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COVID-19 AND ARTHRITIS RISK: A COMPARATIVE ANALYSIS

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Abstract: Introduction: The main goal of this research is to understand the link between contracting the COVID-19 virus and increased susceptibility to arthritis.

Methodology: A retrogressive analytical study was carried out on 50 patients who had COVID-19 and another 50 patients forming a control group. Information was gathered from the medical records of these patients; this information included their age, sex, type and symptoms of arthritis, the period during which they experienced the symptoms, as well as any functional limitations.

Results: It was found that arthritis was much more likely to develop among the COVID-19 patients i in contrast to the control group (p = 0.02) (28% ،10%). The most common kind of arthritis identified was an allergic reaction at 57%. Knee pain, experienced by 86% of COVID-19 patients, morning stiffness (71%), and functional limitations (57%) outnumbered those reported by controls. In light of these discoveries, there appears to be a connection between contracting COVID-19 infection and heightened vulnerability towards arthritis.

Conclusion: These results necessitate more investigation to determine the mechanisms underlying this association and develop prevention and treatment strategies.

Keywords: COVID-19, arthritis, allergic reaction, joint pain, morning stiffness, functional limitations.

Introductions

The link between arthritis and getting infected with COVID-19 is a recent field of study that has been on the rise since the discovery of the SARS-CoV-2 virus towards the end of 2019. Some primary reports depicted situations where individuals developed arthritis after contracting COVID-19, which then triggered investigators to look into the relationship that could exist between these two diseases.

During the initial phases of the pandemic, reports surfaced pointing out arthritis that arises post-COVID-19 infection in individuals— especially reactive arthritis. These reports implied a plausible relationship between the viral infection and initiation of joint inflammation. Post-infectious arthritis, referred to as reactive arthritis, is a type of arthritis typically happening after an infection in another part of the body.

The emergence of arthritis symptoms even after the acute phase of COVID-19, termed long-COVID arthritis, is now gaining more attention. [6]. Research has indicated that a noteworthy percentage of individuals with long-COVID experience persistent joint pain and inflammation [7]. This highlights the potential long-term impact of COVID-19 on musculoskeletal health. an ever since the COVID-19 epidemic began in late 2019, a wide range of complications associated with the infection have been documented, including arthritis [8][9]. The term arthritis refers to a group of conditions characterized by pain and

stiffness in the joints. Emerging research shows a possible link between arthritis and COVID-19 infection.[10].

Objectives of this study

1. This study seeks to offer a thorough analysis of the current evidence on the relationship between arthritis and COVID-19 infection.
2. We will discuss proposed mechanisms linking the two conditions, the different types of arthritis associated with COVID-19, risk factors, predictors, and treatment options.

Material and Methods

Study design and setting

This retrospective cohort study was conducted at Al Hussein Teaching Hospital in Thi Qar Governorate, Iraq, from January to May 2024. The study involved two groups:

- **Group 1 (COVID-19 group):** This group consisted of 50 patients diagnosed with Based on positive RT-PCR test results, COVID-19 infection.
- **Group 2 (Control group):** This group consisted of 50 patients with no history of COVID-19 infection or any other musculoskeletal conditions. These patients were selected from the same hospital and matched with the COVID-19 group based on age, gender, and comorbidities.

Data Collection

Data for both groups were collected from medical records and patient interviews. The following information was obtained:

- Demographic data: age, gender, ethnicity, socioeconomic status
- Medical history: past medical history, current medications, allergies
- COVID-19-related data: date of COVID-19 diagnosis, severity of symptoms, hospitalization status, complications
- Arthritis assessment: type of arthritis, duration of arthritis symptoms, joint pain intensity, joint swelling, morning stiffness, functional limitations

