

## Incidence Of Burkitt Lymphoma In The North Of Iraq

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### الخلاصة

**الهدف:** يهدف هذا البحث الى تحديد نسبة حدوث ورم بركت اللعقوي في شمال العراق وبالتحديد في عظم الفك. **المواد والطرائق المستخدمة:** تمت مراجعة ملفات المرضى المصابين بورم الغدد اللعقويه بين سنة 1981-1990 وبين سنة 1995-1999 في مستشفى حازم المحافظ للاورام والطب النووي في الموصل مع التركيز على عمر وجنس المرضى وتوزيع هذا الورم في الجسم. **النتائج:** بلغ عدد المرضى المصابين بورم الغدد اللعقويه بشكل عام 1002 مريض وكان من بينهم 70 مريض مصابين بورم بركت اللعقوي ( 7% ) منهم اربعة مرضى كان ورم بركت اللعقوي في عظم الفك (5.7%). وقد تراوحت اعمار المرضى بين 4-12 سنة ومعدل العمر 7.5 سنة. جميع المرضى المصابين بورم بركت كانوا من الذكور. ولم تكن هناك حالات انتشار للورم من الفك الى الدماغ. **الاستنتاجات:** ورم بركت اللعقوي محتمل الحصول في الامعاء والفك لدى المرضى المصابين في العراق لذلك يجب ان يوضع في الحسبان عند وضع التشخيص السريري الاولي للمرضى المصابين باي ورم في الفك.

### ABSTRACT

**Aim :** To describe the incidence of Burkitt lymphoma (BL) in the North Iraq with special regard to the incidence of BL of the jaw bone. **Materials and Methods:** The records of patients with lymphoma between the years 1981-1990 and 1995-1999 in Hazim Al-Hafid Hospital in Mosul City were reviewed and they are analyzed with special regard to the BL including age, sex and the site distribution of the lesions. **Results:** One thousand and two records of the patients with lymphoma were reviewed. Seventy cases of them were BL consisting 7% of all lymphomas. Four cases (5.7%) of the BL were present as jaw bone lesion. The age range for patients with BL of the jaw bone was 4-12 years with mean of age 7.5 years. All patients of BL of the jaw bones were male. No lesion of the jaw bone showed metastasis to the brain where prognosis become worse. **Conclusions:** BL in our country can be occurred in the intestine and even in the jaw bone so it must be included in our differential diagnosis of the jaw bone lesions.

**Key words:** Burkitt lymphoma, Lymphoma.

Al- Niaimi AI. Incidence Of Burkitt Lymphoma In The North Of Iraq. *Al-Rafidain Dent J.* 2010; 10(1): 84-88.

**Received:** 22/10/2008

**Sent to Referees:** 23/10/2008

**Accepted for Publication:** 30/11/2008

### INTRODUCTION

Burkitt lymphoma (BL) is a high grade B-cell neoplasm and is the most common malignancy in African children, but can occur sporadically in every country<sup>(1,2)</sup>. In equatorial Africa and other tropical locations, the incidence of BL is 100 per million children<sup>(3)</sup> and account for 50% of all childhood malignancies<sup>(4)</sup>. While, in USA BL is very rare with about 100 new cases occurring in each year<sup>(3)</sup> it constitutes of 6-10% of childhood malignancies in USA<sup>(5)</sup>.

BL first described in 1958 by a British surgeon called Dennis Burkitt

Who was working in Central Africa. He described an unusual type of lymphoma, which was very common in children, this became known as BL<sup>(6)</sup>.

As with other cancers the exact cause is not known, but later researches showed that B-Lymphocyte in those children had been infected with the Epstein-Barr virus (EBV)<sup>(5,6,7,8)</sup>. However, differences with regard to age and site of clinical presentation and rate of association to EBV are also observed in endemic and sporadic BL. Studies on BL has been showed that EBV is implicated strongly in the African form (about 100%), while the relationship is less clear in the sporadic form (ranging between 10-30%)<sup>(4,9)</sup>.

The lymphocyte has receptors for EBV and one of its specific target. In

the Africa form, the hosts are believed to be unable to mount an appropriate immune response to primary EBV infection, possibly because of coexistent malaria infection that is immune suppressor and the host is unable to generate an adequate T- lymphocyte response (ie, EBV specific cytotoxic T- cell) against B-cells that are infected latently with EBV. This subsequently result in B- cell proliferation and ultimately result in chromosomal translocation involving C-myc gene lead to malignancy<sup>(10)</sup>.

Both sporadic and endemic form of BL are characterized by a translocation of the C- myc oncogene from chromosome 8 to either the immunoglobuline heavy chain region on chromosome 14 or one of the light chain loci on chromosome 2 ( kappa light chain ) or chromosome

22 ( lambda light chain )<sup>(3,4)</sup>.

This study is carried out to describe the incidence of BL in the North Iraq in regard to the clinical presentation and jaw bones involvement.

**MATERIALS AND METHODS**

The record of patients with lymphoma between the years 1981-1990 and 1995

- 1999 in Hazim AL-Hafid Hospital for oncology and nuclear medicine in Mosul City that consider officially as center for the North Iraq for oncology, all where reviewed with special concern to BL cases including the age and sex of the patients and the site of the tumor and the type of treatment received. The files of patients between the years 1991-1994 are not included because they were not available. The statistical analysis used in this study is descriptive.

**RESULTS**

The total cases of lymphoma between the years 1981-1990 were

400 only, 32 cases of them were BL and the total cases of lymphoma between the years 1995 – 1999 were 602 only 38 cases of them were BL. So the total number of lymphoma had been seen was 1002 cases only 70 cases of them were BL ( 7 % ). Most of the cases of BL were occurred in the abdomen and only 4 cases ( 5.7% ) of them occurred in the jaw bones.

