International Journal of Pediatrics and Neonatology
Online ISSN: 2664-8369, Print ISSN: 2664-8350
Received: 05-03-2019; Accepted: 07-04-2019; Published: 14-04-2019
www.pediatricsjournal.net
Volume 1; Issue 1; 2019; Page No. 15-17

What is mature b-cell all or Burkitt leukemia chemotherapy protocol

Abdolkarimi Babak[1*], Salajeghe Puria[2]
[1] Fellowship of Pediatric Hematology-Oncology, Iran University of Medical Sciences, Tehran, Iran
[2] Assistant, Professor of Pediatric Hematology-Oncology, Department of Pediatrics, Lorestan University of Medical Sciences, Khoramabad, Iran

Abstract
In this text we discus about Burkitt lymphoma/ leukemia chemotherapy protocol and difference with classic acute lymphoblastic leukemia.

Keywords: mature, Burkitt, chemotherapy protocol, Lymphoblastic

1. Introduction

Mature B-cell Acute Lymphoblastic Leukemia(ALL)also called Burkitt leukemia is rare, accounting for only about 2% to 3% of childhood ALL. It is essentially the same as Burkitt lymphoma and is treated differently from most leukemias. Involvement of the bone marrow may lead to confusion as to whether the patient has lymphoma or leukemia. Traditionally, patients with more than 25% marrow blasts are classified as having mature B-cell leukemia, and those with fewer than 25% marrow blasts are classified as having lymphoma. It is not clear whether these arbitrary definitions are biologically distinct, but there is no question that patients with Burkitt leukemia should be treated with protocols designed for Burkitt lymphoma. In this contex we introduce standard treatment options which are exist for treatment of Mature B cell lymphoma and Leukemia. Current data do not suggest superiority for either of the following standard treatment options.

Table 1: Standard Treatment Options for High-Stage B-cell NHL and Leukemia:

	Stratum	Disease Manifestations	Treatment
ALL = acute lymphoblastic leukemia; BFM = Berlin-Frankfurt-Munster; CNS = central nervous system; LDH = lactate dehydrogenase; NHL= non-Hodgkin lymphoma.			
FAB/LMB-96 International Study COG-C5961 (FAB/LMB-96)[2, 3]	B	Multiple extra-abdominal sites	Prephase + four cycles of chemotherapy (reduced intensity arm) [2]
		Nonresected stage I and II, III, IV	
		Marrow <25% blasts	
		No CNS disease	
	C	Mature B-cell ALL (>25% blasts in marrow) and/or CNS disease	Prephase + 8 cycles of chemotherapy (full intensity arm) [3]
BFM Group[1,5]	R2	Nonresected stage I/II and stage III with LDH <500 IU/L	Prephase(COP) + 4 cycles of chemotherapy (4 h methotrexate infusion) [1]
	R3	Stage III with LDH 500–999 IU/L	Prephase + 5 cycles of chemotherapy (24 h methotrexate infusion) [1]
		Stage IV, B-cell ALL (>25% blasts) and LDH <1,000 IU/L	
		No CNS disease	
	R4	Stage III, IV, B-cell ALL with LDH >1,000 IU/L	Prephase + 6cycles of chemotherapy (24 h methotrexate infusion) [1]
		Any CNS disease	

- COG-ANHL1131 use sa trial with combination chemotherapy with or without Rituximab in treating younger patients with Stage III–IV Non-Hodgkin Lymphoma or B-Cell Acute Leukemia): This randomized study of patients with high-risk disease (defined as Group B with high lactate dehydrogenase and Group C) examines the addition of rituximab to the standard FAB LMB 96 (COG-C5961) chemotherapy regimen.
- Additionally, the dose-adjusted EPOCH-R regimen (etoposide, prednisone, vincristine, doxorubicin, and rituximab) will be tested in a single-arm, phase II trial for pediatric patients with primary mediastinal B-cell lymphoma. Also we introduce Summary of BCCA Protocol for Treatment of Burkitt Lymphoma and Leukemia (ALL-L3) with Ifosfamide, Mesna, Etoposide, Cytarabine (IVAC) and rituximab.

