



Outcomes of induction therapy in patients with Acute Myeloid Leukemia during Covid-19 pandemic: A retrospective study from a tertiary care cancer centre

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Context

The induction mortality of Acute Myeloid Leukemia in India is around 16%, and CR1 rate is around 67% across all age and risk categories which is at par with many other centres of the western world. But we fear that Covid-19 pandemic, and the resultant social, financial, political, and medical disturbances, might influence outcomes. The medical infrastructure was completely engulfed in the care of SARS-CoV2 patients. Voluntary blood donations came to a halt. Expectedly, the care of patients with AML were compromised. Hence, this study was conducted to establish whether the limitations had impacts on induction outcomes and if so, the degree of the causal relationships

Design and Settings

○ This was a retrospective, observational study. Based on Covid19 pandemic induced Lockdown period in India, patients were divided into two groups: Lockdown phase- induction therapy between 1st May till 31st August, 2020; and Locklifted phase- induction therapy between 1st Sept till 31st Dec, 2020.

○ This study was conducted in Dr. B. Borooah Cancer Institute, Guwahati, which is a Tertiary care cancer centre, a unit of Tata Memorial Centre, Mumbai, India.

Objective

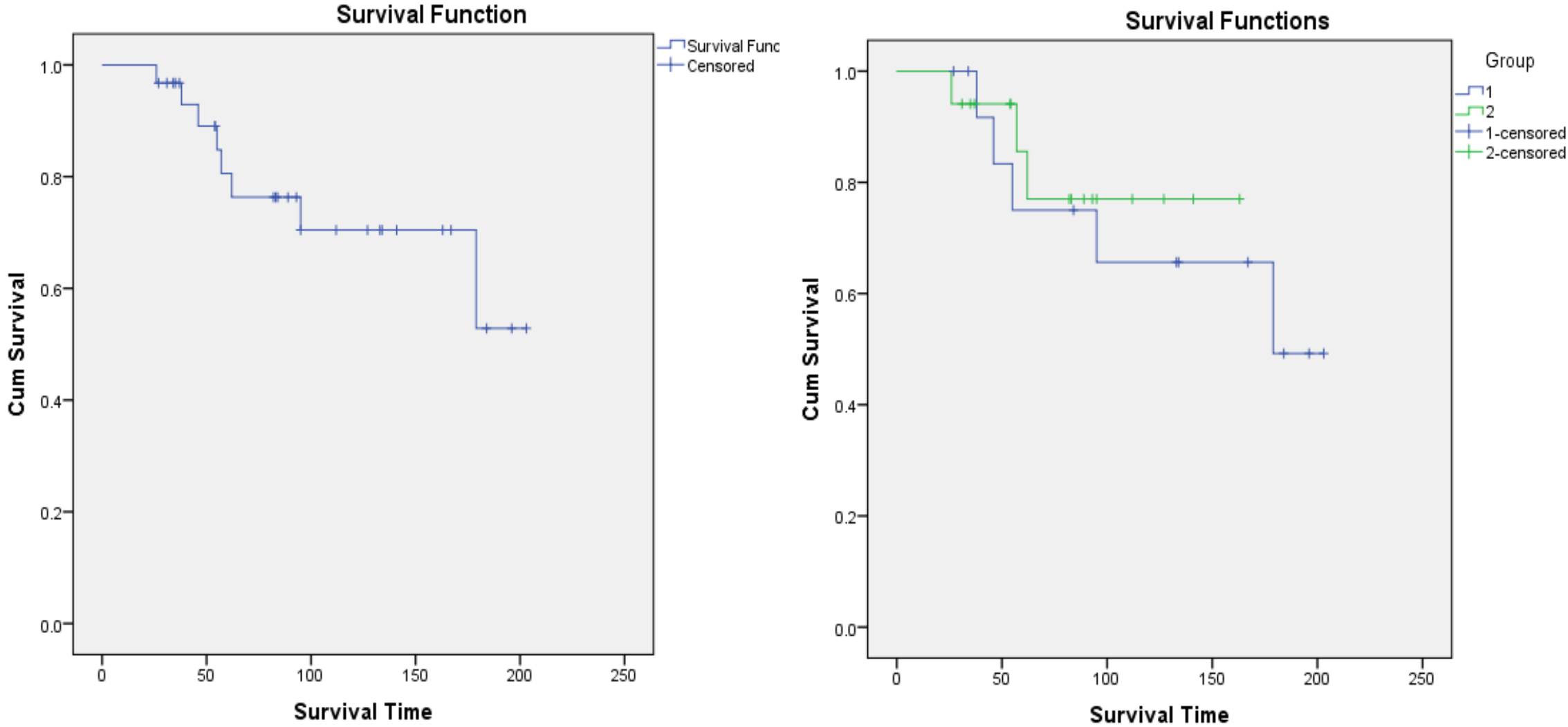
To determine the rates of induction remission, induction failure, and induction mortalities in patients with AML treated during Covid19 pandemic and compare the results during the Lockdown period with the Lock lifted period in India.