Table (1) showed the site distribution of BL in which intestinal lesions appear to be the most common lesion while jaw lesions are rare.

Table (1): Distribution of the BL cases according to the site of involvement in the given period of time.

Year Site	1981-1990		1995-1999		Total	
	No.	%	No.	%	No.	%
Intestine	31	85.7	29	85.7	60	85.7
Jaw Bones	2	5.7	2	5.7	4	5.7
Cervical Lymph Nodes(CLN)	4	7.1	1	7.1	5	7.1
Jaw+Intestine	1	1.4	/	1.4	1	1.4
Total	38	100	32	100	70	100

In general, the age range of the patients with BL was between 2 - 38 years with mean of age was 5.5 year. Separately, for patients with BL in the intestine the age range was between 2 – 38 years with mean of age 5.3 year while for patients with BL in the jaw bones the age

range was between 4 – 12 years with mean of age 7.5 year and for patients with BL in the cervical lymph nodes (CLN) the age rang was between 4 - 13 years with mean of age 7 year and as shown in table (2)

Table (2): Distribution of BL cases according to patients age.

Site Age	Jaw bone	CLN	Intestine	Intestine+ Jaw bone	Total
1-10	3	4	57	1	65
11-20	1	1	1	/	3
21-30	/	/	1	/	1
31-40	/	/	1	/	1
Total	4	5	60	1	70

In table (3) the male /female ratio in general was 2.6 / 1 .The male to female ratio in the jaw bone lesions and intestinal lesions were high in male than in female

while in the cervical lymph node lesions there were slightly high incidence in female than in male.

Table (3):Distribution of BL cases according to patients sex.

Sex Site	Male	Female	Total	
			No.	%
Jaw bone	4	/	4	5.7
CLN	2	3	5	7
Intestine	44	16	60	85.7
Intestine+ Jaw bone	1	/	1	1.4
Total	51	19	70	100

In table (4) we can seen that the age rang for male is slightly wider extended

to the second decade of life.

Table (4):The relation between patients age groups and sex.

Sex Age	Male	Female	Total
1-10	47	18	56
11-20	3	/	3
21-30	/	1	1
31-40	1	/	1
41-50	/	/	/
51-60	/	/	/
61-70	/	/	/
Total	51	19	70

Table (5) showed that 5 cases of intestinal lesions were metastasized to the brain with no jaw lesion had secondary

metastasis makes the prognosis of intestinal lesions more worse.

Table (5):The site distribution of the secondary tumor of BL

Primary site	Secondary site					
	Intestine	Jaw	Brain	CLN	Liver&Spleen	Others
Jaw bone	/	/	/	1	1	1
Intestine	/	2	5	/	4	2
CLN	1	/	/	/	/	/
Combined	/	/	/	/	/	/

### DISCUSSION

Although the histological appearance of endemic and sporadic BL are similar but their clinical presentations are different. The African form most often involve maxilla or mandible where as, involvement of abdominal organs and lymph nodes are less common. In contrast the sporadic form usually involves abdominal organs and lymph nodes and less commonly involve the facial bones (1,11,12).

In this study BL representing about 7% of all lymphomas and jaw involvement was seen in 4 cases ( 5.7% ),two cases in the maxilla and the other two cases in the mandible (one was involved the two sides of the mandible ), and this agrees with experience from USA (13), Europe (14) and Malaysia (15) and disagrees with the endemic BL where jaw bone involvement account about 50 – 70% of BL in the body(15). Also, lymph node involvement in our study was seen in 5 cases (7.1%)which is in contrast with the rate in endemic areas which is less than 1% (15)

Intestinal tumors formed the largest group in our study reaching up to 60 cases (85.7%) which is in consistent with the clinical pattern of BL in sporadic form (4,5)

The vast majority of the patient's age in our study were between 2-13 years with median of age 7.5 years as in a study carried out in USA the median of age was 8 years (0- 21 year ) (16) while some Asian countries such as Malaysia the median of age was 15.8 years (15). In Africa the mean of age 7 years (3).

BL showed general predilection to occur in male with mild variation in male /female ratio .In this study the male /female ratio was 2.6/1 which agree with the endemic ratio of male / female of 2-3 / 1 (3) while in USA 4/ 1 (16) and in Malaysia 3.9 /1 (15).

BL is a very fast growing tumor . Systemic chemotherapy is the treatment of choice of this aggressive disease in all it's stages . The overall survival rate of BL depends upon the stage of the disease at initial diagnosis . Patients with localized disease respond well to chemotherapy and have excellent survival rate .Patient with disseminated disease (patient with bone marrow and central nervous system involvement ) respond less well to chemotherapy and has a less favorable survival rate (17,18).

In this study 5 cases ( 7% ) out off 70 cases of BL showed dissemination of the disease from the intestine to involve the central nervous system .The treatment regime were included the use of combination of chemotherapy and some cases needed the use of radiotherapy in addition to the chemotherapy and small operable BL

Lesion were subjected to surgery that followed by chemotherapy and / or radiotherapy but because of absence of full information about the follow-up of treatment of most if not all cases ,therefore collection of sufficient

Data about the outcome of the treatment of the cases were difficult.

Three cases of BL of the intestine that needed chemotherapy did not receive the required treatment because of the unavailability of the medicine in our country between the years 1995-1999 because our country was submitted to economic sanctions between the years 1990-2003.

### CONCLUSION

BL is a highly malignant neoplasm and may occur in the jaw bones mainly of the children and its early diagnosis and treatment may give the patient more chance to survive.

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