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Research Article

A Retrospective Chart Study To Analyze the Role of DMARD in Connective Tissue Disease Patient Population with Confirmed COVID Positive and Overall Health Outcomes at Community Hospital

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ABSTRACT

Introduction: Coronavirus emerged from the city of Wuhan in the last months of 2019. Pathological findings revealed that it is a single-stranded RNA virus which mutates rapidly with 2.2 basic reproductive numbers. Objective: The main objective is a retrospective chart review study to analyze the role of DMARD in connective tissue disease patient population with confirmed COVID positive and overall health outcomes at Bronxcare Hospital.

Materials and methods: This retrospective study was conducted in during. This study aimed to help to find the role of DMARD in connective tissue disease patient population with confirmed COVID positive and its impact on overall health outcomes.

Results: The data was collected from 50 patients. According to data average age of patients was 60.82 ± 10.90 years and the BMI was 31.09. The average measured temperature was 97.41 F°. There were 20% patients who were suffering from CKD.

Conclusion: It is concluded that an increased risk of developing COVID-19 or a complicated course of COVID-19 cannot be deduced from data on COVID-19 or other connective tissue diseases in patients with inflammatory arthritis.

Keywords: Disease-modifying antirheumatic drugs; Connective tissue diseases; COVID-19

INTRODUCTION

Coronavirus emerged from the city of Wuhan in the last months of 2019. Pathological findings revealed that it is a single-stranded RNA virus which mutates rapidly with 2.2 basic reproductive numbers [1]. Recent studies examine that 6 species of coronavirus can form human disease [2]. Generally, the four species including 229E, OC43, NL63, and HKU1 are common which induce common cold symptoms [2]. The rest two species MERS-COV and SARS-COV are caused by the animals and can engage persons in fatal illness3. The high prevalence of coronavirus in different regions of the world depicts that it could be occasionally effected the human species due to its cross-species infection features [3,4]. In CT imaging of the patients, pulmonary opacities were also observed [5]. After the analysis of Bronchoalveolar lavage fluid under the electronic microscope, it came to know that a crown like virus emerging from viral spike peplomers [6]. This virus was observed for the first time so newly came virus labeled as 2019 novel coronavirus. Generally, a wide perception is that it could be transmitted from respiratory droplets and close contact but recent studies depict that it may be caused by the digestive tract [7]. The majority of the patients had mild symptoms but in many countries old patients with poor immune systems and comorbidities were severely affected by this deadly virus [8]. Only early detection and control of its transmission in form of isolation of infected persons can be helpful to stop this deadly virus [9]. Unfortunately, a large number of suspected cases need more time for laboratory examination which causes a wide spread of this disease. A low number of examination kits and a high rate of suspected patients in some regions becomes another issue that causes the

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wide spread of this virus because of no quarantine administration of the suspected person [10].

All age groups and patient populations can be affected by COVID-19, however, individuals with an older age, and those with co-morbidities have a higher risk for more severe disease [2]. Inflammatory Rheumatic Diseases (IRDs) have especially been a concern for a number of reasons. The immune dysregulation that may be associated with IRDs or by the medications used for these may affect innate immune responses that play a critical role in preventing viral replication and in development of an adaptive immune response. Inability to reduce the viral load in the early stages of the disease may result in an exaggerated inflammatory reaction, leading to tissue damage and multiple organ failure [11]. A higher infection rate was observed in patients with IRDs compared to their family members and higher respiratory failure rates were reported in COVID-19 patients with IRDs compared to those without IRDs. Medications that are used for IRDs may influence the outcome of COVID-19. Hydroxychloroquine (HQ), chloroquine and baricitinib were suggested to have antiviral effects and patients on these drugs were proposed to be less likely to have severe COVID-19 outcomes due to reduced viral replication during the early phase 6. Moreover, physician-reported COVID-19 Global Rheumatology Alliance (GRA) registry suggested that Biologic Disease-Modifying Antirheumatic Drugs (bDMARDs), which are used for the treatment of cytokine storm that is responsible for tissue damage and multiple organ failure in COVID-19, may prevent this condition in patients with IRDs who are already using bDMARDs, if infected by SARS-CoV-2 [3].

