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Myelodysplastic Syndromes (MDS) & COVID-19: Clinical Experience from the US Epicenter of the Pandemic

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Background:

The COVID-19 (SARS-CoV-2) pandemic has affected cancer patients (pts) in a myriad of ways, including diagnostic & treatment delays, scarcity of blood products, and most importantly, higher risks of morbidity and mortality from the viral infection itself. Though COVID-19’s effects on many specific cancers has previously been described, there has been little reported on its effects on pts with MDS.

Methods:

We prospectively reviewed the records of all pts seen in the MDS clinic of a large New York City tertiary academic medical center between March 12 and May 07 2020. A confirmed case of COVID-19 was defined by a positive (+) result on a real-time reverse-transcriptase polymerase chain reaction (PCR) assay of a specimen collected on a nasopharyngeal swab, or detectable COVID-19 antibodies. COVID-19 antibodies were determined via an IgG assay developed at Mount Sinai with the ability to detect antibody titers to a dilution of 1:2880. Initially, only symptomatic pts were screened due to limited testing availability. However, after April 7, all clinic pts were screened by PCR.

Results:

Among 85 pts seen in the clinic, 23 were found to have COVID-19 (27.1%). The median age of all pts was 72 years (range 20-90); racial breakdown included 58.8% Caucasian, 12.9% Hispanic, 10.6% African-American, 7.1% Asian, and 10.6% other. Of note, 65.2% of COVID-19+ pts were Caucasian, 13.0% Hispanic, and 17.4% other. The most common diagnoses were MDS (n=61), AML (n=10), multiple...
myeloma (MM) (n=9), large granular lymphocytic leukemia (LGL) (n=6), ALL (n=6), MPN (n=4), NHL (n=3), and CML (n=2). Forty-two of the MDS patients had no other malignancies; co-diagnoses among the remaining MDS patients included MM (n=8), LGL (n=6), & T-cell dyscrasias (n=5).

Of the 23 COVID-19+ pts, 11 (47.8%) were hospitalized and 4 (17.4%) were asymptomatic. Common symptoms were URI symptoms (15) and fever (14). ARDS and pneumonia occurred in 4 pts. The most common treatments were hydroxychloroquine (n=4), steroids (n=3), and azithromycin (n=2). Eighteen of the 23 + pts (78.3%) had MDS; the others included pts with MPN, APL, ALL, AML, or NHL. Among the COVID-19+ MDS pts, IPSS-R was very low (n=5), low (n=3), intermediate (n=1), high (n=2), and very high risk (n=5) in evaluable patients. MDS directed treatment included azacitidine (8) (2 with venetoclax), erythropoietin stimulating agents (3), best-supportive care (4), intravenous immunoglobulin (3), and lenalidomide (1). Disease status at diagnosis was stable disease (SD; n=9), hematologic improvement (HI; n=6), progressive disease (PD; n=1), and complete response (CR; n=1). The median number of co-morbidities per pt was 2. Major co-morbidities included cardiac disease (n=5), hypertension (n=5), diabetes (n=5), and dementia (n=2). COVID-19+ pts remained PCR+ for a range of 14-42 days in those with available serial testing (n=8). Of the PCR+ pts, 14 were tested for the presence of COVID-19 antibodies; 12 were +, with a range of titers from <1:80 to 1:2880. Three patients were PCR negative at least once but tested antibody positive.

Nine of 23 (39%) COVID-19+ pts died; mortality among MDS patients included 6/18 (33%) COVID-19+ and 6/61 (9.8%) from the overall cohort. Among the 9 who died, the median number of co-morbidities was 3 and the median age was 75 years-old. Disease status in these patients was SD (2), CR (1), HI (1), and PD (1). IPSS-R was very high (n=4), high (n=1), and intermediate (n=1) in the MDS pts who died.

**Conclusions:**

This represents the first reported large case series regarding the risks of developing COVID-19 and its effects at an MDS clinic in the initial US epicenter of the pandemic. Overall, 27.1% of the pt population was diagnosed with COVID-19; 39.1% of these pts died, or 10.6% of the overall cohort. A retrospective study across the US reported a 16% mortality rate of COVID-19 in cancer pts (Dr Rivera et al, 2020). The mortality rate reported here is higher, but with a smaller sample size. The clinical significance of persistently + PCR tests up to 6 weeks is unclear. COVID-19 antibodies were found in 85.7% of COVID-19 PCR+ pts tested, showing MDS pts can mount a humoral response. Likely factors contributing to the high mortality of MDS pts were co-morbidities and age. The majority of pts recovered and have resumed MDS directed therapy. Protecting MDS pts from COVID-19 infection must be a primary overall therapeutic approach until there are more effective COVID-19 treatment strategies.

**Disclosures**
Navada: Onconova Therapeutics Inc: Research Funding. Silverman: Medimmune: Research Funding; Onconova Therapeutics Inc: Patents & Royalties, Research Funding; Celgene: Research Funding.

Author notes
* Asterisk with author names denotes non-ASH members.

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