Journal of Pharmaceutical Research International

33(45A): 389-393, 2021; Article no.JPRI.70764
ISSN: 2456-9119
(Past name: British Journal of Pharmaceutical Research, Past ISSN: 2231-2919, NLM ID: 101631759)

Burkitt Lymphoma: A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i45A32756
Editor(s):
(1) Dr. Jongwha Chang, University of Texas, College of Pharmacy, USA.
Reviewers:
(1) Woldeteteklehaymanot Kassahun, Woldia University, Ethiopia.
(2) Ankush Sachdeva, Fortis escorts Heart Institute, India.
Complete Peer review History: https://www.sdiarticle4.com/review-history/70764

Case Study

Received 27 June 2021
Accepted 03 September 2021
Published 02 October 2021

ABSTRACT

Introduction: Burkitt lymphoma is highly metastatic active malignant B- cell Non-Hodgkin's Lymphoma characterized by translocation and deregulation of the d- MYC gene on chromosome no.8 on DNA strand.
Background: Burkitt lymphoma (BL) accounts for 30–50% of all peadiatric lymphomas, and non-Hodgkin lymphoma (NHL) is the fourth most common malignant tumor in children. In the sex distribution, there was a male predominance, especially among children
Case Presentation: A 12 year old female child was brought to Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha, Maharashtra, India on date 12/01/2020 with complaints of breathlessness since 5 days, high grade fever since 10 days and retrosternal chest pain since 10-15 days along with anorexia. The patient had a complete blood count, which revealed that his hemoglobin percent, total red blood count, hematocrit and Mean Corpuscular Hemoglobin were all low. Pleural Fluid cytology analysis, Virology investigation, CECT Chest and Cytopathological Examination (USG guided FNAC) done from left axillary lymph node were all performed for diagnostic purposes. The patient was diagnosed as Burkitt Lymphoma after comprehensive examinations. He was treated Tab. Tablet Augmentin, Tab. Pantoprazole, Tab. Prednisolone, Tab. Brufen, and Tab. Emset, Syrup Gelusil, Injection Cyclophosphamide and Injection Vincristine as well as nursing care was provided based on his needs.
Conclusion: Patient showed spontaneous recovery.

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Keywords: Burkitt lymphoma; Non-Hodgkin lymphoma; chemotherapy.

1. INTRODUCTION

Burkitt's lymphoma is the fastest-growing human tumor and is a hyper aggressive B-cell non-Hodgkin lymphoma. The disease is associated to the Epstein-Barr virus, and it was one of the first tumors to be discovered with a chromosomal translocation activating an oncogene (c-MYC) on chromosome no.8. In malaria-endemic areas, Burkitt's lymphoma is the most common childhood cancer. Immunocompromised patients in non-endemic areas have a very high rate of infection, particularly when HIV infection is present. In children, the prognosis with intensive chemotherapy has improved and is now excellent, but in elderly adults, the prognosis is poor [1].

1.1 Background

Burkitt lymphoma is a form of non-Hodgkin's lymphoma. Burkitt lymphoma (BL) accounts for 30–50% of all peadiatric lymphomas, and non-Hodgkin lymphoma (NHL) is the fourth most common malignant tumor in children [2]. In the sex distribution, there was a male predominance, especially among children [2].

1.2 Classification

According to World Health Organization classification, there are three types of Burkitt lymphoma: Endemic Burkitt Lymphoma [African], Sporadic Burkitt Lymphoma (Non-African) and Immunodeficiency associated Burkitt Lymphoma [2].

1.3 Staging

The St. Jude staging system, which was intended for all histological subtypes and also included Stages I–IV (Stages I and II were referred to as limited stage, while Stages III and IV were referred to as advanced stage), clinical staging varied according to the anatomic sites of involvement, clinical presentation, and diagnosis level, with most literature reporting that more than half of Burkitt Lymphoma patients presented at advanced stage [2].

