



COVID-19 Pneumonia in Patients with Hematologic Malignancies- A Report from the US Epicenter

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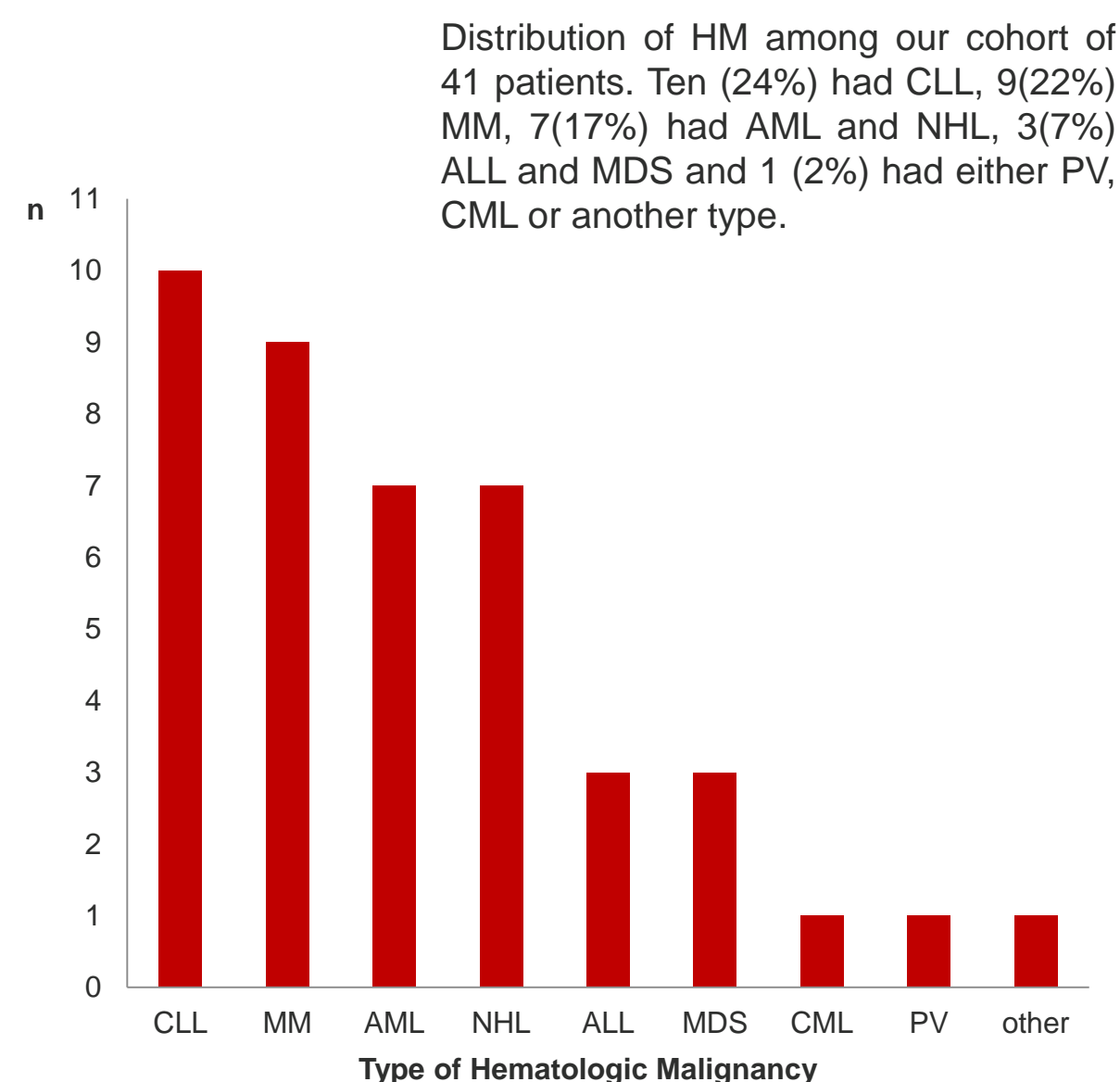
Introduction

COVID-19 infection represents an important threat to cancer patients with recently reported 30% mortality rates¹. We report clinical characteristics, laboratory findings and outcomes of COVID-19 pneumonia in patients with hematologic malignancies.

Methods

A cohort of prospectively followed 41 patients with COVID-19 pneumonia and HM admitted between March 5th and April 17th 2020. NYPH electronic medical records were reviewed and data were entered into a REDCap database.

Results



Demographics	
Median Age in years (IQR)	69 (28-85)
Total number of patients	41
Male (%)	24 (59)
Female (%)	17 (41)
Race (%)	
White	29 (71)
Black	6 (15)
Hispanic ethnicity	7 (17)
Reported symptoms (%)	
Cough	33 (81)
Fever	31 (76)
Dyspnea	26 (63)
Diarrhea	11 (27)
Presentation on Admission (%)	
Fever ≥ 38°C	22 (54)
Heart rate ≥ 100bpm	25 (61)
Respiratory rate ≥ 20/min	30 (73)
Need for supplemental oxygen	27 (66)
Systolic blood pressure ≤ 90 mmHg	4 (10)

Laboratory and Radiographic	
Characteristic	
Median Hemoglobin g/dl	10.8 (6.6-15.6)
Median WBC (x1000/μl)	3.5 (0.3-622.8)
Median ANC (x1000/μl)	2.5 (0.04-24.5)
ANC ≤ 500/μl n(%)	6 (15)
ALC ≤ 500/μl n(%)	27 (66)
ANC/ALC ratio median	6.3 (0.13-245)
Median Platelet count (x1000/ μl)	130 (12-376)
Chemistries (median)	
Creatinine (mg/dl)	0.98 (0.3-12.3)
Albumin (g/dl)	3 (1.6-4.4)
Inflammatory markers (median)	
C-reactive protein (mg/dl)	13.7 (0.5-40.4)
Procalcitonin (ng/ml)	0.3 (0.07-15.4)
Ferritin (ng/ml)	1113.8 (264->16,500)
D-Dimer (ng/ml)	555.5 (<150-6207)
LDH (U/l)	343 (139-1644)
Chest X-ray findings on admission (%)	n (%)
Bilateral infiltrates	29 (71)
Unilateral infiltrates	7 (17)
Pleural effusion	5 (12)
Clear lungs	3 (7)

Outcomes

- 35 (85%) required supplemental O2, 16/35 (46%) were intubated
- Highest rate of intubation in patients with MM (56%), and CLL (40%)
- Overall mortality was 34% (general population at NYPH 10.2%²)
- Mortality was highest in patients with MM 3/9 (33%) and CLL 3/10 (30%)

Conclusions

- Initial clinical presentation, laboratory, and radiographic findings were similar to those of COVID-19 patients without HM; however, the overall mortality was three-fold higher (10 vs 34%).
- Patients with MM and CLL predominated, suggesting an increased risk associated with dysgammaglobulinemia and B cell dysregulation.

Future Directions

- A larger cohort study is warranted to establish population denominators
- Development of a predictive risk-based model of COVID-19 in hematological malignancies.

References

¹COVID-19 prevalence and mortality in patients with cancer and the effect of primary tumour subtype and patient demographics: a prospective cohort study. Lee et al., Lancet Oncol. 2020 Sep 3;21(10):e462. doi: 10.1016/S1470-2045(20)30531-3.
²Clinical Characteristics of Covid-19 in New York City. Goyal et al., N Engl J Med 2020 Jun 11;382(24):2372-2374.