Secondary Infections and Coinfections in Coronavirus Disease 2019 (COVID-19)

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BACKGROUND

- While a common phenomenon in other viral illnesses, data regarding coinfection/superinfections in Coronavirus Disease 2019 (COVID-19) is limited and emerging (1).
- Superinfections may contribute to the overall high mortality in those suffering from severe COVID19.
- We aimed to study the rate of coinfections and secondary bacterial/fungal infections among SARS-CoV-2 positive cases in a community hospital.

METHODS

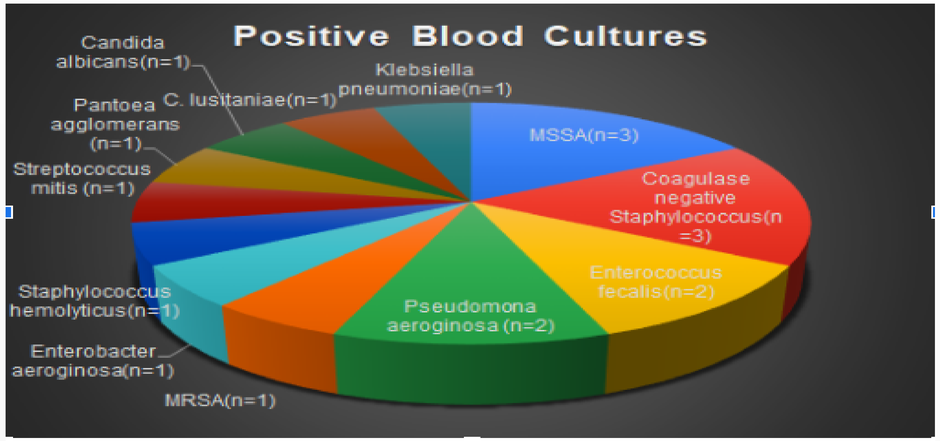
- This is a single-centre IRB approved, retrospective observational study.
- Adult patients with laboratory-confirmed SARS-CoV-2 by Real-Time Reverse Transcriptase–Polymerase Chain Reaction assay of nasopharyngeal swabs admitted from March 1st to April 20th 2020 were included.
- Relevant clinical and laboratory data were manually collected from electronic medical records.

RESULTS

- A total of 129 patients were included in the study.
- 91 patients had a respiratory pathogen panel PCR on admission. This panel includes testing for influenza, parainfluenza virus, respiratory syncytial virus, coronavirus, adenovirus, rhinovirus, *Bordetella pertussis, Bordetella parapertussis, Chlamydophila pneumoniae,* and *Mycoplasma pneumoniae*.

RESULTS

- Only one patient was positive for coinfection with the parainfluenza virus.
- None of them was found to be positive for bacterial coinfection at admission.
- Thirteen patients (10.1%) had secondary bacterial or fungal infections that developed during their respective hospital stays, 12 of them were critically ill (Image 1,2).
- The mean duration from admission to the onset of secondary infection was 13 days.



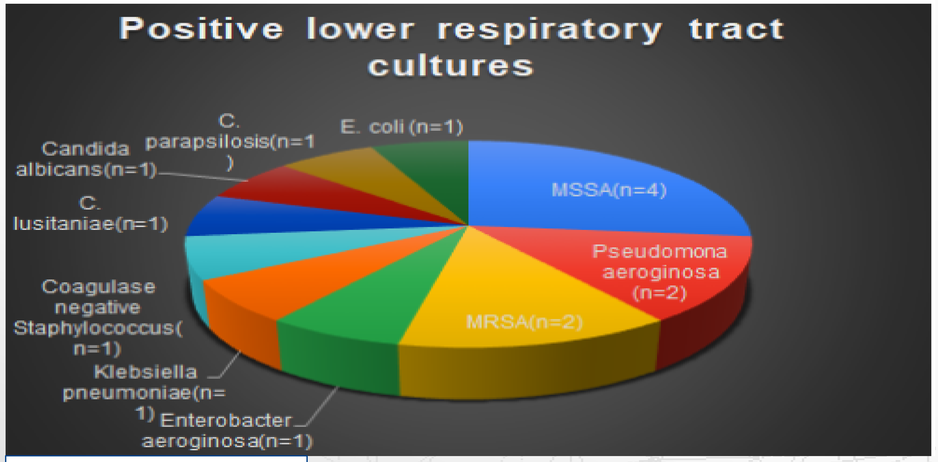


IMAGE 1, 2

CONCLUSIONS

- Our data revealed that the rate of viral coinfection was 1.1 % and bacterial coinfection was 0% at admission.
- Study timing can play a role as upper respiratory virus infection rate is low in the population during March and April.
- Secondary infections were found to be common in patients admitted to the ICU.
- Potential explanations for this include compromised immunity in severely ill patients, extended ICU stay, central venous catheters and endotracheal intubation.
- It is evident that with severe COVID-19 illness, an extended hospital course often ensues, leading to increased risk of secondary infections and contributing to the overall high mortality of these patients

REFERENCE

Morris, Denise E., David W. Cleary, and Stuart C. Clarke. "Secondary Bacterial Infections Associated with Influenza Pandemics." *Frontiers in Microbiology* 8 (2017). doi:10.3389/fmicb.2017.01041