Comparative Efficacy of Tocilizumab and Baricitinib in Treatment of Severe Covid-19 Infections

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Purpose:

- The purpose of this study was to evaluate patient characteristics and efficacy of tocilizumab (TOCI) versus baricitinib (BARI) for the treatment of severe COVID-19 infection

Background:

- Evaluations of new treatment options to reduce mortality in hospitalized patients with COVID-19 are urgently needed to reduce the high frequency of deaths that persists despite improvements in standards of care[1]
- The RECOVERY trial found that TOCI significantly reduced the chance of progressing to IMV or death, increased the probability of discharge within 28 days, and reduced 28-day mortality[2]
- The COV-BARRIER provided evidence that BARI plus standard of care (dexamethasone and remdesivir) showed no significant reduction in frequency of disease progression, but was associated with reduced mortality in hospitalized patients with COVID-19[1]
- TOCI and BARI have been shown to improve mortality in patients with severe COVID-19 disease however, there is limited comparative data amongst these agents for the treatment of severe COVID-19 disease.

Methods:

- Study Design: IRB approved retrospective observational chart review of patients with severe COVID-19 disease from September 2020-November 2021 located at Jefferson Health New Jersey, a 656 bed 3-hospital system
- Primary Endpoint: Incidence of all cause inpatient mortality (ACIM) in patients receiving tocilizumab and baricitinib
  - Subgroup analysis: assessment of clinical improvement and progression to IMV between TOCI and BARI
- Secondary Endpoint: Risk factors associated with ACIM
- Inclusion Criteria: ≥ 18 years old, supplemental O2 at beginning of therapy, received at least one dose of treatment, and severe COVID-19 disease (SpO2 ≤ 94%, PaO2/FiO2 ≤ 300 mmHg, RR ≥ 30 breaths/min, lung infiltrates ≥ 50%)
- Exclusion Criteria: IMV at beginning of therapy
- Patients were then matched based on BMI, age, and severity of hypoxemia at the start of therapy
- Statistical Analysis: Chi Square (primary Endpoint and subgroup analysis), multi-logistic regression (secondary endpoint)

Results

Table 1: Baseline demographics and clinical characteristics

	Baricitnib	Tocilizumab
N (identical)	87	87
Age, median (range)	65 (28-91)	64 (30-90)
Gender, M	65%	57%
BMI ≥ 30 kg/m²	52%	52%
ICU admission, Y	54%	46%
Time from symptom to presentation, days median (range)	6 (1-28)	7 (1-60)
Time from symptoms to therapy, days median (range)	9 (0-31)	9 (1-63)
Low flow NC at the start of therapy, patients	59%	59%
HFNC at the start of therapy, patients	41%	41%
Length of hospital admission, days median (range)	12 (4-41)	9 (2-34)
CRP at start of therapy, mean (±SD)	8.7 mg/L (±6.9)	15.2 mg/L (±7.8)

Table 2: Primary endpoint

	Baricitinib	Tocilizumab	P-value
All cause overall inpatient mortality	33%	22%	0.126
Inpatient mortality based on oxygenation, (primary)			
Low flow O2	20%	12%	0.415
High Flow O2	53%	36%	0.236

Table 3: Subgroup analysis

	Baricitinib	Tocilizumab	P-value
Clinical improvement (COS>2) at EOT	22%	44%	0.004
Progressed to IMV, Y	26%	10%	0.01

Figure 1: Secondary endpoint – baricitinib

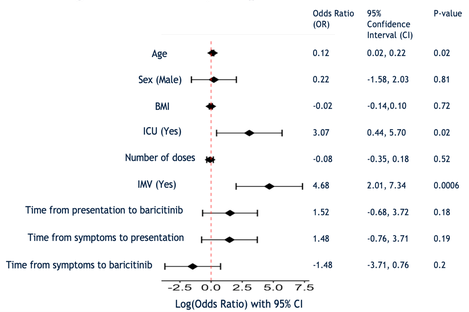
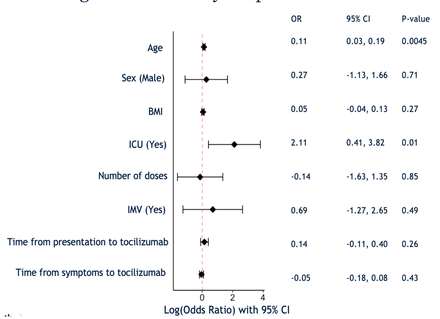
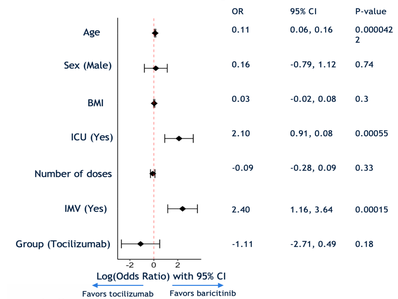


Figure 2: Secondary endpoint – tocilizumab



Results (continued)

Figure 3: Logistic regression of association mortality with baricitnib and tocilizumab



Discussion

- Majority of patients included were male, geriatric, and required supplemental oxygenation at the start of therapy
- When patients were matched no difference was seen in all cause inpatient mortality in both treatment groups
- Risk factor associated with high risk of ACIM in both treatment arms was ICU level of care.
- Patients receiving TOCI were more likely to experience clinical improvement, and less likely to progress to IMV in comparison to BARI
- Patients in both treatment arms had higher odds of ACIM when requiring ICU level of care
- When compared to head to head, TOCI lower likelihood of mortality in patients progressing to IMV or required ICU level of care compared to BARI

Conclusion

- There was no difference in inpatient mortality found between BARI and TOCI treatment arms however, TOCI should be preferred therapy in patients requiring ICU level of care or IMV

Disclosure

The authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

Reference

1. Marconi VC, Ramanan AV, Bono SD et al. Efficacy and safety of baricitinib for the treatment of hospitalized adults with COVID-19 (COV-BARRIER): A randomized, double-blind, parallel-group, placebo-controlled phase 3 trial. *Lancet Respir Med*. 2021. [e-pub]. https://doi.org/10.1016/S2213-2600(21)00331-3
2. RECOVERY Collaborative Group. Tocilizumab in patients admitted to hospital with COVID-19 (RECOVERY): a randomised, controlled, open-label, platform trial. Lancet. 2021;397(10285):1637-1645. doi:10.1016/S0140-6736(21)00676-0