

Treatment Refusal and Abandonment in Pediatric Patients with Acute Lymphoblastic Leukemia in Bangladesh

Sarabon Tahura¹, Manzoor Hussain²

¹Assistant Professor, Department of Pediatric Hematology and Oncology, Bangladesh Institute of Child Health (BICH), Dhaka Shishu (Children) Hospital, Dhaka-1207, Bangladesh

²Professor and Head, Department of Pediatric Medicine and Pediatric Cardiology, Bangladesh Institute of Child Health (BICH), Dhaka Shishu (Children) Hospital, Dhaka-1207, Bangladesh

Abstract: ***Background:** In developing countries, refusal and abandonment is the main challenge regarding treatment of Acute Lymphoblastic Leukemia (ALL). This study tried to understand and find out the causes of treatment refusal and abandonment in Bangladeshi children with ALL. **Methods:** Over 3 years in Dhaka Shishu (Children) Hospital, all diagnosed children with ALL (12 month to 16 year) were included in this prospective study. Open interviews were conducted with the parents who refused or abandoned treatment about their financial and educational status and causes of refusal or abandonment. This study analyzed the situations from the parental point-of-view. Chi-square test (for parental economic status) was used for statistical analysis. P value less than 0.05 was considered as statistically significant. **Results:** Thirty three percent parents refused to take and 20% abandoned the treatment. Both were significantly high in children whose parents' financial and educational background was low. Preference of traditional healers and fear of prolonged duration and toxicities of chemotherapy are other important causes. **Conclusion:** Poverty and lac of parenteral education is the main cause of treatment refusal and abandonment in Bangladeshi children with ALL.*

Keywords: Treatment Refusal, Abandonment, Acute Lymphoblastic Leukemia

1. Introduction

Acute Lymphoblastic Leukemia (ALL) is the most common type of cancer in pediatric age group which comprises 75 - 80% of childhood acute leukemia [1]. In last few decades, with the improvement of early diagnosis, aggressive treatment and robust supportive care, the survival rate of childhood ALL has become as high as 80% in developed countries [2], [3]. But in developing country, it barely reaches 35% [4]. This difference is mainly due to treatment refusal (non-initiation) and abandonment (non-completion) [5]. In developing world, the rate of treatment abandonment in all type of cancers in children vary from 0.5% up to 50% [4] and it is believe to be the leading cause of treatment failure in children with cancer [6]. But in contrast, the frequency of treatment abandonment is higher in case of ALL, which could occur in up to 64% [7]. Bangladesh, a developing country, has achieved appreciable reduction in infant and under-5 mortality [8], but here the number of children diagnosed with cancers is increasing day by day [9]. But there is no structured follow-up system to detect or contact with treatment dropouts of childhood ALL here. Unfortunately, there is no health and social intervening support or attempt to understand and address this problem in Bangladesh yet. To improve the rate of mortality and morbidity in ALL, it is very essential to address the problem of treatment refusal and abandonment from the parental point of views. The current study tried to understand and find out the causes of treatment refusal and abandonment in Bangladeshi children with ALL.

2. Materials and Methods

It was a prospective study conducted from January 2014 to December 2016 in the department of Pediatric Hematology and Oncology of Dhaka Shishu (Children) Hospital, Bangladesh. During this period, all diagnosed children with ALL (12 month to 16 year) were included in the study who were selected to give chemotherapy (Modified UKALL 2003). Open interviews were conducted with parents who refused to take treatment or who initially started treatment but abandoned during the different phases of chemotherapy. Interviews included the causes of treatment refusal or abandonment, parenteral financial and educational status. This study analyzed the situations from the parental point-of-view. Educational status of the parents were classified as Low (Illiterate or with/without primary school education), Intermediate (Primary school or secondary school certificate or vocational training but below the level of higher secondary school) and High (higher Secondary school certificate & university degree). And parents were labeled as poor if monthly income <15000 taka/month or who don't have own house or land. Then all collected data regarding age, sex, causes of treatment refusal and abandonment were analyzed on SPSS version 20. Chi-square test (for parental economic status) was used for statistical analysis. P value less than 0.05 was considered as statistically significant.

3. Results

Out of total 597 children 327 (54.7%) was male and 270(45.2%) was female with male female ratio of 1.2:1. Parents of total 199 (33.33%) children refused to start therapy and rest 398 children began chemotherapy. Among the total children who started chemotherapy, 120 (20.10%)

abandoned treatment in different phases of therapy. Sixty six (55%) children abandoned treatment during induction of remission, 23 (19.16%) during consolidation, 12 (10%) during re-induction and 19 (15.85%) children during maintenance phase of chemotherapy (Figure 1).