All stages of newly diagnosed Burkitt lymphoma (formerly small non-cleaved Burkitt-type) and Burkitt leukemia (ALL-L3). This protocol is usually given after CODOXMR and is considered to be part B of the Magrath protocol. Baseline (required, but results do not have to be available to proceed with first treatment; results must be checked before proceeding with cycle 2): HIV, HBsAg, HBsAb, HBcoreAb, HCAb, CMV serology, HSV serology. Daily every morning

During treatment: CBC & diff, platelets, creatinine, electro Lytes.

Table 2: Lyivacr phase (Ifosfamide, Mesna, Etoposide, Cytarabine and Rituximab)

Drugs	Dose	BCCA usiig
Cytarabine	2000 mg/m2 q 12 h on day 1,2	IV in 100 cc N/S over 2 hr
Ifosphamide	1500 mg/m2 on day 1,2,3,4,5	IV in 500 cc N/S over 2 hr
MESNA	375 mg/m2 q id h on day 1,2,3,4,5	IV in 100 cc N/S over 2 hr
Etoposide	60 mg/m2 on day1,2,3, 4,5	IV in 300-500 cc N/S over 3-8 hr
MTX(IT)	12 mg on after day 18 for 8 cycles	Should be given if there are no blasts in PBS and Plt>50000
Rituximab	375 mg/m2 on day 4	IV in 200 cc N/S over 2 hr
Filgrastim	5 mcg/kg on day7 until Neu greater than 1000	SC daily starting on day 7, until neutrophils greater than 1.

Table 3: Lycodoxmr phase (Leucovorin, Cyclophosphamide, Vincristine, Doxorubicin, Methotrexate, Rituximab)

Drugs	Dose	BCCA usiig
Cyclophosfamide	800 mg/m2 on day 1,2	IV in 500 cc N/S over 30 min
Vincristine	1.4 mg/m2(max:2 mg) on day1,8	IV push
Doxorubicine	50mg/m2 on day	IV in 500 mL NS over 1hr
MTX	3000 mg/m2 on day 10	IV in 1000 mL NS over 4 h, if urine pH greater than 7
Leucovorine	25 mg q6H (start on day 11)	Starting exactly 24 h after start of methotrexate infusion; IV for 4 doses, then PO until methotrexate level less than 0.1 micromol/L***.
Rituximab	375 mg/m2 on day 4	IV in 200 cc N/S over 2 hr
Post-hydration		IV 2/3:1/3 + 100 mEq sodium bicarbonate/L at 125 mL/h, until leucovorin rescue completed
Cytarabine(IT)	50 mg IT on day 3	Via lumbar puncture or Ommaya ventricular reservoir; qs to 6 mL with preservative-free NS. Day 3 dose should only be given, if there are no blasts present in the peripheral blood and if platelets are greater than 50 x109/L
Filgrastim	5 mcg/kg on day7 until Neu greater than 1000	SC daily starting on day 13, until neutrophils greater than 1.

Treatment

Start Treatment Within 48 Hours Of Diagnosis Even If Staging Is Incomplete.

Treatment should be administered as aninpatient.

Low risk patients should have Lycodoxmr given prior to lyivacr, followed by a second cycle of lycodoxmr.

high risk patients should have lycodoxmr, followed by lyivacr, then a second cycle of lycodoxmr followed by lyivacr (two full magrath protocol). a total of 8 doses of IT chemotherapy should be given for all patients.

