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Higher level of Interleukine-6 predispose COVID-19 patients to develop myocarditis

Amir Hossein Heydari*Zanjan Health Center, Iran***Statement of the Problem:**

COVID-19 is a recently emerging pandemic that had killed too many peoples worldwide. Aside from multiorgan complications of COVID-19, cardiovascular involvement are among the most dangerous complications. Myocarditis is seen both COVID-19 infection and post COVID-19 vaccination. **Methods:** 2369 COVID-19 patients admitted to ICU were selected and first day cardiac Troponin I and EKG were obtained. 81 of them diagnosed with myocarditis. IL-6 level of Patients with myocarditis and 32 patients without myocarditis was measured. Some of them was prescribed for Tocilizumab (TCZ) injection for COVID-19 by an infectious disease specialist (IDS) and some was treated by routine COVID-19 treatments (IDS was fully blinded and acted per his/her preference). cTnI and EKG obtained at 7th and 14th days of hospitalization.

Conclusion & Significance:

admission time IL-6 level showed elevated level in patients with myocarditis compare to ones without myocarditis. 26 of 81 COVID-19 induced myocarditis patients were treated with 1 dose of TCZ (until day 14) and they showed significantly lower TnI level at day 7th compare to not TCZ treated myocarditis patients but it was significantly higher than not myocarditis patients. At day 14th cTnI had been returned to normal range (<6.6 pg/ml) and the difference of TCZ treated and non-myocarditis patients was not significant in cTnI level. cTnI was decreased in non TCZ treated myocarditis patients but it was still above the normal range and was significantly higher than other 2 groups. EKG was returned to its previous condition (according to the last patients' EKG prior to COVID-19) in TCZ treated group at day 14th. TCZ therapy for COVID-19 induced myocarditis patients should be considered as first line treatment to reduce cardiac death or complication of COVID-19 induced myocarditis.

Recent Publications

1. Coyle J, Igbinomwanhia E, Sanchez-Nadales A, Danciu S, Chu C, Shah N. A recovered case of COVID-19 myocarditis and ARDS treated with corticosteroids, tocilizumab, and experimental AT-001. *Case Reports.* 2020;2(9):1331-6.
2. Doms J, Prior J, Peters S, Obeid M. Tocilizumab for refractory severe immune checkpoint inhibitor-associated myocarditis. *Annals of Oncology.* 2020;31(9):1273-5.
3. Ho JS, Sia C-H, Chan MY, Lin W, Wong RC. Coronavirus-induced myocarditis: a meta-summary of cases. *Heart & Lung.* 2020;49(6):681-5.
4. Radbel J, Narayanan N, Bhatt PJ. Use of tocilizumab for COVID-19-induced cytokine release syndrome: a cautionary case report. *Chest.* 2020;158(1):e15-e9.

5. Sawalha K, Abozenah M, Kadado AJ, Battisha A, Al-Akchar M, Salerno C, et al. Systematic review of COVID-19 related myocarditis: insights on management and outcome. *Cardiovascular Revascularization Medicine.* 2020.

6. Yang C, Liu E, Liu M. Safety concerns regarding concomitant use of tocilizumab and glucocorticoids in COVID-19 patients. *Proceedings of the National Academy of Sciences.* 2020;117(48):30025-6.

Biography

Amir Hossein Heydari is a medical doctor who works in the Zanjan health center as a first line COVID-19 center physician. He is a one time winner of exemplary medical student of the country award for his original researches. He holding two Medal of Honor from 2 consecutive medical Olympiad in basic science field.