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Ensuring Cardiovascular Safety in the Management of Chronic Rheumatic Diseases

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ABSTRACT

The World Health Organization (WHO) reports that between 9% and 45% of people are affected by musculoskeletal disorders, and around 3% of the population may become disabled due to bone and joint diseases, and almost all of these people experience significant pain. Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly prescribed to alleviate this pain. This article reviews the use of NSAIDs in the management of chronic inflammatory rheumatic diseases, as well as their effects on the body. A study of patients with severe psoriatic arthritis showed that prevention with methotrexate resulted in fewer cardiovascular events compared to other prevention methods, such as traditional treatments, phototherapy, and climatotherapy. Furthermore, this article suggests that inhibitors may play a protective role against tumor necrosis. The prevention approach appears to have a significant impact on reducing the incidence of cardiovascular disease in patients with severe psoriatic arthritis, emphasizing the need for further research to evaluate the cardiovascular safety and efficacy of systemic therapies.

Keywords: Cardiovascular diseases, Selective inhibitors, Arthritis, NSAIDs, Psoriatic arthritis

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Introduction

Inflammatory arthritis is a widespread chronic condition that frequently contributes to the onset of cardiovascular diseases [1-3]. It is a major factor in the development of atherosclerosis, and anti-inflammatory treatments are considered crucial in managing atherothrombotic conditions [4]. The potential impact of systematic anti-inflammatory treatment in preventing cardiovascular diseases among individuals with chronic inflammatory conditions, such as rheumatoid arthritis and psoriatic arthritis, is of increasing concern [5].

Nonsteroidal anti-inflammatory drugs (NSAIDs) are essential for managing pain, as they are involved in the cyclooxygenase (COX) pathway, which plays a significant role in inflammation and pain [6]. However, NSAIDs carry risks of toxicity [7]. In the 1990s, paracetamol was commonly used as a pain reliever for osteoarthritis, but subsequent studies highlighted its adverse effects on the gastrointestinal (GI) tract. Additionally, paracetamol has lower analgesic efficacy compared to NSAIDs and is not considered a viable alternative for inflammatory arthritis management [8].

The identification of cyclooxygenase 2 (COX-2) and the development of COX-2 selective NSAIDs was initially seen as a breakthrough that would minimize side effects, especially when used intravenously. However, this expectation did not hold for celecoxib and, as later findings showed, for all COX-2 selective inhibitors when

combined with aspirin (ASA) [9]. These inhibitors can cause renal complications, such as fluid retention, edema, hypertension, and cardiac failure, which can be fatal [10].

A key disadvantage of selective COX-2 inhibitors is their association with an increased risk of myocardial infarction and other cardiovascular conditions [11, 12]. As a result, the initially anticipated advantages of COX-2 selective inhibitors have been overshadowed by their potential for toxicity. Studies suggest that using proton pump inhibitors with traditional NSAIDs can help manage some of these risks [13]. Furthermore, NSAIDs and COX-2 inhibitors are known to reduce the gastrointestinal toxicity and the risk of peptic ulcers significantly [14-16]. Therefore, traditional NSAIDs are often considered the most suitable option for preventing arthritis and musculoskeletal disorders.

Despite these findings, our review of existing literature presents conflicting results, with selective data from randomized studies and clinical cohorts of patients with psoriatic arthritis [17-20]. As a result, this study aims to assess the prevalence of cardiovascular diseases in individuals with severe psoriatic arthritis. These patients were treated with various systemic therapies, including biological agents (such as tumor necrosis factor inhibitors and an interleukin-12/23 inhibitor), methotrexate, cyclosporine, retinoids, and other prevention methods like traditional medicine, phototherapy, and climatotherapy [21].

