Background: The coronavirus disease 2019 (COVID-19), caused by a novel corona virus named SARS-CoV-2, has emerged as a global pandemic. Severe inflammatory process is one of main pathogenesis of COVID-19 and this involves cytokine storm along with overactivation of macrophage. On another front, cytokine storm with macrophage activation is frequently observed in various connective tissue diseases including dermatomyositis with positive antimalanoma differentiation-associated protein 5 (anti-MDA5) autoantibodies and adult Still’s disease. Macrophage activation during inflammatory states is partially characterized by an increased serum ferritin levels and hyperferritinaemia and characteristics shared by the three diseases are a topic of interest to rheumatologists, however, no study has evaluated anti-MDA5-positive dermatomyositis and adult Still’s disease in comparison to COVID-19.

Objectives: The aim of this study was to highlight the homology and heterogeneity of COVID-19, anti-MDA5 dermatomyositis, and adult Still’s disease by comparing clinical pictures of each disease in order to discuss their respective pathogeneses.

Methods: We reviewed consecutively, newly diagnosed, untreated patients with COVID-19, anti-MDA5 dermatomyositis, or adult Still’s disease. We compared their clinical, laboratory, and radiological characteristics, including the prevalence of macrophage activation syndrome and lung involvement in each disease.

Results: The numbers of patients with COVID-19, anti-MDA5 dermatomyositis, and adult-onset Still’s disease with hyperferritinaemia (serum ferritin ≥ 500ng/dL) who were included for main analysis were 22, 14, and 59, respectively. COVID-19 and adult Still’s disease both featured hyperinflammatory status, such as high fever and elevated serum C-reactive protein, whereas COVID-19 and anti-MDA5 dermatomyositis both presented with severe interstitial lung disease and hyperoxaemia. While two-thirds of the patients in each group met the criteria for macrophage-activated syndrome that is used in systemic juvenile idiopathic arthritis, the HScore, an indicator of haemophagocytic lymphohistiocytosis, was low in anti-MDA5 dermatomyositis and COVID-19 even in severe or critical cases. The findings of chest computed tomography were similar between COVID-19 and anti-MDA5 dermatomyositis (Figure 1).

Conclusion: COVID-19 shared clinical features with rheumatic diseases characterised by hyperferritinaemia, including anti-MDA5 dermatomyositis and adult Still’s disease. These findings should be investigated further in order to shed light on the pathogenesis of not only COVID-19 but also the aforementioned rheumatic diseases.

REFERENCES:

Figure 1. Imaging characteristics of chest CT scans in patients with COVID-19, anti-MDA5 dermatomyositis, and adult Still’s disease. (A) Bilateral ground-glass and consolidative opacities with peripheral distribution in COVID-19. (B) Bilateral ground-glass opacities with peripheral consolidations in anti-MDA5 dermatomyositis. (C) Pleural effusion with pleural thickening on the left side in adult Still’s disease.

Disclosures of Interests: None declared.

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