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PREDOMINANCE AND CLINICAL CHARACTERISTICS OF BURKITT LYMPHOMA IN SUDANESE PATIENTS

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ABSTRACT

Introduction: Burkitt lymphoma (BL) is a type of B lymphocyte lymphoma characterized with high proliferation rate. This study aimed to investigate age and gender distribution in addition to the predominant sites of cancer among Sudanese patients with BL. **Materials and Methods:** This was retrospective cross-sectional study conducted in private histopathology laboratory at Khartoum state-Sudan, during the period from June 2014 to June 2017. The data were collected from 35 confirmed BL patients' file records at the histopathology laboratory. Archived Paraffin embedded sections were processed and prepared stained tissue slides re-interpreted by haematoxylin and Eosin in addition to the Immunohistochemistry panel for confirmation. **Results:** The study conducted on 35 BL patients (60% males, 40% females), with Male: Female ratio, 1.5:1, their age ranged between (2-57) years old. 54.29% of them their age were less than 5 years old and 14.29% were more than 18 years old, while 31.43% their aged ranged between 6-18 years. The collected samples showed that the Burkitt's lymphoma found at mandibular, pelvic mass, tongue and abdominal lymph node site, usually at adult age group (above the 18 years old) and mainly found in a females group, while for children less than 18 years old, Burkitt's lymphoma present mostly in male group at abdominal mass, abdominal lymph nodes, terminal lymph nodes and appendix. **Conclusion:** The study revealed that Sudanese children under 5 years old and younger people were more susceptible to the disease, commonly male patients and the most cancer site involved is the abdomen.

KEYWORDS: BL: Burkitt's lymphoma, clinical, age.

INTRODUCTION

Burkitt lymphoma's (BL) was described earlier by surgeon Denis Burkitt in Uganda. BL still remains an indefinable disease, which has strong relation with viral carcinogenesis and molecular oncology.[1,2] Burkitt lymphoma (BL) considered as an aggressive type of non-Hodgkin lymphoma[3], also it has been classified according to its geographic distribution, incidence magnitude and risk factors. First type is Endemic BL (eBL) originally described by Denis Burkitt and found in Africa, characteristically affecting children between age's two to nine on the facial skeleton. Second type Sporadic Burkitt's lymphoma (sBL) described outside the African region, but morphologically similar to eBL and affecting mainly abdominal viscera; it can be detected at any age and no specific co-factor has been described. A third subtype of BL has association with HIV infection. HIV associated BL can be identified in any geographical area and at all ages and is of great importance especially in sub-Saharan Africa.[4,5]

Morphologically the WHO classification distinguishes between classical BL, generally observed in eBL and sBL; BL with plasmacytoid differentiation seen more commonly among immune deficient children and finally the atypical Burkitt or Burkitt-like variant.

The main characteristic in most patients with BL is the unique morphology and the chromosomal translocation involving MYC oncogene,[4] which is present in BL irrespective of geographical location and immunodeficiency status. Burkitt's cells are monomorphic cells with round nuclei, multiple nucleoli, and basophilic cytoplasm with a high rate of proliferation and spontaneous cell death. Cytoplasm lipid vacuoles are usually obvious on smears. The rate of cell division is the highest of any known tumor noted by the very high mitotic figures. A starry-sky pattern is usually present, imparted by numerous benign macrophages that have ingested apoptotic tumour cells.

MATERIALS AND METHODS

This was retrospective cross-sectional study conducted in private histopathology laboratory at Khartoum state-Sudan, during the period from June 2014 to June 2017. The data were collected at the histopathology laboratory from confirmed BL patients' samples and records. The diagnosis of the disease based on microscopic examination for tissue slides collected from different body cancer sites after processed by tissue processing machine and stained with hematoxylin and eosin, in addition to stained slides with Immunophenotyping for reinterpretation and confirmation of BL. Ethical approval have been obtained from institutional ethical committee.

RESULTS

A total of 35 studied cases with BL, 21 (60%) were males and 14 (40%) were females, with ratio of Male: Female, 1.5:1. The age mean ± SD of Burkett's Lymphoma patients in Sudan were 11.51 ± 14.12 years. Concerning age distribution of the studied patients, 19 (54.29%) of the patients were less than 5 years old, 5 of them were females while 14 of them were males, (male to female ratio = 2.8: 1). In 11 (31.43%) patients their aged ranged between 6-18 years, 5 of them were females and 6 of them were males(male to female ratio= 1.2:1), while 5 (14.29%) patients their age was more than 18 years, 4 of them were females and only one males (female to male ratio = 4:1).

