



Leronlimab: Is it Just Another Monoclonal Antibody for COVID-19?

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Over the past 18 months, the world has been going through a roller coaster ride. Pandemic so far has taken more than 3 million lives globally and infected more than 160 million people [1]. Besides the health toll, there has been a significant economic toll. The race is on for the development of therapeutics and vaccines at a fast pace. With the Pfizer and Moderna Vaccine's successful result, the race for developing the vaccine is at the fastest pace. Now with Astra Zeneca, J&J, Cansino, Sinopharm, Sputnik, Bharat Pharmaceuticals, vaccines have been approved, to name a few [2]. According to the World Health Organization report on May 14th, 2021, there is 100 vaccine in clinical development and 184 vaccines in pre-clinical development for the COVID-19. The therapeutics have been going fast, but the vaccine's phenomenal success has overshadowed their success. Remdesivir, Tocilizumab, sarilumab, and steroids have shown the benefit, whereas the anticoagulation, ivermectin, colchicine data is still muddy. There have not been many drugs that have been suggested for immunosuppressed patients.

Leronlimab-Pro 140 is a CCR5-specific human IgG4 monoclonal antibody. CCR5 plays a central role in modulating immune cells trafficking to sites of inflammation. It is currently indicated in combination therapy with HAART for HIV and Metastatic triple-negative breast cancer. Initially, it was attempted in a solid organ transplant patient with COVID by Dr. Seethamraju with a good outcome [3]. Later, ten patient EIND (Emergency Investigational new drug) usage was granted by FDA to use in severe cases with COVID. 50% survival rate (6 patients with transplant and COVID) [4]. In a study with 23 severely ill hospitalized patients with COVID-19. 87% of patients had severe comorbidities. 17 out of 23 patients recovered

and two patients out of 23 remained hospitalized at the time of the publication, and 4 out of 23 patients had died. Among patients on mechanical ventilators, 4 out of 7 patients recovered, two were in the hospital at the time of publication, and 1 out of 7 patients died.

Another study was a double-blind, randomized trial, including 86 patients with 60.7% female and a median age of 55.5 years. Their baseline total symptom score (TSS) was less than or equal to 4 in 53.4% of the population and greater than 4 in 46.4%. The patients who had the TSS of <4 90% reported improvement in their score at day vs. 71% in the placebo group. Serious adverse effects were seen in 14% of the leronlimab group compared to 39% in the placebo group. Overall, eight serious AEs occurred in 56 patients (14%) in the leronlimab arm compared with 11 in 28 patients (39%) from the placebo arm [5].

Recently there has been a press release of the phase 3 trial data on 384 patients, with 62 patients being critically ill [6]. The study showed a 24% reduction in mortality, which was significantly better than Tocilizumab. In addition, the probability of discharge alive was 28% vs. 11%, and there was also a reduction in the average length of stay by six days ($p < 0.005$). The statistically significant difference was not seen in the patients on dexamethasone and leronlimab compared to patients who received dexamethasone and no leronlimab (once again suggesting some benefit of steroid). The statistically significant difference of 0.03 was seen in patients who received leronlimab and commonly used covid treatment when compared to those who only were treated with commonly used covid treatment [7].

Several monoclonal antibodies are undergoing clinical trials to find the cure or improvement in the severity of the COVID-19. The leronlimab certainly offers hope in decreasing the mortality in patients with the severe covid-19 disease with an acceptable safety profile. Hopefully, the trials with more patients in the severely ill group can shed some more light, and also future studies can help our understanding and treatment for the long covid syndrome.

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