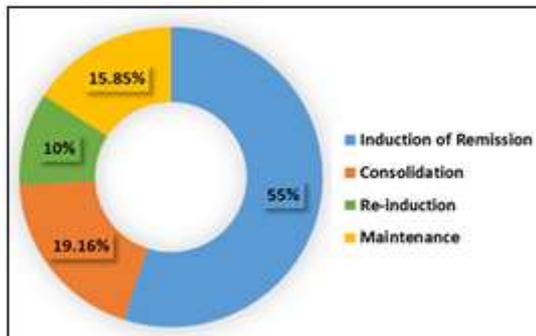


Figure 1: Time of Abandonment during treatment of ALL (n=120)

So among total 597 children having ALL, total 319 (53.43%) children refused and abandoned treatment. Among them 105 children was male and 214 was female with M:F=1:2. Reasons given for refusal and abandonment are mentioned in figure 2.

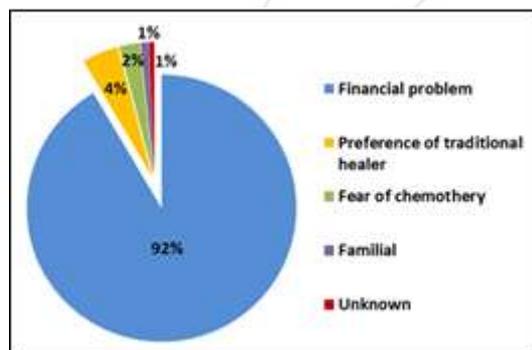


Figure 2: Causes of treatment refusal and abandonment of ALL in children (n=319)

I found the correlation between the parenteral economic status and occurrence of treatment refusal and abandonment. Treatment refusal and abandonment was significantly (<0.001) high in poor economic status (Table I).

Table 1: Parenteral economic status of children having ALL who refused or abandoned treatment (n=319)

Economic status (income /month)	Total patients (n)	P value
Poor	278	<0.001*
Prosperous	32	

*Highly Significant (using Chi- square test)

The current study found that among the parents who refused or abandoned treatment, 198(62.06%) had low, 87(27.27%) had intermediate and only 34(10.65%) had the high parental educational level (figure 3).

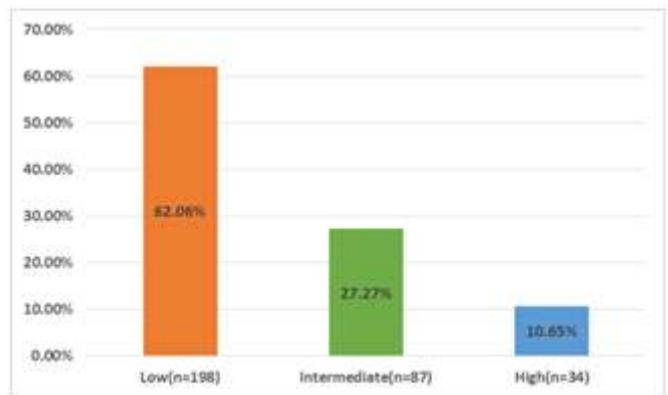


Figure 3: Level of parenteral education of children having ALL who refused or abandoned treatment (n=319)

4. Discussion

The current study showed that treatment refusal and abandonment were 33.33% and 20.10% respectively among Bangladeshi children having ALL. However, it does not give a true prevalence in the total population of the country. But Dhaka Shishu (Children) Hospital is the largest referral tertiary care pediatric hospital in Bangladesh. Hence, this hospital based data is an important source of epidemiologic information about childhood cancer in the country.

This study showed that financial problem was the main cause of treatment refusal and abandonment in childhood ALL. Income seemed a more important determinant than education in the study done by Mostert S et al[10]. But other study showed that providing free chemotherapy did not prevent abandonment in Indonesia [11], abandonment rates decreased when poor, uneducated parents in Indonesia were given free chemotherapy along with proper knowledge how to access this resource[12].

This study found that majority (55%) of children having ALL abandoned treatment during induction of remission phase. Several studies also showed that the rate of treatment abandonment for ALL is highest during the early phase of induction of remission [13], [10]. Arora RS et al[6] found that treatment related toxicity is a major reason for abandonment during the initial intensive phase of treatment.