The studied population showed many sites of human body have been affected by the malignancy Figure 1. The collected samples showed the cancer site of Burkitt's lymphoma present in abdominal mass, abdominal lymph nodes, terminal lymph nodes and appendix, mostly in male children's Figure 2, while the presence at mandibular, pelvic mass, tongue, abdominal lymph node site were found mainly in adult females group Figure 3.

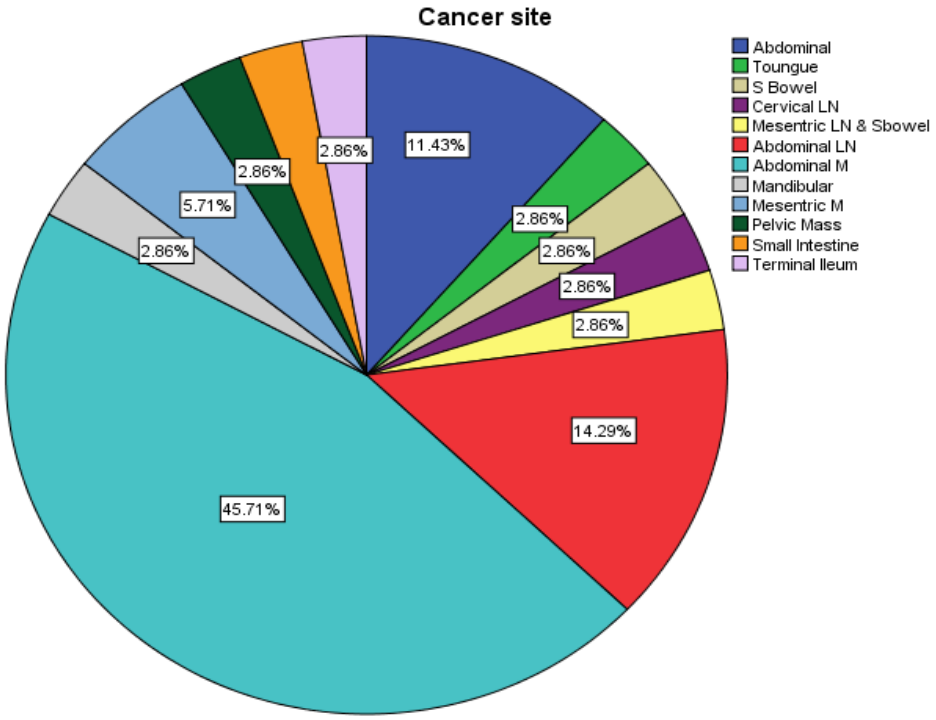

Fig 1: **The frequencies of clinical samples from different cancer sites among BL patients.**

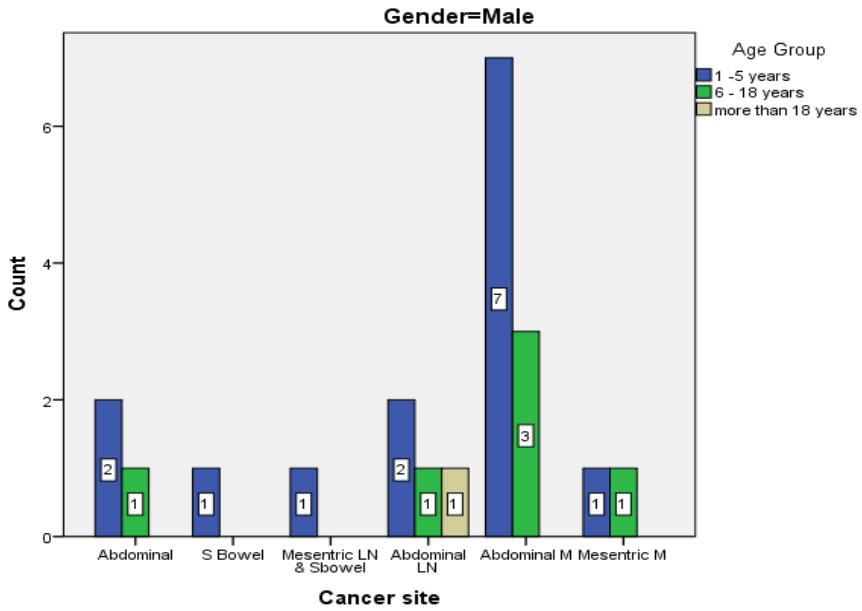

Fig 2: Predominance of Burkitt's lymphoma with different age groups among males patients