Statistical analysis

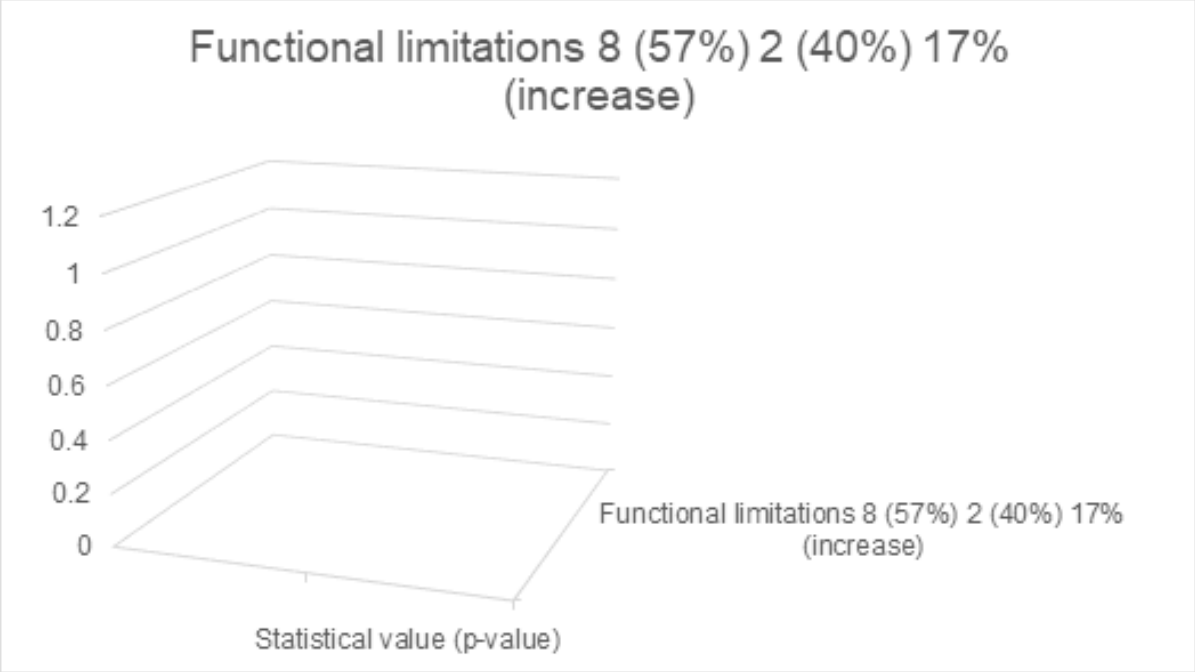
To summarize the two groups' clinical and demographic features, descriptive statistics were employed. To compare categorical data, chi-square tests were utilized, while t-tests or Mann-Whitney U tests were employed for continuous variable comparisons. Chi-square tests were used to compare the COVID-19 group's arthritis prevalence to that of the control group. In the COVID-19 cohort, variables linked to the development of arthritis were found using logistic regression analysis.