As most of the developing countries don't have robust supportive care, intensified myelosuppressive chemotherapy leads more harm than benefit [14]. On the other hand, most poor families could not afford the costly chemotherapy for prolonged period of time, resulted in refusal or abandonment of treatment and as there is no structured follow up system for detecting dropout, patients are lost [10]. But every child having ALL, also in developing countries, have the right to receive treatment [15]. So, now it is very essential to develop a locally appropriate, less expensive, less toxic, short duration treatment protocol of ALL for children of developing countries.

5. Conclusions

Poverty and lac of parenteral education is the main cause of treatment refusal and abandonment in Bangladeshi children with ALL. To overcome this challenge we need a systematic

structured attempt to understand and address this problem in Bangladesh.

6. Acknowledgements

I thank Prof (Dr.) Md. Selimuzzaman, Head of the Dept. of Pediatric Hematology and Oncology, Dhaka Shishu (Children) Hospital for giving me the support and inspiration.

References

- [1] James G, Gurney and Melissa L, Bondy. Epidemiology of Childhood Cancer. In Pizzo PA, Poplack DG, editors: Principles & Practice of Pediatric Oncology. Philadelphia, Lippincott Williams & Wilkins. 2006, 2.
- [2] Pui CH, Relling MV, Downing JR. Acute lymphoblastic leukaemia. *N Engl J Med* 2004; 350: 1535-1548
- [3] Lilleyman J. Simple deliverable therapy needed for childhood leukaemia. *Lancet*. 2003; 362: 676-677
- [4] Mostert S, Arora RS, Arreola M, Bagai P, Friedrich P, Gupta S. Abandonment of a SIOP PODC Working group. *Lancet Oncol* 2011; 12:719-720
- [5] Metzger ML, Howard SC, Ligia CF. Outcome of childhood acute lymphoblastic leukaemia in resource-poor countries. *Lancet* 2003; 362: 706-708
- [6] Arora RS, Pizer B, Eden T. Understanding refusal and abandonment in the treatment of childhood cancer. *Indian Pediatrics* 2010; 47: 1005-1010
- [7] Wang YR, Jin RM, Xu JW, Zhang ZQ. A report about treatment refusal and abandonment in children with acute lymphoblastic leukemia in China, 1997-2007. *Leuk Res* 2011; 35: 1628-1631
- [8] Three year report of the population based cancer registries 2009-2011: Report of 25 PBCRs; National Cancer Registry Programme, Indian Council Medical Research, Bangalore 2013. Available from: URL: http://ncrpindia.org/Reports/PBCR_2009_2011.aspx .Accessed 24th September 2013; 4(4.)
- [9] Tahura S, Hussain M. Current status of congenital heart disease in neonate – Experience at Dhaka Shishu (Children) Hospital. *DS(Children) H J* 2013; 29(1): 20-24
- [10] Mostert S, Sitaresmi MN, Gundy CM, S Veerman AJ. Influence of socioeconomic status on childhood acute lymphoblastic leukemia treatment in Indonesia. *Pediatrics* 2006; 118:e 1600-1606
- [11] Mostert S, Sitaresmi MN, Gundy CM, Sutaryo, Veerman AJ. Does aid reach the poor? Experiences of a childhood leukaemia outreach-programme. *Eur J Cancer* 2009; 45: 414-419
- [12] Sitaresmi MN, Mostert S, Schook R, Sutaryo Veerman AJ. Treatment refusal and abandonment in childhood acute lymphoblastic leukemia in Indonesia: an analysis of cause and consequences. *Psycho-oncology* 2010; 19: 361-367
- [13] Mostert S, Sitaresmi MN, Gundy C, Janes V, Sutaryo S, Veerman AJ. Comparing childhood leukemia treatment before and after introduction of parental-education program in Indonesia. *Arch Dis Child* 2010; 95: 20-25
- [14] Hesseling PB, Broadhead R, Molyneux E, Borgstein E, Schneider JW, Louw M, Mansvelt EP, Wessels G.

- Mslawi pilot study of Burkitt lymphoma treatment. *Med Pediatr Oncol* 2003; 41: 532-540
- [15] Masera G, Eden T, Schrappe M, Nachman J, Gadner H, Gaynon P, Evans WE, Pui CH. Position statement. Statement by members of the Ponte di Legno Group on the right of children to have full access to essential treatment for acute lymphoblastic leukemia. *Pediatr Blood Cancer* 2004; 43: 103-104