malignant melanoma in the body

Sites of lesions	No.	%
Lower limbs (LL)	40	81.6
Lt foot	17	42.5
Rt foot	20	50
Lt thigh	1	2.5
Gluteal abscess	1	2.5
Right thigh	1	2.5
Trunk	3	6.1
Upper limbs	2	4.1
LL with lymph node invasion	2	4.1
Absent data about the site	2	4.1

Table 3: Clinico-pathological features and cell types of all lesions in the study group

Feature	No.	%
Pathological type		
Acrallentiginus type	37	75.5
Nodal type	12	24.5
Pigmentation		
Pigmented	41	83.7
Non pigmented	8	16.3
Cell types		
Epithelioid	30	61.2
Spindle	16	32.7
Bizarre shaped	2	4.1
Mixed (spindle &epithelioid)	1	2

Table 4: Different histological features of malignant melanoma in the study group

Feature	No.	%
Cytoplasm		
Eosinophilic	24	49
Basophilic	25	51
Invasion		
Intraepithelial- junction	1	2.0
In papillary dermis but not filling it	2	4.1
Filling papillary dermis	7	14.3
Into reticular dermis	5	10.2
Into sub-cutis	25	51.0
No invasion	9	18.4
Ulceration		
Present	23	46.9
Absent	26	53.1
Lymphovascular invasion		
Present	23	46.9
Absent	26	53.1
Lymphocyte infiltration		
Present	45	91.8
Absent	4	8.2

IV. Discussion

Old articles in Sudan Medical Journal, dating back to more than 50 years ago, showed that skin cancer had been the most common type of registered malignancy in Sudanese patients accounting for 18.5% of all malignancies in old reports (8). Unfortunately, there is fewrecent updated data regarding prevalence and mortality rates. Malignant melanoma is the most serious form of skin cancers, responsible for the largest number of deaths attributed to these lesions; however, its incidence in black people is much lower than incidence of other non-melanoma skin cancers like squamous cell and basal cell carcinomas. In this study, cutaneous malignant melanoma was more prevalent in males compared to females. Predominance of males was noticed in other African countries (9). However, in Western countries, contradictory results were obtained even from the same country(10,11). On the other hand, the mortality rates and risk of distant metastasis are lower among women compared to men(12).

A recent review of skin cancers in Sudan showed that the most common site is the head and neck (13). Our finding that the lower limb wasthe most commonly affected sitewas similar to findings in black patients (14). In general melanomas in Africans occur on the less pigmented, non-exposed skin, especially the palms, soles, mucous membranes and nail regions. Possible causative factors include repeated trauma and presence of pre-existing naevi in the soles of feet (14).

In this study, the most frequent clinicopathological type was ALM which was prevalent in more than 3 quarters of patients in the study group. ALM was reported as the most frequent type of malignant melanomain many studies conducted among black people (15,16) .Previous studies conducted in the United States showed that ALM is the least common subtype of melanoma in white persons whereas it is rather common in dark skinned individual (17).It is worth noting that the majority of lesions in our study were pigmented.

Bad prognostic features such as deep invasion of melanoma, ulceration, and lympho-vascular invasion were present in large number of our patients indicating late presentation which is a common practice in the developing countries. On the contrary, patients in Europe and America present early for diagnosis and management(18,19). This may explain why mortality rates of malignant melanoma are higher in Africa than in the developed countries. Greater efforts are needed to educate people about benefits of early presentation to health care providers for immediate management. The only good prognostic factor was the presence of tumor infiltrating lymphocytes in almost all cases. Previous studies showed that only thickness and presence of tumor infiltrating lymphocytes are significant and independent positive histologic prognostic factors (20).These findings are almost similar to what was reported about melanoma in Black Americans, with late presentation and aggressive type of malignant melanoma being mainly ALM (21).

One of the limitations in this study is missing or incomplete history and clinical information about the lesions, including lymph node infiltration and distant metastasis. However; our resultsindicated that MM is an important health problem in our country. Further work is needed to shed more light on the natural history of MM in Sudanese patients.

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