Objective

The main objective is a retrospective chart review study to analyze the role of DMARD in connective tissue disease patient population with confirmed COVID positive and overall health outcomes at Bronxcare Hospital.

MATERIALS AND METHODS

This retrospective study was conducted in during, this study aimed to help to find the role of DMARD in connective tissue disease patient population with confirmed COVID positive and its impact on overall health outcomes.

Inclusion criteria

- All the confirmed COVID-19 patients.
- All the participants who are willing to participate in the study.
- All patients suffering from connective tissue disease.

Exclusion criteria

- Pregnant women.
- Not willing to participate
- Already taking any blood coagulant drug.

Data collection

The data was collected after getting the permission from ethical committee of hospital. The data was collected from 50 patients and they all were suffering from different kind of connective tissue disease. We collect the data from RA, psoriasis, OA, SLE, joint pain and gout patients. We collect all the basic and demographic values like BMI, SpO2, Temperature, pulse rate, RR and all other related data. Out of these 50 patients only 4 patients were intubated and only 8 patients were also suffering from COPD. All the laboratory parameters, CRP, Ferritin, D dimer, PT, PTT, RFT's and LDH were also measured by taking 5 cc blood sample of every patient.

Statistical analysis

All the data were collected and analysed using SPSS version 19.0. All the values were expressed in mean and standard deviation.

RESULTS

The data was collected from 50 patients. According to data average age of patients was 60.82 ± 10.90 years and the BMI was 31.09. The average measured temperature was 97.41 F°. There were 20% patients who were suffering from CKD. As per statistics average pulse rate of all the selected patients was mentioned in Table 1.

Patients	Average of pulse (per min)
Gout	83.13
Joint pain	97.33
Osteoarthritis	89.4
Osteonecrosis	108
Primary osteoarthritis	86.5
Psoriasis	97.8
Psoriatic arthritis mutilans	69
Rheumatoid arthritis	91.55
SLE	93
Soft tissue	91.67
Spondylosis	97
Unilateral osteoarthritis	91
Grand Total	91

Table 1: Average pulse rate of selected 50 patients.

There were 26 patients who were suffering from pneumonia, 1 patients from pneumonia and hypertension and 23 patients from pulmonary aspergillosis, sarcoidosis and pneumothorax at the same time. Out of 50 there were 49 patients who were suffering from diabetes also. All laboratory findings were expressed in Tables 2 and 3.

	RA	SLE	Gout	p-value
WBC (109/L)	4.4 [4.0, 5.0]	5.5 [4.5, 7.4]	6.5 [4.7, 8.0]	0.128
Lym (109/L)	1.2 [1.2, 1.4]	0.9 [0.6, 1.3]	1.2 [0.9, 1.6]	0.013
Neu (109/L)	2.5 [2.5, 3.1]	3.9 [2.7, 5.2]	4.3 [2.8, 5.8]	0.363
Hb (g/L)	130.0 [119.0, 153.0]	114.5 [100.8, 132.3]	139.0 [123.0, 152.5]	<0.001
PLT (109/L)	154.0 [120.0, 178.0]	181.0 [123.3, 237.8]	220.0 [168.5, 262.0]	0.037
ALT (U/L)	24.0 [24.0, 34.3]	25.0 [10.0, 54.0]	34.0 [20.0, 57.5]	0.085
AST (U/L)	26.0 [20.0, 33.0]	29.0 [20.0, 44.0]	30.4 [22.5, 43.0]	0.735
UA (μmol/L)	239.0 [180.0, 376.1]	254.0 [186.0, 297.6]	403.0 [290.0, 500.3]	<0.001
Cr (μmol/L)	67.0 [56.0, 70.2]	62.0 [52.5, 87.0]	88.0 [74.5, 107.4]	<0.001
PCT (ng/mL)	0.03 [0.02, 0.19]	0.10 [0.05, 0.28]	0.07 [0.05, 0.21]	0.67
CRP (mg/L)	5.0 [1.5, 20.0]	20.6 [5.2, 58.0]	21.7 [3.1, 56.5]	0.987
ESR (mm/h)	20.0 [15.0, 36.0]	39.0 [19.5, 53.5]	28.00 [10.0, 51.0]	0.303

Table 2: Laboratory indices of rheumatic patients infected with COVID-19.