Materials and Methods

A cohort study was carried out among patients attending diagnostic centers in Dagestan, with 464 participants aged between 18 and 65 years. The cohort comprised 252 women and 212 men, all diagnosed with psoriatic arthritis and either hospitalized or receiving home treatment. The study spanned from 2014 to 2017. The patients were categorized based on the severity of their psoriatic arthritis and their treatment regimen, divided into five groups:

- Group 1: Cyclosporine treatment
- Group 2: Methotrexate treatment
- Group 3: Biological therapy
- Group 4: Retinoid treatment
- Group 5: Treatment with traditional methods (topical NSAIDs and/or topical vitamin D analogs), phototherapy (UVB or psoralen with UVA), and climatotherapy.

Participants were continuously monitored throughout the study period until December 31, 2017, or until their recovery. Regular health assessments were performed, utilizing questionnaires and systematic collection of health data.

Results and Discussion

The study included 464 participants, with no fatalities recorded. The majority of patients received NSAIDs, which helped manage levels of glucose, cholesterol, and blood pressure. Antihypertensive drugs were administered where necessary, and antidepressants were used only for those experiencing severe pain. Cardiovascular disease development was found to be infrequent during the treatment process.

The breakdown of patients by group was as follows: group 1 (82 participants), group 2 (170 participants), group 3 (16 participants), group 4 (53 participants), and group 5 (143 participants). Cardiovascular complications were observed in the following number of patients: 1 in group 1, 3 in group 2, 1 in group 3, 4 in group 4, and 12 in group 5 (**Figure 1**).

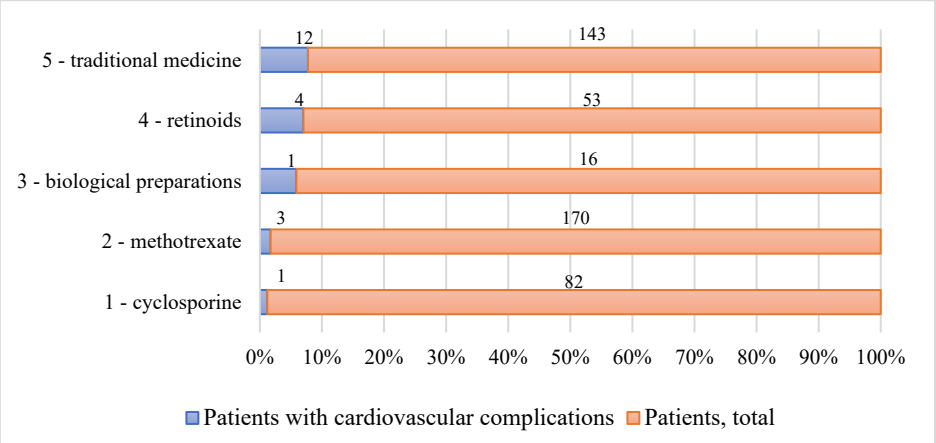

Figure 1. The number of complications in the cardiovascular system for each group of patients

Among the 7,027 patients observed, only 37 experienced gastrointestinal complications. This data supports the conclusion that a combination of NSAIDs and selective COX-2 inhibitors is among the safest approaches for managing chronic inflammatory rheumatic conditions.

Conclusion

The discovery of cyclooxygenase-2 (COX-2) and the use of selective COX-2 inhibitors alongside nonsteroidal anti-inflammatory drugs (NSAIDs) have become central to preventing musculoskeletal diseases. However, the potential gastrointestinal side effects must be carefully managed. Our study found no evidence suggesting that celecoxib causes fewer gastrointestinal issues than traditional NSAIDs. Additionally, COX-2 inhibitors did not show superior effectiveness in improving symptoms or preventing inflammatory arthritis compared to conventional NSAIDs. Based on this, it was concluded that COX-2 inhibitors do not offer significant advantages over standard NSAIDs. Moreover, aspirin, which is often prescribed for older patients, reacts with COX-2, converting it to COX-1, effectively functioning as a traditional NSAID. The research further indicates that combining NSAIDs with COX-2 inhibitors may reduce recurrence, ulceration, and pain symptoms. As a result, traditional NSAIDs, particularly when combined with a proton pump inhibitor, remain a reliable option for preventing and managing inflammatory arthritis and musculoskeletal disorders.

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Ethics Statement: None

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