

Coronary microvascular dysfunction in the context of long COVID-19: What is the effect of anti-inflammatory treatment?

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We have read with great interest the results of the pilot study conducted by Rola et al. [1], who demonstrated in a cohort of 24 individuals with long COVID-19 syndrome after hospitalization (median days of hospitalization: 11) that one-fourth of them had indications of coronary microvascular dysfunction, defined as index of microvascular resistance (IMR) >25 or coronary flow reserve (CFR) <2 [1]. As the researchers point out, systemic inflammatory response, involving pro-inflammatory cytokines, such as interleukin (IL)-1, IL-6, and tumor necrosis factor-alpha (TNF- α), might be implicated in endothelial dysfunction pathogenesis in the context of COVID-19 [1].

Previous evidence from patients with rheumatoid arthritis has shown that long-term treatment both with anakinra, an IL-1 antagonist, and tocilizumab, an IL-6 antagonist, is associated with improvement in CFR values, with anakinra providing better results compared to tocilizumab [2]. Anakinra has also been shown to produce a significant acute improvement in CFR in subjects with rheumatoid arthritis in another cohort [3]. Notably, single administration of tocilizumab in patients with acute myocardial infarction has been shown not to affect CFR during hospitalization but to correlate with significant long-term improvement in CFR after 6 months [4]. Even though inflammatory cascade is recognized as a promising treatment target in primary and secondary prevention of atherosclerotic cardiovascular disease, of course, it has to be admitted that anti-inflammatory drugs do not currently hold a place in corresponding treatment algorithms.

However, both anakinra and tocilizumab have been widely adopted for use in hospitalized subjects with severe COVID-19 in various treatment algorithms to ameliorate the so-called "cytokine storm" [5]. Therefore, it would be really interesting to know, if applicable, whether the subjects in the pilot study by Rola et al. [1] received anti-inflammatory agents during hospitalization for severe COVID-19, and if yes, whether they featured different coronary microvascular function at assessment during follow-up, compared to subjects that did not receive such treatment. Such information would provide further, valuable insights into the therapeutic efficacy of IL-1 and IL-6 blockers in COVID-19, not only in the acute setting but also for the prevention of long-term COVID-19-associated complications.

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