Medication	RA	SLE	Gout
Glucocorticoids	0 (0)	22 (45.8)	0 (0)
Hydroxychloroquine	0 (0)	18 (37.5)	0 (0)
Prednisone	2 (40.0)	7 (14.6)	0 (0)
Methotrexate	0 (0)	8 (16.7)	0 (0)
Leflunomide	0 (0)	7 (14.6)	0 (0)
Propofol IVPB	1 (20.0)	0 (0)	0 (0)
Oxycodone	0 (0)	3 (6.3)	0 (0)
Febuxostat	0 (0)	0 (0)	8 (17.0)
Allopurinol	0 (0)	0 (0)	3 (6.4)
Sodium bicarbonate	0 (0)	0 (0)	3 (6.4)

Table 3: Use of Rx in 50 patients.

DISCUSSION

The crucial role of immune response raised researchers and scientists interest in anti-rheumatic drugs, such as immunomodulators (e.g. Hydroxychloroquine (HCQ), Chloroquine (CQ)), anti-cytokines (such as Interleukin (IL) 1, IL6, Tumor Necrosis Factor (TNF), and Granulocyte-Macrophage Colony-Stimulating Factor (GM-CSF)) and Janus kinase (JAK) inhibitors [12]. On the other hand, patients with rheumatic inflammatory disease, such as Rheumatoid Arthritis (RA), are known to be particularly susceptible to infections due to underlying immune system dysfunction and to chronic treatments with immunosuppressive medications. With regards to the specific risk of SARS-CoV-2 infection, the available information from the literature (mostly provided by case series and survey-based designs), suggests that rheumatic patients are not at higher risk of developing COVID-19 than the general population, but they may have a higher likelihood of having complications, such as the need of mechanical ventilation [13]. Another clinical test is related to the likely abnormal show of COVID-19 in patients on immunosuppressants. For instance, Glucocorticoids (GCs) and Nonsteroidal Calming Drugs (NSAIDs) may repress a febrile reaction and IL-6 inhibitors forestall an ascent in incendiary markers [14]. Likewise, to be viewed as that side effects like arthralgia, myalgia, fever, and rise of fiery records, might be hard to recognize in RA patients between an illness flare and a SARS-CoV-2 contamination. Then again, the viral contamination can prompt reactivation or a deteriorating of infection movement in RA patients.

Coronavirus has additionally influenced the administration and treatment of patients with rheumatic and immune system illnesses during the COVID-19 crisis. Distributions revealing these impacts have portrayed difficulties to arrangement of care, the executives of clinical preliminaries and the mental condition of patients and their carers [15]. These difficulties are especially applicable on account of uncommon and complex connective tissue and musculoskeletal infections (rCTDs), in which information related to finding, treatment and confusions is regularly restricted and aptitude is dissipated. Robust Cell Type Decomposition (rCTDs) contain an enormous number of sicknesses and disorders, including genetic conditions, uncommon foundational immune system infections and complex fundamental immune system illnesses, and are described by the intricacy of their uncommon and different clinical aggregates (for instance, neurological contribution in fundamental lupus erythematosus, or cryoglobulinaemia or lymphoma in Sjögren disorder). rCTDs massively affect the health and prosperity of patients all throughout the planet; they influence people by restricting their exercises, influence social orders by adding to health-care costs, work misfortune, handicap benefits, exiting the workforce and the requirement for social help, and present a significant weight comparable to dismalness and mortality [16].

CONCLUSION

It is concluded that an increased risk of developing COVID-19 or a complicated course of COVID-19 cannot be deduced from data on COVID-19 or other connective tissue diseases in patients with inflammatory arthritis. Further studies are needed to investigate the course of COVID-19 in connective tissue diseases such as SLE or vasculitis, particularly in patients with already existing organ damage and/or other comorbidities.

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