Volume 11, Issue 7, July – 2026 International Journal of Innovative Science and Research Technology
ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26jul1833

A Child with Burkitt's Lymphoma: A Community Health Nursing Case Report

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Publication Date: 2026/08/06

Abstract: Burkitt's lymphoma (BL) is a highly aggressive mature B- cells, non- Hodgkin lymphomas in childhood, a type of White Blood Cells. Other names of this condition include Burkitt's disease, Burkitt's lymphoma and Burkitt's tumor. It typically starts in lymph nodes of abdomen or pelvis later causes diffuse skeletal involvement with extensive extra nodal disease and may initially a mimic metastatic solid tumor such as primitive neuro ectodermal tumor (PNET). I had seen a case of 4 year child in community who is underweight with intermittent fever since 5 days, poor appetite, extreme fatigue, running nose, and weak cry and less active since 5 days. Initially the child was treated with antibiotic assuming to have some bacterial infection in a private hospital for 3 days. As the child had persisting illness and abdominal pain further evaluation was performed. A whole body PET scan revealed to have extensive intensely hypermetabolic skeletal lesions involving cervical, thoracic, lumbar vertebrae, pelvis, ribs, skull, scapulae, humerus and femoral part. MRI scan demonstrated multifocal lesions, raising suspicion of metastatic malignancy. Histopathological examination with immunohistochemistry confirmed Burkitt's lymphoma. The child was subsequently referred to a tertiary care hospital where the child had 6 months of chemotherapy and the child had favorable response, highlighting the importance of early diagnosis and timely management in improving outcome in pediatric Burkitt's lymphoma.

Keywords: *Burkitt's Lymphoma, Non- Hodgkin's Lymphoma, Childhood Malignancy, Chemotherapy.*

How to Cite: S. Revathi (2026) A Child with Burkitt's Lymphoma: A Community Health Nursing Case Report. *International Journal of Innovative Science and Research Technology*, 11(7), 3154-3156. https://doi.org/10.38124/ijisrt/26jul1833

I. INTRODUCTION

Burkitt's lymphoma is a highly aggressive mature B – cell non – Hodgkin lymphoma accounting for approximately 30 – 50 % of childhood lymphomas in endemic regions and 30 – 40 % of pediatric non – Hodgkin lymphoma worldwide. The tumor exhibits an exceptional rapid doubling time of approximately 24 -48 hours, making early diagnosis and prompt critical treatment. The sporadic variant predominantly involves the abdomen, especially the ileocecal region. Diffuse skeletal lesions associated with multiple abdominal deposits and pleural involvement at presentation are uncommon and identifies to be a metastatic neuroblastoma, Ewing sarcoma or PNET. Although most reports focus on oncological diagnosis and treatment, the contribution of community health nurses in early symptom recognition, family education, referral co – ordination and long term follow – up remains under reported.

II. CASE PRESENTATION

A 4 year child in community was found underweight (11kg) with intermittent fever since 5 days, poor appetite, extreme fatigue, running nose, and weak cry and less active since 5 days. Initially the child was treated with antibiotic assuming to have some bacterial infection in a private hospital for 3 days. As the child had persisting illness and abdominal pain further evaluation was performed. A whole body PET scan revealed to have extensive intensely hypermetabolic skeletal lesions involving cervical, thoracic, lumbar vertebrae, pelvis, ribs, skull, scapulae, humerus and femoral part. MRI scan demonstrated multifocal lesions, raising suspicion of metastatic malignancy. FDG of brain and cervical lymph nodes were found normal. An intensely hypermetabolic pleural – based soft tissue lesion was identified in thorax along the right chest wall measuring 4.4 x1.2 cm approximately. Abdominal imaging showed a large sub hepatic lesion measuring 7.9 x 5.6 cm .Several lesions were associated with soft tissues. Histopathological examination with

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immunochemistry confirmed Burkitt's lymphoma. Parents were being counselled appropriately about the child's condition and treatment modalities .The child was subsequently referred to a tertiary care hospital where the child had 6 months of chemotherapy and the child had favorable response, highlighting the importance of early diagnosis and timely management in improving outcome in pediatric Burkitt's lymphoma.

➢ *Definition:*

Burkitt's lymphoma is an aggressive non – Hodgkin B – cell lymphoma characterized by rapid tumor growth frequently affecting the jaw, abdomen, or central nervous system associated with Epstein- Barr virus (EBV), human immunodeficiency virus (HIV), and chromosomal translocations involving the MYC oncogene.