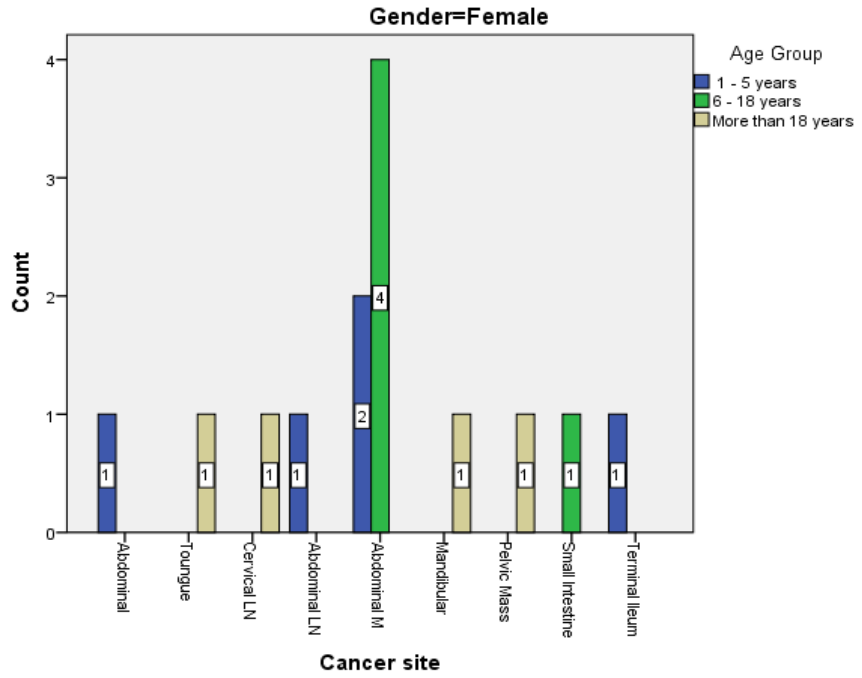

Fig 3: Predominance of Burkitt's lymphoma with different age groups among Females patients.

DISCUSSION

Burkitt's lymphoma is complicated disease of different subtypes and characterization, which may related to genetic variation, age onset, predisposing cause of disease and geographical distribution. The present study revealed that Sudanese children under 5 years old were more susceptible to the disease, commonly male patients and the most site involved is the abdomen, this results was agreed with Chinese study done by Cheng-Feng, etal (2012): showed that predominance of the disease was observed among patients less than eighteen years old, most of them were male with ratio of Male: Female, 9.75:1. Abdomen was the most frequent extra-nodal sites (46.5%) followed be Jaw and facial bone (16.3%).[6]

Regarding age and sites of disease in children, the study finding was in concordance with study done in Brazil (1997): they studied 98 children with lymphoma, 92 of them have NHL, among those (84) had advanced (stage III/IV) disease at diagnosis. The abdomen was the most common sites of disease (84) cases, Jaw involvement was rare (only three patients).[7]

In study done by Mwanda OW (2014) among Kenyan population, they showed that BL was demonstrated among 961 children and 44 adult. The ratio of distribution of gender was 1.5:1 regarding Male: female among children while a ratio of 1:1 was demonstrated among adult. The major involved sites of disease were Jaw 51.6%, abdomen 25%, combined jaw and abdomen13.8% and other sites 9.6%. While in adult involved sites were abdomen 43.2%, combined jaw and abdomen 25%, jaw 4.5 and the other sites 27.3%[8] also this result was agreed with the present study except in the cancer site and that might be related to different population ethnicity and predisposing causes of the disease.

CONCLUSION

The study revealed that Sudanese children under 5 years old and younger people were more susceptible to the disease, commonly male patients and the most cancer site involved is the abdomen.

Conflict of Interest

All authors declare no conflict of interest.

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