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Investigation of sarcoidosis patients during COVID-19 pandemic

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To the Editor,

Coronavirus disease 2019 (COVID-19), is a globally spread contagion caused by a viral pathogen from the coronavirus family called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)(1). The epidemic originated in Wuhan, China, and was first detected in December 2019, and announced as a global pandemic by the World Health Organization's (WHO) in March 2020 (2).

Sarcoidosis is a multiorgan, inflammatory, granulomatous disease that can affect different tissues, but the lungs are involved in more than 90% of the cases (3).

All human beings are prone to Sars-CoV 2 virus, which can cause respiratory tract infection. Notably, in most cases of sarcoidosis patients, the respiratory system is already damaged and inflamed. Additionally, most of the sarcoidosis cases are treated with immunosuppressive therapies, which make them more susceptible to infections, including coronavirus infections. Hence, we were expecting a high number of sarcoidosis patients contracting COVID-19.

Surprisingly, at Masih Daneshvari Hospital, despite the massive load of COVID-19 patients from 15.02.2020 until 10.04.2020 (300 patients with Covid-19), we have only encountered 10 cases of COVID-19 positive patients among all registered cases in the Sarcoidosis clinic of The National Research Institute of Tuberculosis and Lung Diseases (NRITLD) with approximately 1000 followed-up patients (Table 1). Our findings are in line with Conticini et al, cohort study in which 859 patients with different rheumatic diseases who were treated with disease-modifying antirheumatic drugs (DMARDs) were studied in Italy. Among those two patients were diagnosed with COViD-19 (4).

It is worth to mention a patient of ours with sarcoidosis that has been under the treatment regimen, including methylprednisolone 5mg daily and 7.5 mg Methotrexate (MTX), for years. Her husband passed away due to COVID-19, that is while her test results were repeatedly negative for SARS-COV-2.

There are several hypotheses in this regard.

• Firstly, Angiotensin-converting enzyme-2 (ACE2) is a type of integral membrane glycoprotein. ACE2 that is expressed in the lungs and serves as the main entry point into cells for some coronaviruses (5) is involved in the progression of pulmonary sarcoidosis (6). That is while the presence of the ACE2 enzyme protects lung cells from damage caused by the virus by increasing the level of the angiotensin-1-7 (7).

• Secondly, sarcoidosis patients apply more self-protection due to the history of chronic disease. It is possible that their extra precautions reduce the risk of being infected.

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• Moreover, their regimen consists of combinations of multiple medicaments including: methylprednisolone, Methotrexate (MTX), hydroxychloroquine, ect. Although it is not currently known how exactly these medicaments affect the COVID-19 infection, some of these medications suppress signs and symptoms of the disease; therefore, sarcoidosis patients taking them might be asymptomatic carriers of COVID-19 and pose a threat to their family and the society.

• And finally, the sarcoidosis treatment regimen may have protective effects against COVID-19.

In order to investigate all probable hypotheses in this regard, we are already conducting a study in which we follow up on our sarcoidosis patients regarding all their signs and symptoms that have developed recently. Herewith, we hope to find a new perspective on this disease.

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Table 1. Data of the 10 patients with sarcoidosis and positive polymerase chain reaction COVID-19 test

Gender	Age	Duration Of Disease (sarcoidosis) (year)	Positive Covid-19 test In Family	Hospitalization	Prednisolone	Methotrexate	Hydroxychloroquine	Chills	Fever	Myalgia	Loss Of Appetite	Olfactory Disorder	Taste Disorder	Chronic Disease	Death
Male	31	2	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	No
Female	46	2	Yes	No	Yes	No	No	No	Yes	Yes	Yes	No	No	No	No
Female	50	1	No	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No	DM	No
Female	53	10	Yes	No	Yes	No	No	Yes	Yes	No	No	No	No	No	No
Male	43	8	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	IHD	No
Female	34	10	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No
Female	53	6	Yes	No	Yes	No	No	Yes	Yes	Yes	No	No	No	HTN	No
Female	51	8	Yes	No	Yes	No	No	Yes	Yes	Yes	No	No	No	Hypothyroidism	No
Male	48	3	Yes	No	Yes	No	Yes	No	No	Yes	Yes	Yes	No	No	No
Male	42	3	Yes	No	Yes	No	No	No	Yes	Yes	Yes	No	No	No	No

DM: diabetes mellitus type 2; IHD: ischasmic heart-disease; HTN: hypertension