Safety Profile of Tocilizumab Use in COVID-19 Critically Ill Medical Intensive Care Unit Patients

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Background

- Tocilizumab is an interleukin-6 receptor antagonist indicated for immune mediated inflammatory conditions
- Black Box Warning: Serious potentially fatal infections including active tuberculosis, invasive fungal, bacterial, viral, protozoal, and other opportunistic infections

- National initiative to find treatment for COVID-19 pneumonia
- Thought in using tocilizumab is that it will inhibit part of the inflammatory cascade and prevent/limit the inflammation that occurs within the lungs
- Thus limiting progression of illness to the point of requiring mechanical ventilation

- The U.S. Food and Drug Administration has granted tocilizumab emergency use authorization (EUA) for use in COVID-19 based on the results of several studies.
  - RECOVERY Trial
    - No difference in mortality for those that received tocilizumab, did find that patients that received tocilizumab and dexamethasone were more likely to be discharged from the hospital by 28 days
  - EMPACTA Trial
    - Tocilizumab associated with lower combined rate of mechanical ventilation or death
  - COVACTA Trial
    - Tocilizumab use was associated with a shorter time to discharge and shorter ICU length of stay

Objectives

- Describe if there is a difference in rates of infections in critically ill ICU patients diagnosed with COVID-19 pneumonia that received tocilizumab to those that did not

- Hypothesis: is that patients the tocilizumab will have higher rates of infection but lower rates of mechanical ventilation compared to those that did not receive tocilizumab

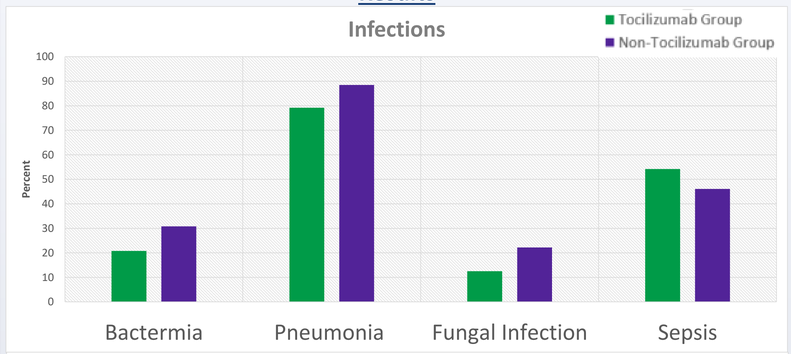
Methods

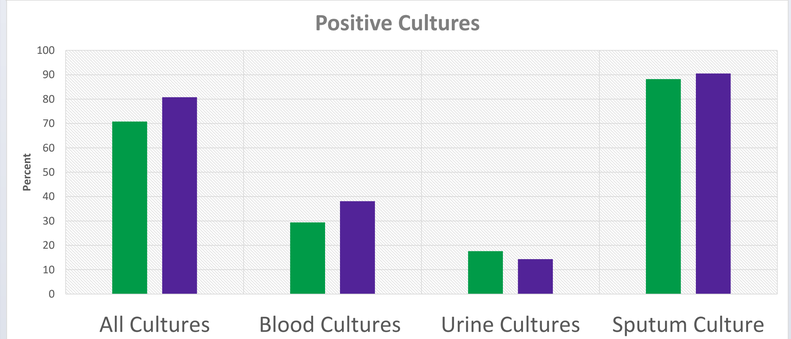
- A IRB retrospective approved chart review
- Patients admitted to the Medical Intensive Care Unit at Regions Hospital for treatment of COVID-19 pneumonia
- February 1st, 2021 to December 31st, 2021

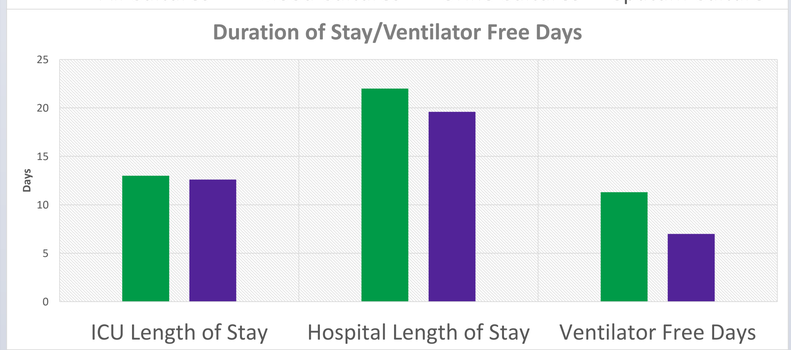
- Inclusion
  - Age 18 years or older
  - Confirmed COVID-19 infection by positive PCR laboratory test
  - Admitted to the Medical Intensive Care Unit at Regions Hospital

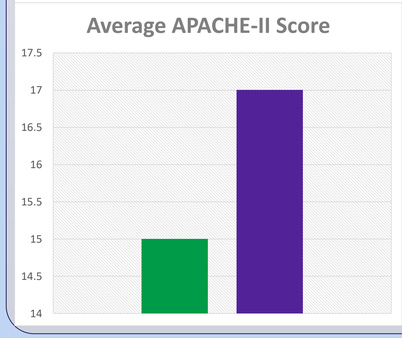
- Exclusion
  - Patients that are immunosuppressed (HIV/AIDS, recent chemotherapy, transplant, chronic steroid use, use of immunomodulators)
  - Pregnancy
  - Bacterial or fungal infection confirmed by laboratory cultures prior to ICU admission
  - Latent or active tuberculosis
  - Those that elected to not have their medical information used for research purposes

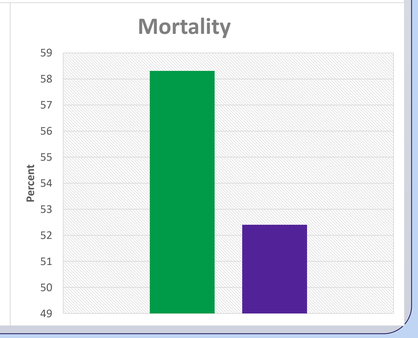
Results











Conclusions

- This study is still ongoing and results are based on preliminary data
- Tocilizumab use appears to be associated with:
  - Lower rates of infection besides sepsis
  - Longer hospital length of stay
  - More ventilator free days
  - Higher mortality
- Additional studies are needed utilizing larger patient populations to determine statistical significance of the differences found in this study

Limitations

- This study is retrospective in nature and difficult to directly compare therapies
- Advanced methods to draw conclusions from observation data beyond scope and power of this study
- The recommended, approved, and available therapies for COVID-19 pneumonia have change drastically since the start of the pandemic
- The clinical course of COVID-19 pneumonia is unpredictable from patient to patient

Future Directions

- Study is still ongoing and collecting more data
- A much larger scale study looking at the clinical course for all Regions Hospital inpatients admitted/treated for COVID-19 is currently underway

References

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