Results

Table 1: Patient demographics and other baseline variables

Baseline characteristics	Lockdown Phase group (n=22)	Lockdown Lifted Phase group (n=31)	Proportion of patients (n=53)	Lockdown Phase group (n=22)	Lockdown Lifted Phase group (n=31)	P value (Chi-Square)
Age (in years) (Mean + SD)	36.23 ± 19.1	29 ± 22.22				
Gender [n (%)]						
Female	11(50%)	14(45.8%)				
Male	11(50%)	17(54.2%)				
Blood Group n (%)						
Others	1 (4.5%)	6 (19.3%)				
A+ve	6 (27.3%)	3 (9.6%)				
AB+ve	2 (9.1%)	7 (22.6%)				
B+ve	7 (31.8%)	2 (6.4%)				
O-ve	1 (4.5%)	7 (22.6%)				
O+ve	5 (22.7%)	6 (19.3%)				
FAB Classification						
Unclassified	5 (22.7%)	12 (38.7%)				
M0	1 (4.5%)	1 (3.2%)				
M1	3 (13.6%)	3 (9.7%)				
M2	5 (22.7%)	11 (35.5%)				
M3	2 (9.1%)	1 (3.2%)				
M4	4 (18.2%)	3 (9.7%)				
ELN Risk categorization						
Standard risk	6 (27.2%)	5 (29.0%)				
Intermediate risk	12 (54.4%)	11 (35.0%)				
High risk	3 (13.6%)	10 (32.6%)				

Figure A: Event- Death. Kaplan Meier survival curves of AML patients during Lockdown and lockdown lifted period.



Results

Table 2: Proportion of patients after 2 induction chemotherapy

Proportion of patients (n=53)	Lockdown Phase group (n=14)	Lockdown Lifted Phase group (n=17)	P value (Chi-Square)
Remission induction			
Intensive chemotherapy (ICT)	3 (37.5%)	6 (42.9%)	0.06
Low Intensity chemotherapy (LCT)	8 (62.5%)	14 (57.1%)	

Table: Response of patients after 2 induction chemotherapy

	Lockdown Phase group (n=14)	Lockdown Lifted Phase group (n=17)	P value (Chi-Square)
Mortality	5 (35.7%)	3 (17.6%)	0.558
Complete Remission	5 (35.7%)	3 (17.6%)	
No complete Remission (Partial Remission + failed Remission)	4 (28.5%)	11 (64.7%)	

Figure B: Event- Remission. Kaplan Meier survival curves of AML patients during Lockdown and lockdown lifted period

