Corticosteroids for inflammatory responses during induction chemotherapy in myeloid malignancies are not associated with increased invasive fungal infections

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INTRODUCTION

- Corticosteroid use increases the risk of invasive fungal infections (IFIs).[1]
- At our institution, corticosteroids are used to treat inflammatory responses related to intensive chemotherapy, particularly for hyperinflammation due to mucosal barrier injury.[3]
- We hypothesize a beneficial impact of early cessation of hyperinflammation with corticosteroids on patient outcome.

METHODS

Retrospective cohort study 2018-2021

Remission induction chemotherapy myeloid malignancies

Indication corticosteroids and cumulative dose during hospitalization +8 d

Probable or proven IFIs (PP-IFIs)

Clinical features hyperinflammation

STUDY COHORT

152 treatment episodes in 95 patients were included. In the corticosteroid group, the median cumulative prednisolone iv dose was 607.5 mg (IQR 273.0-1,087.0).

Table 1. Characteristics of all treatment episodes.

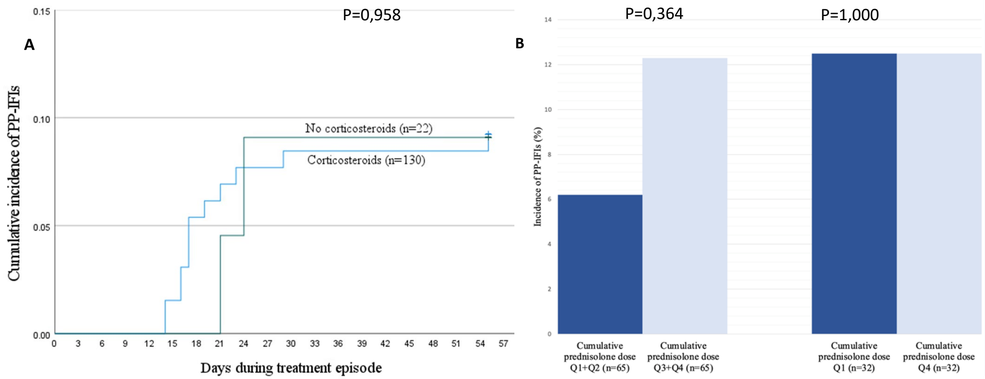
Characteristics	Corticosteroids n=130 (86.0%)	No corticosteroids n=22 (14.0%)	*p*
Male patients	67 (51.5%)	10 (45.5%)	0.650
Age (years) Median (IQR)	59.0 (44.0-63.0)	57.5 (48.3-63.0)	0.801
Diagnosis			
AML	117 (90.0%)	17 (77.3%)	0.125
MDS-EB	7 (5.4%)	3 (13.6%)	
Other	6 (4.5%)	2 (9.1%)	
Duration of neutropenia (days) Median (IQR)	19.0 (14.0-25.0)	20.0 (15.0-24.3)	0.753
Mold-directed prophylaxis			
Yes	10 (7.7%)	2 (9.1%)	0.686
No	120 (92.3%)	20 (90.9%	
Candida-directed prophylaxis			
Fluconazole	84 (70.0%)	13 (65.0%)	0.044
Micafungin	27 (22.5%)	2 (10.0%)	
No	9 (7.5%)	5 (25.0%)	

RESULTS

INVASIVE FUNGAL INFECTIONS

PP-IFI occurred in 9.2% (12/130 episodes) in the corticosteroid group and in 9.1% (2/22 episodes) in the no corticosteroid group (p = 0,958).

Figure 1. (A) Kaplan-Meier curves for the cumulative incidence rate of PP-IFIs by day in the corticosteroid group (blue line) *vs* the no corticosteroid group (green line). (B) Bar chart of the incidence (%) of PP-IFIs in different quartiles of cumulative prednisolone dose

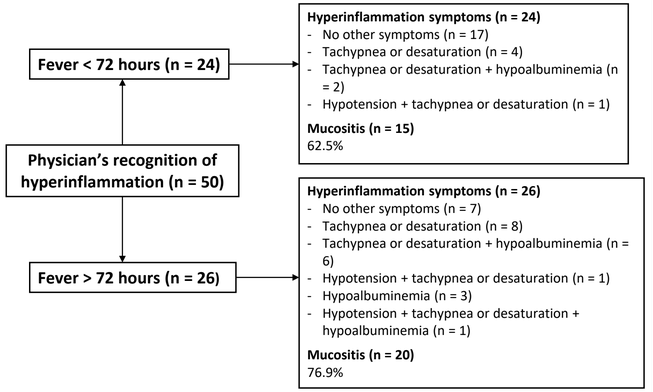


INDICATIONS CORTICOSTEROID THERAPY

Table 2. Indications for starting corticosteroids.

Indication	Number of treatment episodes, (%) n=130
Leukostasis or hyperleukocytosis	32 (24,6)
Anti-emetic	13 (10,0)
Cytarabine syndrome	65 (50,0)
S. mitis inflammatory syndrome	7 (5,4)
Repopulation fever	6 (4,6)
Immune Reconstitution Inflammatory Syndrome	12 (9,2)
Engraftment syndrome	0 (0,0)
Other reasons	31 (23,8)
Physican's recognition of hyperinflammation	**50 (32,9)**

Figure 2. Clinical features of physician's recognition of hyperinflammation.



OUTCOME SUBGROUP HYPERINFLAMMATION

Table 3. Outcomes between treatment episodes with corticosteroid use for hyperinflammation and the no corticosteroid group.

Outcomes	Hyperinflammation n=50	No corticosteroids n=22	*p*
Nadir albumin (g/L) Mean (95% CI)	21.00 (19.45-22.55)	26.73 (25.43-28.03)	<0.001
Number of days albumin <25 (g/L) Median (IQR)	7.00 (0.00-19.50)	0.00 (0.00-0.00)	<0.001
Duration of neutropenia (days) Median (IQR)	19.00 (14.8-24.3)	20.0 (15.0-24.3)	0.811
Length of hospital stay (days) Median (IQR)	31.00 (26.00-36.00)	29.50 (26.00-34.25)	0.336

CONCLUSIONS

- We found no association between liberal use of corticosteroids during RI chemotherapy for myeloid malignancies and the incidence of PP-IFIs.
- Corticosteroid use for hyperinflammation could improve patient recovery since hospital stay between hyperinflammation subgroup and the no corticosteroid cohort is comparable.

CONTACT INFORMATION

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