➢ *Epidemiology:*

Burkitt's lymphoma (BL), in children commonly sporadic type involves abdomen, etranodal and skeletal regions.70 % of cases identified to have abdomen as the primary site of involvement. Globally significant proportion of cases with high incidence were reported in endemic regions of Africa. In India 2-4 % of childhood cancer are with leukemia and lymphomas. A retrospective study by Nirmal.G (2025) had analyzed and reported that good survival would be achieved with appropriate treatment of cases among children with Burkitt's lymphoma

➢ *Etiology:*
- The exact cause is unknown
- Genetic cause (MYC gene / Chromosomal translocation)

➢ *Risk Factors:*
- Epstein Barr virus infection
- Immune deficiency
- Genetic alterations
- Environmental factors

➢ *Types of Burkitt's lymphoma*
- Endemic(common among Africans)
- Sporadic (common in children)
- Immuno - deficiency related lymphomas

III. PATHOPHYSIOLOGY

Burkitt's lymphoma is a fast-growing malignancy of mature B cells caused by genetic alterations, which lead to the uncontrollable proliferation of the cells. The leading genetic alteration in the disease is the expression of the MYC gene through chromosomal translocation t(8;14). It is characterized by extremely fast growth because of the increased rate of cell proliferation. Tumor cells usually contain B-cell markers CD20 and CD10, and the histological picture of the disease is defined by the presence of the so-called "starry-sky" pattern.

The pathogenesis of Burkitt's lymphoma depends on the subtype of the disease. The endemic type of the condition is highly associated with the presence of Epstein–Barr virus infection, and the sporadic type is characterized by abdominal symptoms and occurs mainly in children. The immunodeficiency-associated type is typical for patients with immunodeficiency disorders.

The fast growth of the disease leads to the extensive dissemination of Burkitt's lymphoma to lymph nodes, abdominal organs, bone marrow, and even bones. However, despite the aggressive characteristics of the disease, it responds positively to intensive chemotherapy.

➢ *Clinical Features:*
- Lymph node enlargement
- Abdominal pain / distension
- Nausea, Vomiting
- Fever , night sweats
- Fatigue
- Unintentional weight loss
- Burkitt's tumor may double in size within days.

➢ *Stages of Burkitt lymphoma*
- Stage I : Single tumor that is extra nodal
- Stage II : Single extra nodal tumor with regional node involvement (affecting 2 or more nodes) on the same side of the diaphragm
- Stage III : Two or more nodal or extra nodal tumors on both side of the diaphragm
- Stage IV : Cancer involving CNS or bone marrow spreads other organs.

➢ *Diagnostic Evaluation:*
- Blood investigation
- Lymph node biopsy
- CT scan
- PET scan
- Bone marrow biopsy
- Spinal tap (lumbar puncture)

➢ *Management:*
- Chemotherapy
- Immunotherapy
- Radiation Therapy
- Stem Cell Transplantation
- Surgical removal of Tumor

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➢ *Community Health Nursing Management:*

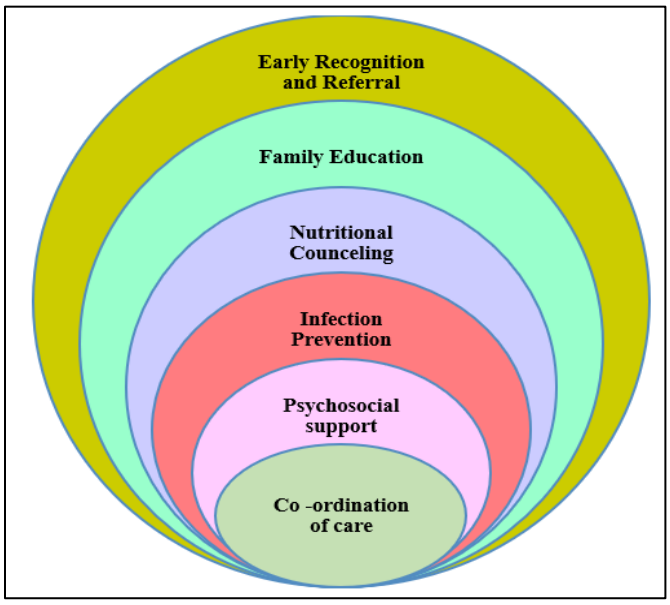

Fig 1 Community Health Nursing Management

➢ *Challenges at Community Level:*

- Delay in referral
- Financial burden
- Family support
- Continuity of Care

IV. CONCLUSION

This case demonstrates that the Burkitt lymphoma found to be an aggressive disease, but can be recovered with prompt referral and treatment. Recognition of warning signs, family education, adherence to treatment and continuity of care promotes better clinical outcome and family well-being.

V. NOVELTY OF THIS CASE

Unlike traditional case studies which emphasize imaging and chemotherapy, this study stresses continuity of care from the community health nursing aspect. The study points out the need for early detection, education of caregivers, referral, nutritional counseling, psychosocial care, and follow-up play a key role in the management of pediatric patients with malignant conditions like Burkitt lymphoma. This case report highlights an under explored nursing perspective in the literature, providing clinically relevant and public health oriented insights which emphasize the early detection and timely referral of community health nurse.

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