2. CASE PRESENTATION

A 12 year old female child was brought to Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha, Maharashtra, India on date 12/01/2020 with complaints of breathlessness since 5 days, high grade fever since 10 days and retrosternal chest pain since 10- 15 days along with anorexia.

On initial examination, patient was having a pulse rate of 90 beats/min, respiratory rate of 30 breaths/min and her Blood Pressure was 110/70 mmHg. On general examination, pallor was present. The alopecia was also present. Left and right axillary lymph nodes were swollen and palpable. On physical examination, the patient's general parameters height 125 cm, weight 25 kg, body mass index 18.4 kg/m^2. The patient had unexplained fever and looks pale, had jaundice and inactive, weight loss, fatigue, night sweats and loss of appetite. Evaluation of rest of system was within limit.

2.1 Diagnostic Assessment

History collection, physical examination, blood investigation, Pleural Fluid cytology analysis, Virology investigation, CECT Chest and Cytopathological Examination (USG guided FNAC) done from left axillary lymph node were all performed for diagnostic purposes. [Showed in Table 1]

2.1.1 Management

Multiagent chemotherapy tailored to the histologic subtype and clinical stage of disease is the cornerstone of conventional therapy. Surgical resection and radiation therapy are also crucial aspects of definitive treatment in some people with non-Hodgkin lymphoma [3]. The success of intensive treatment relies on good supportive care. The therapy offered in oncology units in low-income countries is not as aggressive as in centers in high-income countries and outcomes are less successful. Adjuvant monoclonal antibody therapy with rituximab shows promise for improved outcomes and reduced toxic effects in the future [1]. In about 90% of peadiatric and 50-60% of adult patients with Burkitt Lymphoma, current intensive chemotherapy regimens have shown long-term disease-free survival [4].

In present case, Pleural Fluid cytology analysis, Virology investigation, CECT Chest and Cytopathological Examination (USG guided FNAC) done from left axillary lymph node were all performed for diagnostic purposes. The

Table 1. Showing investigations of the patient

Complete Blood Count	Hemoglobin was 9.6gm% (anemia) Total Red Blood Count was 3.26 million/cu.mm Total White Blood Cell Count was 10300/cu.mm Haematocrit (HCT) was 26.1% Mean Corpuscular Volume was 80 cub. micron, Mean Corpuscular Hemoglobin was 26.2 Pico gm, Mean Corpuscular Hemoglobin Concentration was 32.1%. Total Platelet Count was 3.5 lac/cu.mm, RDW was 11%, Monocytes was 07%**,** lymphocytes was 40%, eosinophils was 03%, granulocytes was 50% and basophils was 00%.
Kidney Function Test	Blood Urea was 18.6 mg/dl, Serum creatinine was 0.6 mg/dl, serum sodium was142 mEq/L, Serum Potassium was 4.84 mEq/L and Serum Calcium was 8.8mg/dl.
Virology investigation	HIV Test: Non-Reactive HCV Test: Non-Reactive HBS Ag: Non-Reactive
Pleural Fluid cytology	• Smear shows occasional lymphocyte especially of small type along with few polymorph spalsh macrophages and smudged nuclei in blood mixed within proteinaceous background • cytology suggested “blood mixed serous effusion with low infiltrate of small lymphocyte”
CECT CHEST	• Multiple enlarged descrete homogeneously enhancing lymph nodes are noted in bilateral axillary region measuring 27mmx18 mm in size • Moderate right pleural effusion with fissural extention • Mild pericardial effusion predominantly along left heart border and around apex.
Cytopathological Examination (USG guided FNAC) done from left axillary lymph node	• Smear shows predominantly small lymphoid population along with large lymphocyte with blastoid features and cytoplasmic vacuoles. • Cytomorphology is suggestive of “Non-Hodgkin’s Lymphoma – “Burkitt Type”

Table 2. Treatment was started immediately after admission.

