Introduction
Adult Still's disease (ASD) is an uncommon inflammatory disorder characterized by fevers, a salmon-colored rash, and arthritis. Cytokines storm syndrome related to Coronavirus-19 (COVID-19) usually occur in acute period of COVID-19 and can mimic clinical features of ASD.

Case Report: We present a case of a 27-year-old male who was hospitalized in July 2020 due to fever, sore throat, multiple joint pain, and body rash for 2 weeks. Patient recovered from COVID-19 8 weeks ago but his nasopharyngeal SARS CoV-2 PCR was still positive on current hospitalization. Post COVID-19 cytokines storm syndrome post COVID-19 was suspected but after further assessment and investigations, diagnosis of ASD was established and patient was treated with corticosteroids therapy and had favorable outcome.

Conclusions: During COVID-19 pandemic, diagnosis of many other diseases either were delayed or missed. We encourage all clinicians to have a broader differential diagnosis to improve patient care and outcome.

Keywords: COVID-19, adult, Still’s, cytokines
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with 5 days of antibiotic therapy he showed no improvement. His fever was intermittent and he was found to have no growth on the blood cultures.

The patient’s clinical presentation and labs met the Yamaguchi criteria for Adult Onset Still’s disease. The patient was cleared by the infectious disease team with an impression of the positive COVID-19 result being most likely due to viral shedding. Antibiotics were discontinued and he was started on IV methylprednisolone.

Three days later, with corticosteroid use, he improved clinically with resolving joint pain and the disappearance of his rash (Figure 2). His fever resolved and the patient was discharged on oral Prednisolone with follow-up appointments in the rheumatology clinic.

Discussion
COVID-19 infection is usually diagnosed by the detecting the viral RNA in PCR testing. However, detection of viral RNA is not necessarily mean that a person is infectious and is able to spread the virus.5

Liu et al7 defined the median time from onset to clinical recovery is about 2 weeks for a mild infection and is up to 6 weeks for severe infection especially with cytokines storm syndrome. Our patient showed full recovery from the coronavirus 2 weeks after onset of symptoms.

Viral RNA can be detected after clinical recovery from the virus because the presence of viral shedding; however, the viral load wanes over time. The time after clinical recovery is a good indicator of recovery and infectivity. It is rarely required to repeat PCR testing in these patients.7,8

Our patient showed full recovery from the coronavirus 2 weeks after the onset of symptoms. His nasopharyngeal SARS CoV-2 swab was positive which is likely an indicator of viral shedding. His symptoms upon presentation raised suspicion for ASD with the patient fulfilling the Yamaguchi criteria.

The incidence of ASD is about 0.16 cases per 100.000 people. The incidence is almost equal between both genders.9 ASD diagnosis is usually made after excluding infectious causes, malignancies, and other connective tissue diseases. After exclusion, definitive diagnosis is established by utilizing Yamaguchi or Fautrel criteria.3

The Yamaguchi criteria is very sensitive for the diagnosis of ASD with a sensitivity of 96.2% and specificity of 92.1%, requiring the presence of 5 features, with at least 2 of them being part of the major diagnostic criteria. The major criteria consists of a fever of at least 39°C for at least 1 week, a nonpruritic rash with a salmon-colored appearance usually in the trunk or extremities during the febrile episode, arthritis or arthralgia, and leukocytosis (10,000/microL or higher). While the minor criteria consists of a sore throat, lymphadenopathy, hepatomegaly or splenomegaly, abnormal liver function, and negative test of (ANA) and (RF).10 Investigations were carried out to exclude all other causes and the patient was found to have all 4 of the major criteria and 3 of the minor criteria.

The treatment of ASD depends on the disease activity and organ system involvement. It can be classified into mild, moderate, and severe disease. Mild disease presents with a fever and a rash with a favorable response to nonsteroidal anti-inflammatory drugs (NSAIDs) alone. Moderate disease shows evidence of internal organ involvement but is not life-threatening and usually requires low-dose of glucocorticoids to control the inflammatory process. Severe disease is considered life-threatening and needs a high dose of glucocorticoid therapy and sometimes immune modulators therapy is needed.11

The reported patient was started on IV methylprednisolone and was then shifted to oral Prednisolone as an outpatient which showed favorable response in just a few days.

Figure 1. Left arm macular rash prior to methylprednisolone.

Figure 2. Resolution of left arm macular rash post methylprednisolone.
It is recommended to monitor the response to therapy through assessment of clinical and laboratory results. Our patient will follow up in the rheumatology clinic in the following days.

Conclusion
It was noticed that in the current COVID-19 pandemic, the diagnosis of many non-COVID-19 medical conditions were missed or delayed due to the burden COVID-19 on healthcare system. We encourage all clinicians to have a broader differential diagnosis for us to improve patient’s care and outcome.

Author Contributions
AA and RJ contributed to conception and design of the study, acquisition and analysis of data, and drafting a significant portion of the manuscript. ST, NR, TA and FA contributed to conception and design of the study, and acquisition and analysis of data. SRY contributed to acquisition and analysis of data. MS contributed to conception and design of the study, acquisition and analysis of data, and drafting a significant portion of the manuscript.

Informed Consent
Patient consent was secured to publish the findings of this case study.

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REFERENCES
1. Still GF. On a form of chronic joint disease in children. Med Chir Trans. 1897;80:47-60.
2. Bywaters EG. Still’s disease in the adult. Ann Rheum Dis. 1971;30:121-133.
3. Kontzias A, Efthimiou P. Adult-onset Still’s disease: pathogenesis, clinical manifestations and therapeutic advances [published correction appears in Drugs. 2011 Oct 1;71:1820]. Drugs. 2008;68:319-337.
4. Hui DS, Azhar EI, Madani TA, et al. The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health – the latest 2019 novel coronavirus outbreak in Wuhan, China. Int J Infect Dis. 2020;91:264-266.
5. de Carvalho JF. COVID-19 in Still’s disease. Eur Rev Med Pharmacol Sci. 2020;24:12627-12629.
6. World Health Organization. Criteria for releasing COVID-19 patients from isolation: scientific brief. World Health Organization, 2020. https://apps.who.int/iris/handle/10665/332453
7. Liu WD, Chang SY, Wang JT, et al. Prolonged virus shedding even after seroconversion in a patient with COVID-19. J Infect. 2020;81:318-356.
8. Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19). 16-24 February 2020, Accessed April 7, 2020. https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf.
9. Magadur-Joly G, Billaud E, Barrier JH, et al. Epidemiology of adult Still’s disease: estimate of the incidence by a retrospective study in west France. Ann Rheum Dis. 1995;54:587-590.
10. Yamaguchi M, Ohba A, Toutematsu T, et al. Preliminary criteria for classification of adult Still’s disease. J Rheumatol. 1992;19:424-430.
11. Pouchot J, Sampalis JS, Beaudet F, et al. Adult Still’s disease: manifestations, disease course, and outcome in 62 patients. Medicine (Baltimore). 1991;70:118-136.