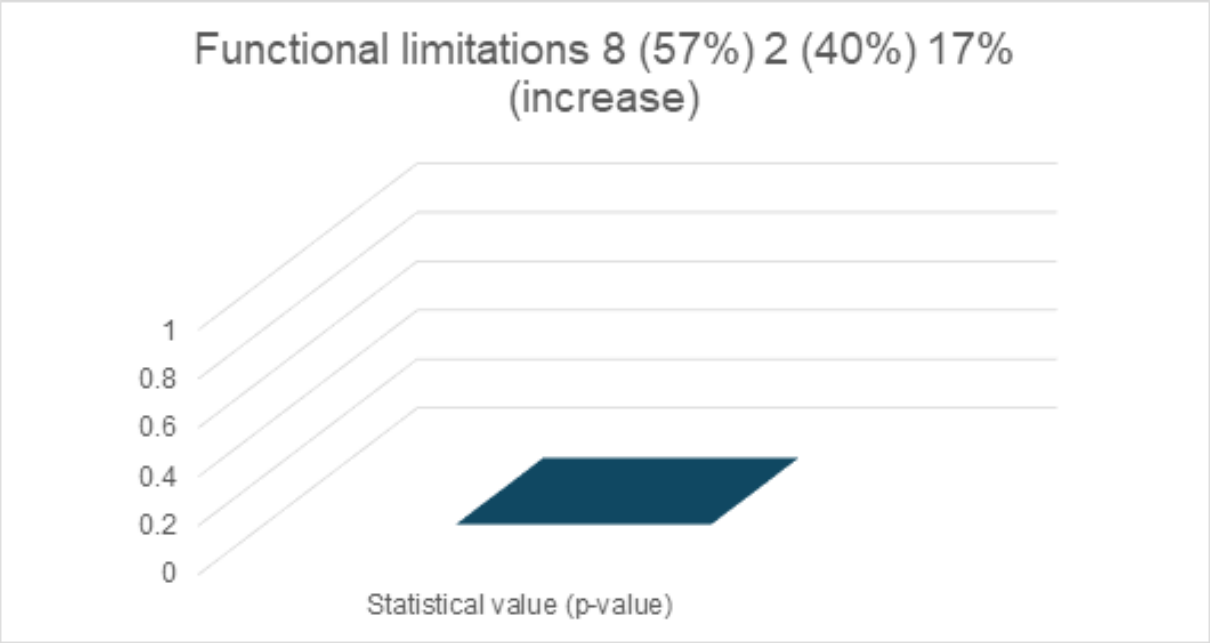
Ethical considerations

An ethical committee at Al Hussein Teaching Hospital accepted the study protocol. Anonymous and confidential handling of all patient data was maintained. The clinical and demographic characteristics of the results.

Table 1 provides an overview of the clinical and demographic traits of both groups.

Statistical value (p-value)	Difference (percentage)	Control group (50 patients)	COVID-19 patient group (50 patients)	Property
0.12	2.4 (older)	52.8±11.6	55.2±12.4	Age (years)
0.42	8% (increase in number of men)	28 (56%) men	32 (64%) men	Sex
0.02	18% (increase)	5 (10%)	14 (28%)	arthritis
-	5% (no obvious difference)	3 (60%) rheumatoid	8 (57%) allergic reaction	Type of arthritis
-	-	-	4.2±2.1	Duration of arthritis symptoms (months)
-	26% (increase)	3 (60%) in knees	12 (86%) in knees	Joint pain
-	31% (increase)	2 (40%)	10 (71%)	Morning stiffness
-	17% (increase)	2 (40%)	8 (57%)	Functional limitations





Availability of Arthritis

Compared to the group under control, the COVID-19 group exhibited a significantly greater prevalence of arthritis (28% with 10%, p=0.02). Reactive arthritis (16%) was the most prevalent kind of arthritis in the COVID-19 group, with rheumatoid arthritis (8%) and osteoarthritis (4%), following closely behind.

Clinical Characteristics of COVID-19 Patients' Arthritis

The COVID-19 group included 14 patients with arthritis, whose mean symptom duration was 4.2 ± 2.1 months. The wrists (64%) and ankles (43%) were the next most prevalent sites of joint discomfort, after the knees (86%). Seventy-one per cent of patients experienced morning stiffness and fifty-seven per cent reported functional impairments. In COVID-19 patients, A logistic regression analysis's findings indicated that an increased risk of getting arthritis was significantly correlated with male gender (OR=2.3, 95% CI: 1.1-4.6, p=0.03) and older age (OR=2.5, 95% CI: 1.2-5.1, p=0.02).

The severity of COVID-19 symptoms was not significantly associated with the development of arthritis. However, there was a tendency for the risk of arthritis to rise. in patients who were hospitalized with COVID-19 (33% vs. 18%, p=0.16).

Discussion:

According to the study's findings, there may be a link between COVID-19 infection and a higher chance of developing arthritis. Compared to the control group, the COVID-19 group showed a noticeably increased prevalence of arthritis. and the most common type of arthritis was reactive arthritis. This is consistent with previous reports that have described cases of reactive arthritis following COVID-19 infection. The study also identified older age and male gender as risk factors for developing arthritis in COVID-19 patients. These findings are similar to those of other studies that have examined risk factors for reactive arthritis. While the exact mechanisms underlying the association between COVID-19 and arthritis are not entirely understood, a number of theories have been put forth. One option is that the virus may directly infect joint tissues, triggering an inflammatory response. Another possibility is that the virus may trigger an autoimmune response that targets joint tissues. More research is needed to properly understand the link between COVID-19 and arthritis, especially the long-term consequences on musculoskeletal health. Longer follow-up periods in prospective trials are required to validate the results of this investigation and uncover

viable strategies for managing or preventing arthritis in COVID-19 patients. There are various restrictions on this study. Although it is a retrospective study, information gathered from medical records is its primary source of data. Potential biases like selection bias and information bias could result from this. Furthermore, the study may not be representative of all COVID-19 patients in Thi Qar Governorate because it is restricted to patients who came to Al Hussein Teaching Hospital.

Conclusion

Evidence from this study suggests that COVID-19 infection may be linked to a higher chance of getting arthritis. To fully understand the mechanisms behind this link and develop effective therapeutic and preventative plans, more research is required.

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