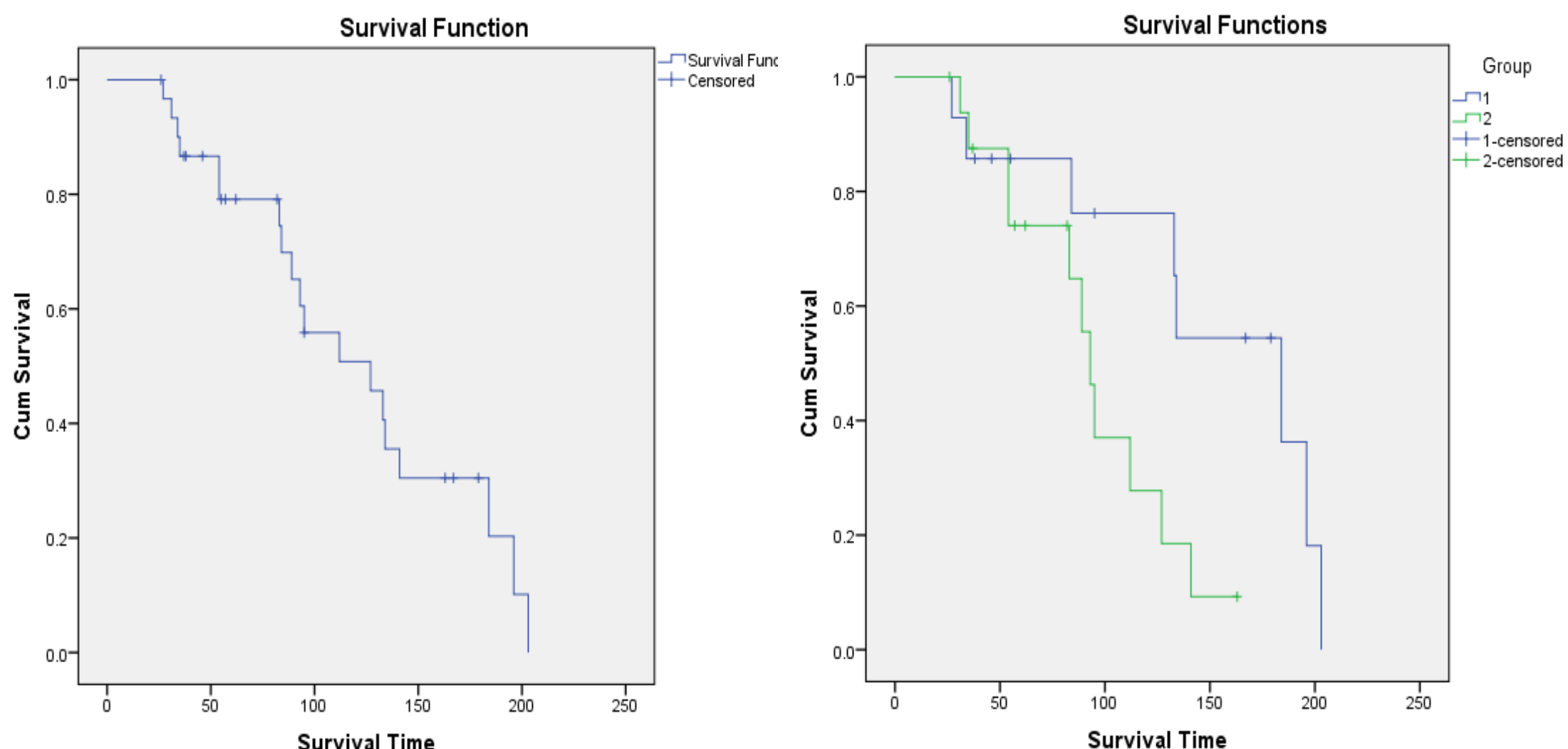


Table 3: Median and mean number of transfusions in both the groups

Transfusions	RBC	RDP	SDP
Total			
Mean ± SD	2.24 ± 1.8	10.02 ± 7.59	0.68 ± 1.15
Median	3.00	11.00	0.00
Lockdown phase group			
Mean ± SD	2.55 ± 1.73	10.59 ± 6.70	0.59 ± 1.14
Median	3.00	11.00	0.00
Lockdown lifted phase group			
Mean ± SD	2.96 ± 1.77	12.00 ± 7.84	1.00 ± 1.28
Median	3.00	12.00	0.00

Discussions and Summary

Patients with AML treated during the Covid19 pandemic have worse outcomes than the pre-pandemic period. When compared with the patients treated during the locklifted phase, the lockdown phase of Covid-19 pandemic in 2020 had better but slower response rates (partial and complete). This might be explained by the increasing use of LCT with limited supportive infrastructure and limiting use of curative strategies during the lockdown phase. However, the induction deaths were higher in patients treated during the lockdown phase. The outcomes can be explained due to concomitant Covid infections, limitations, and delay in the availability of blood products and other medications. In summary, both the long term and short term outcomes of patients with AML were modified due to the logistic limitations and the resultant differences in the treatment strategies

References

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