Sr. No.	Name of the drug	Dose	Route	Frequency	Drug Action
1.	Tablet Augmentin	375 mg	Oral	Three times a day	Antibiotics
2.	Tablet Pantoprazole	40 mg	Oral	Once a day	Antacid
3.	Tablet Prednisolone	20 mg	Oral	Three times a day	Corticosteroid
4.	Tablet Brufen	400 mg	Oral	Three times a day	Non-Steroidal Anti-Inflammatory Drug
5.	Tablet Emset	40 mg	Oral	Once daily	Antiemetic
6.	Syrup Gelusil	5 mL	Oral	Three times a day	Antacid
7.	Injection Cyclophosphamide	300 mg over 30 minutes	Intravenous		For first cycle of chemotherapy
8.	Injection Vincristine	1 mg	Intravenous		Antineoplastic agent For first cycle of chemotherapy

patient was diagnosed as Burkitt Lymphoma after comprehensive examinations. He was treated Tab. Tablet Augmentin, Tab. Pantoprazole, Tab. Prednisolone, Tab. Brufen, and Tab. Emset, Syrup Gelusil, Injection Cyclophosphamide and Injection Vincristine as well as nursing care was provided based on his needs.

3. DISCUSSION

Burkitt lymphoma is highly metastatic active malignant B- cell Non-Hodgkin's Lymphoma characterized by translocation and deregulation of the d- MYC gene on chromosome no.8 on DNA strand [5]. With a doubling time of less than 24 hours, it is the fastest growing human tumor [6]. Dennis Burkitt first described this entity in 1956 in equatorial Africa. [5]. In India, the clinical presentation of Burkitt's lymphoma is intermediate between sporadic and endemic. It has a 25 percent to 80 percent association with EBV [7]. In present case was sporadic [non-African] type.

The primary and secondary sites of involvement determine the clinical manifestations of Burkitt Lymphoma. It usually manifests as an abdominal (sporadic type) or head and neck (endemic type) disease involving the bone marrow or the central nervous system. The clinical features includes Cough, superior vena cava syndrome, dyspnea with thoracic extension, abdominal masses, intestinal obstruction, intussusception-like symptoms, and ascites or localized bony pain. In 45 percent of cases, Burkitt's lymphoma manifests as an abdominal or pelvic mass, with 22.5 percent of cases involving the gastrointestinal tract [8]. Our patient was present with breathlessness, high grade fever and retrosternal and chest pain along with anorexia.

Debulking surgery is only used to obtain tissue for biopsy and diagnosis and is rarely beneficial [4]. In our patient Cytopathological Examination (USG guided FNAC) done from left axillary lymph node suggested of "Non-Hodgkin's Lymphoma-Burkitt type".

Multi-agent systemic chemotherapy combined with intrathecal chemotherapy is the mainstay of treatment [4]. In present case, chemotherapy was stated.

COPAD (cyclophosphamide, vincristine, prednisone, and doxorubicin) and COMP (cyclophosphamide, vincristine, methotrexate, 6-mercaptopurine and prednisone) are two of the most commonly used chemotherapy regimens [4]. In moderate to severe disease, intrathecal chemotherapy with methotrexate, hydrocortisone, or Ara-C is used. In about 90% of peadiatric and 50-60% of adult patients with Burkitt Lymphoma, current intensive chemotherapy regimens have shown long-term disease-free survival [4]. In present case, Injection Cyclophosphamide and Injection Vincristine chemotherapy agents with Tablet Prednisolone were given.

4. CONCLUSION

Burkitt's lymphoma is a rare, rapidly progressing malignant tumor of childhood with a variety of clinical features. In children, the prognosis with intensive chemotherapy has improved and is now excellent, but in elderly adults, the prognosis is poor [1]. Despite its rarity in the Indian population, clinicians should include it in their differential diagnosis. In children, the prognosis with intensive chemotherapy has improved and is now excellent, but in elderly adults, the prognosis is poor. The current case is an excellent illustration of the importance of early detection and treatment, which saved the child's life [6].

CONSENT

While preparing case reports for publication parents informed consent has been taken from patient father.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle4.com/review-history/70764