Abstract: P422

Title: IMPACT OF PROPHYLACTIC CRANIAL IRRADIATION ON OUTCOMES OF ADULTS ACUTE LYMPHOBLASTIC LEUKEMIA TREATED WITH PEDIATRIC INSPIRED PROTOCOL

Abstract Type: Poster Presentation

Topic: Acute lymphoblastic leukemia - Clinical

Background:

Prophylactic cranial irradiation (PCI) has been recently omitted from modern acute lymphoblastic leukemia (ALL) treatment protocols due to concerns about long-term cognitive dysfunction and ongoing debate about its benefits, particularly in the pediatric population. At our centre, PCI has been excluded since the beginning of 2015. There is limited data on PCI outcomes in adults. Recently the GMALL 08/2013 prospective trial showed a trend towards improvement in systemic leukemia control in adults who received PCI.

Aims:

To evaluate the impact of PCI on outcomes of adults with ALL.

Methods:

We performed a single-centre retrospective analysis of adult patients with B or T-ALL treated with pediatricinspired chemotherapy protocols between 2000-2022. We included patients up to the age of 59, who achieved CR following induction including high-dose methotrexate, and who went on to receive primary or secondary CNS prophylaxis with PCI (12 Gy for CNS negative (CNS-) and 18 Gy for CNS positive (CNS+) patients) combined with intrathecal chemotherapy (ITc) versus those who received ITc alone., The primary outcome of interest was leukemia free survival (LFS), overall survival (OS), and incidence of CNS relapse (CNSr). Standard statistical analyses were conducted using Stata (StataCorp LP, College Station, TX, USA).

Results:

Of 420 adults with ALL included in this study, 202 (48%) had Philadelphia chromosome (Ph) negative B-cell ALL, 106 (25%) had Ph positive ALL, 104 (25%) had T-cell ALL, and 8 (2%) had Mixed Phenotype Acute Leukemia (MPAL). Forty-two (10%) patients had CNS involvement at presentation. Four hundred and two (96%) patients underwent PM-modified DFCI induction, 18 (4%) were treated with other protocols. Within our cohort, 195 (46%) received PCI. The median follow-up for patients treated or not with PCI was 92 months (31-136) and 48 months (19-73), respectively (p=<0.01). There was no difference in age, sex, Ph status, karyotype, white blood cells count and CNS involvement at diagnosis between both groups (table 1). Patients who received PCI had a lower rate of prior malignancy (4% vs 10%, p=0.017) (table 1).

Ninety-five patients (23%) experienced a systemic relapse, with a median time to relapse of 19.5 months (10.5-38). There was no significant difference in the relapse rate between those who received PCI n=42 (22%) and those who did not n=54 (24%) (p=0.671). CNSr was observed in 34 patients (8.5%), with no significant difference between those who received PCI (n=13, 7%) and those who did not (n=21, 9%) (p=0.306).** There was a trend for a higher rate of CNSr among those who were CNS+ at diagnosis (6/42, 14%) compared to those who were CNS- (28/378, 7%) (p=0.10). ** A trend towards a difference in LFS was observed between the PCI group 70.2% (95% CI 63.07-76.33) and the non-PCI group 63.49% (95% CI 56.31-69.81) at 48 months (p=0.0504), with a Hazard Ratio (HR) of 0.72 (95% CI 0.52-1.0034) ,fig 1. However, there was no difference in OS at 48 months between the two groups, with rates of 75% (95% CI 68.05-80.66) in the PCI group and 73.6% (95% CI 67.01-79.12) in the non-PCI group (p=0.3487),fig 2.In a multivariate analysis involving age group (<40 and ≥40), sex, history of prior malignancy, PCI status, CNS status, and ALL type, PCI led to a better LFS with HR:0.68 (95% CI 0.48-0.95) (p=0.023).

Summary/Conclusion:

Our findings suggest that omitting PCI in the treatment of adult with ALL did not significantly impact relapse rates, OS, or CNS relapse rates. However, the observed trend in LFS, which aligns with recent reports by the GMALL group, warrants further investigation. This emerging body of data calls for deeper evaluation of our current adult ALL CNS prophylaxis paradigm.



Keywords: Adult, Irradiation, CNS, Acute lymphoblastic leukemia