

PJN

ISSN 1680-5194

PAKISTAN JOURNAL OF
NUTRITION

ANSI*net*

308 Lasani Town, Sargodha Road, Faisalabad - Pakistan
Mob: +92 300 3008585, Fax: +92 41 8815544
E-mail: editorpjn@gmail.com

Effect of Serum Albumin Level (at Admission) on the Overall Outcome of the Treatment of Childhood Standard Acute Lymphoblastic Leukemia

N. Haider¹, M. Ashraf, G. Naheed and P. Fouzia

Department of Clinical Nutrition, Shaukat Khanum Memorial Cancer Hospital and Research Center,

Lahore, Pakistan, ¹The Aga Khan University Hospital, Karachi, Pakistan

E-mail: nasir.haider@aku.edu

This research was designed to study the impact of malnutrition based upon anthropometric measurement (MAD) and malnutrition based upon visceral protein level (MVP) on hospitalization stay, capability of patient to receive full dose treatment and overall outcome of childhood standard acute lymphoblastic leukemia in the developing countries

The majority of children on earth are to be found in the third world, many of them malnourished members of impoverished families. Thus the effects of nutritional status (NS) on the therapeutic response of children with cancer are obviously relevant.

In Pakistan more than 80% children are malnourished and more than 51 % are moderate to severe malnourished (UNICEF Children World, 1996), Which might be a vital poor prognostic factor for lower event free survival and outcome, even when aggressive protocols were used. As all other cancer acute lymphoblastic leukemia is also a catabolic state and patient and nurture on the behalf of the patients nutritional status.

In a country, where more than 50 % children are moderate to severe malnourished, it is very difficult to keep the optimal patient's nutritional status. Latest improvement in overall disease free survival is only been possible by the use of aggressive protocols in the developed countries. The tolerance of these aggressive protocols based upon the nutritional status of the patients. With a prevalence of 50% moderate to severe malnutrition it is very difficult to induct the same level of the chemotherapeutic dosages. Reduced induction of the drugs ultimately Leads to the poor disease free survival and lower morbidity. This study was conducted to determine the effect of serum albumin level (at admission) on the overall outcome of the treatment of standard acute lymphoblastic leukemia according to the FMB protocols.

Posttest- randomized control group was designed to study the effects of malnutrition classified based upon anthropometric data MAD (Weight, height for age) and malnutrition classified on the bases of visceral protein (Koskelo *et al.*, 1990; 1991; Yu-Le and Kuribidla, 1994) MVP (serum total protein and Serum albumin) levels (Ross Laboratories, 1978; Wahling and Georgieff, 1995) during the stay in the hospital, tolerance of the treatments doses and overall outcome during the course of treatment according to FMB protocols. To get a homogenous group of the patients, all patients were inducted in the study that registered in the Pediatric Hematology and Oncology Department for treatment.

All patient who were <02 and above 12 years, previous treated, were excluded from the study. Patients with standard ALL, age below 12 and above 02 years, newly diagnosed untreated, registered with the department for treatment were included in the study.

Total number of patients	:	70
Patients with (ALBUMIN) Grade I	:	28

Patients who complete treatment and alive	:	27	96%
Patients who relapsed but alive	:	00	
Patients who expired	:	01	4%
Total number of patients	:	70	
Patients with (ALBUMIN) Grade II	:	15	
Patients who completed treatment and alive	:	05	33%
Patients who relapsed but alive	:	03	20%
Patients who expired	:	07	46%
Total number of patients	:	70	
Patients with (ALBUMIN) Grade III	:	24	
Patients who complete treatment and alive	:	00	00%
Patients who relapsed but alive	:	01	4%
Patients who expired	:	23	96%
Total number of patients	:	70	
Patients with (ALBUMIN) Grade IV	:	03	
Patients who complete treatment and alive	:	00	00%
Patients who relapsed but alive	:	00	00%
Patients who expired	:	03	100%

The patients with Grade I serum albumin having good overall outcome. Ninety six percent patients completed their treatment and are alive and no patient relapsed. The expired patient was only one. The patients with Grade II, 33% patients completed their treatment and are alive. The percentage of relapsed is 20% and 46% patients expired. A marked decrease in overall outcome observed in patients with Grade III serum albumin level of 2.5 – 2.00 mg/dl. No patients completed their treatment and are alive. Ninety six percent patients expired during the treatment of standard acute lymphoblastic leukemia. One patient relapsed.