Premedications

For Day 1 to 5 IVAC portion:

- ondansetron 8 mg PO/IV pre-chemotherapy, then every 12 hours until day 5
- dexamethasone 12 mg PO pre-chemotherapy daily until day For Day 4ri TUX imabportion:
- diphenhy Dr. AMINE 50 mg PO prior to riTUXimab and then q4h during the IV infusion, if the infusion exceeds 4 h.
- acetaminophen 650 to 1000 mg PO prior to riTUXimab and then q4h during the IV infusion, if the infusion exceeds 4 h (maximum total daily acetaminophen dose = 4 g PO in patients with normal liver function)

Supportive Medications

If HBs Ag or HB core Ab positive, start lami VU Dine 100 mg/day PO for theduration of chemotherapy and for six months afterwards.

Response evaluation and definitions

Evaluation of the response to treatment included bone marrow analysis after the first course in leukemia patients and computed tomography (CT) scans after the second course in lymphoma patients. The final response was assessed 4 weeks after the end of treatment by repeating the CT scans, while positron emission tomography (PET) and MRI were used in doubtful cases as clinically indicated.

What are some new modalities thought to produce promising results in the future? The current focus is to bring the promising chemotherapies and antibody therapies in Burkitt lymphoma/ leukemia up to a standard, but also to extend these treatments to other patients, as it has been successful in HIVpositive Burkitt patients. New treatment options include additional antibody therapy, such as those directed against CD19; for example, blinatumomab (MT-103, Micromet) has been shown to eliminate target cells in particular. Other treatment options may be improved stem cell transplantation in better-defined early nonresponders or new classes and principles of therapy such as molecular. Targeting (eg, with various in hibitors).

References

1. Woessmann W, Seidemann K, Mann G. The impact of the methotrexate administration schedule and dose in the treatment of children and adolescents with B-cell neoplasms: a report of the BFM Group Study NHL-BFM95. Blood. 2005; 105(3):948-58.
2. Patte C, Auperin A, Gerrard M. Results of the randomized international FAB/LMB96 trial for intermediate risk B-cell non-Hodgkin lymphoma in children and adolescents: it is possible to reduce treatment for the early responding patients. Blood. 2007; 109(7):2773-80.

3. Cairo MS, Gerrard M, Sposto R. Results of a randomized international study of high-risk central nervous system B non-Hodgkin lymphoma and B acute lymphoblastic leukemia in children and adolescents. Blood. 2007; 109(7):2736-43.
4. Cairo MS, Bishop M. Tumour lysis syndrome: new therapeutic strategies and classification. Br J Haematol. 2004; 127(1):3-11.
5. Reiter A, Schrappe M, Tiemann M. Improved treatment results in childhood B-cell neoplasms with tailored intensification of therapy: A report of the Berlin-Frankfurt-Münster Group Trial NHL-BFM 90. Blood. 1999; 94(10):3294-306.
6. Perkins SL, Lones MA, Davenport V. B-Cell non-Hodgkin's lymphoma in children and adolescents: surface antigen expression and clinical implications for future targeted bioimmune therapy: a children's cancer group report. Clin Adv Hematol Oncol. 2003; 1(5):314-7.
7. Coiffier B, Lepage E, Briere J. CHOP chemotherapy plus rituximab compared with CHOP alone in elderly patients with diffuse large-B-cell lymphoma. N Engl J Med. 2002; 346(4):235-42.
8. Pfreundschuh M, Trümper L, Osterborg A. CHOP-like chemotherapy plus rituximab versus CHOP-like chemotherapy alone in young patients with good-prognosis diffuse large-B-cell lymphoma: a randomised controlled trial by the MabThera International Trial (MInT) Group. Lancet Oncol. 2006; 7(5):379-91.
9. Thomas DA, Faderl S, O'Brien S. Chemoimmunotherapy with hyper-CVAD plus rituximab for the treatment of adult Burkitt and Burkitt-type lymphoma or acute lymphoblastic leukemia. Cancer. 2006; 106(7):1569-80.
10. Meinhardt A, Burkhardt B, Zimmermann M. Phase II window study on rituximab in newly diagnosed pediatric mature B-cell non-Hodgkin's lymphoma and Burkitt leukemia. J Clin Oncol. 2010; 28(19):3115-21.