The results are worst in patients with serum albumin level below 1.9 mg/dl Grade IV. All patients expired during the due course of the treatment according to the FMB protocols. Data and results showed that serum albumin has significant factor for overall outcome of the treatment of standard acute lymphoblastic leukemia of childhood.

The serum albumin level below 3.00 mg/dl Leads to very low prognosis and outcome of the treatment for standard acute lymphoblastic leukemia (Koskelo *et al.*, 1991; Lobato-Mendizabal *et al.*, 1989). The present study concluded that over all recovery above 80 % is only achievable if the patient's serum albumin level is above 3.00 mg/dl.

The determination of nutritional status on the basis of visceral protein markers (Koskelo *et al.*, 1991; Lobato-Mendizabal *et al.*, 1989; Lobato-Mendizabal and Ruiz-Arguelles, 1990; Marin-Lopez, 1991) especially serum albumin level are most significant factor for the prognosis than the nutritional status determination on the basis of the anthropometry (weight, height). As Weir *et al.*, 1998 Suggested that nutritional status at diagnosis, defined on the basis of the body mass index, in developed countries, has no effect on the prognosis in acute lymphoblastic leukemia and it

Haider *et al* : Malnutrition as Prognostic Factor in Childhood Acute Lymphoblastic Leukemia

should not be considered as a prognostic factor, but in under developed countries the results are entirely different. In developed countries the incident of the malnutrition is very low.

References

- Columbus, O. H., 1978. Protein for the Hospitalized. Ross Laboratories.
- Kibrige, M. S., P. H. Morris-Jones, R. F. Stevens and C. Rayner, 1988. Nutrition infection and morbidity in leukemia. *Pediatr. Hematol. Oncol.*, 5: 179-85.
- Koskelo E. K., U. M. Saarinen, M. A. Siimes, 1991. Low levels of serum transport proteins indicate catabolic protein status during induction therapy for acute lymphoblastic leukemia. *Pediatr. Hematol. Oncol.*, 8: 53-9.
- Koskelo E.K., U. M. Saarinen and M. A. Siimes, 1990. Skeletal muscle wasting and protein -energy malnutrition in children with diagnosed acute leukemia. *Cancer*, 66 : 373-6.
- Lobato-Mendizabal, E., Ruiz-Arguelles and A. Marin-Lopez, 1989. Malnutrition is an adverse prognostic factor in the outcome of treatment with standard risk acute lymphoblastic leukemia. *Leuk. Res.*, 13: 899-906.
- Lobato-Mendizabal, E. and G. J. Ruiz-Arguelles, 1990. (Leukemia and malnutrition).The magnitude of maintenance chemotherapy as a prognostic factor in the survival of patients with standard risk acute lymphoblastic leukemia. *Rev. Invert. Clin.*, 42 : 81-7.
- Marin-Lopez, A., 1991. Malnutrition is an adverse prognostic factor in the response to treatment and survival of patients with acute lymphoblastic leukemia at the usual risk. *Gac. Med. Mex.*, 127: 125-31.
- Wahling, T. M., M. K. Georgieff , 1995.The effects of illness on neonatal metabolism and nutritional management. *Clin. Perinatol.*, 22: 77-96.
- Weir, J., J. J. Reilly, J. H. Mc Coll and B. E. Gibson, 1998. No evidence for an effect of nutritional status at diagnosis on prognosis in children with acute lymphoblastic leukemia. *J. Pediatr. Hematol. Oncol.*, 20: 534-8
- Children World, 1996. UNICEF Annual Report, 07-08.
- Yu-Lc and S. Kuribidla, 1994. Nutritional status of children with leukemia. *Med. Pediatr. Oncol.*, 22: 73-7.7