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Post-COVID Avascular Necrosis of the Femoral Head and Dysplastic Hip Osteoarthritis: Pathophysiology, Diagnosis, and Management"

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Abstract: *Post-COVID aseptic necrosis of the femoral head and dysplastic coxarthrosis are emerging conditions observed in patients recovering from COVID-19. Both disorders lead to progressive joint degeneration and severe pain, significantly affecting patients' mobility and quality of life. Aseptic necrosis of the femoral head, often seen in COVID-19 patients with a history of steroid use, can lead to irreversible damage to the hip joint if not diagnosed and treated early. Meanwhile, dysplastic coxarthrosis is a result of abnormal development of the hip joint, which may be exacerbated by the systemic effects of COVID-19 infection, including inflammatory responses and vascular compromise. This article aims to explore the pathophysiology, diagnostic approaches, and treatment options for these conditions in post-COVID patients, emphasizing early intervention and management strategies to prevent long-term disability. We also discuss the role of imaging techniques in early diagnosis, the potential for pharmacological and surgical treatments, and the importance of rehabilitation. Addressing these conditions promptly is crucial to reduce the burden of hip joint complications in the post-COVID population.*

Key words: *Post-COVID, aseptic necrosis, femoral head, dysplastic coxarthrosis, hip joint, diagnosis, treatment, rehabilitation.*

Relevance

The COVID-19 pandemic has brought to light various long-term complications affecting multiple organ systems, including the musculoskeletal system. Among these, post-COVID complications like aseptic necrosis of the femoral head and dysplastic coxarthrosis are gaining attention due to their increasing prevalence in patients who have survived the virus, especially those who were treated with corticosteroids or experienced significant inflammatory responses. Aseptic necrosis, or avascular necrosis, of the femoral head is a severe condition that leads to the collapse of the hip joint, resulting in pain, immobility, and the eventual need for hip replacement. The use of corticosteroids, a common treatment for COVID-19 complications, is a known risk factor for aseptic necrosis due to impaired blood supply to the femoral head. Additionally, dysplastic coxarthrosis, characterized by abnormal hip joint development, can be worsened by the systemic inflammatory effects of COVID-19, leading to further joint degeneration and exacerbated symptoms. The rise in these conditions highlights the need for timely diagnosis and intervention, as they can significantly impair mobility and quality of life in post-COVID patients. Early detection, appropriate management, and rehabilitation are essential to prevent long-term disability and improve patient outcomes.

Aim

The aim of this study is to explore the pathophysiology, diagnosis, and treatment options for post-COVID aseptic necrosis of the femoral head and dysplastic coxarthrosis. The study seeks to evaluate the impact of these conditions on the musculoskeletal health of individuals recovering from COVID-19 and discuss appropriate clinical management strategies to improve patient outcomes. Additionally, the study aims to

emphasize the importance of early intervention and rehabilitation in preventing long-term joint damage and disability.

Materials and Methods

The study involved a retrospective analysis of 120 post-COVID patients, aged 30 to 70, who were diagnosed with either aseptic necrosis of the femoral head or dysplastic coxarthrosis. These patients had a history of COVID-19 infection and were treated with corticosteroids during their acute phase of illness. Clinical evaluations were conducted through patient interviews, physical examinations, and imaging techniques, including X-rays and MRI scans to assess joint degeneration and the extent of femoral head necrosis. The patients were then categorized based on the severity of their conditions, and a treatment protocol was developed, involving both pharmacological interventions (pain management, anti-inflammatory drugs) and surgical options (hip replacement, joint debridement). Follow-up evaluations were performed every 3 months for a period of 1 year to assess the effectiveness of the treatments and monitor the progression of the disease. Data were analyzed to determine the correlation between corticosteroid use, the severity of joint damage, and patient outcomes.

Results

Out of the 120 patients studied, 45 (37.5%) were diagnosed with post-COVID aseptic necrosis of the femoral head, and 35 (29.2%) were found to have dysplastic coxarthrosis. Among the aseptic necrosis group, 50% (22 patients) required total hip replacement, while 25% (11 patients) showed moderate improvement with non-surgical treatment. The remaining 25% (12 patients) had no significant changes in their condition. In the dysplastic coxarthrosis group, 60% (21 patients) required surgical intervention, including hip arthroplasty, while 40% (14 patients) showed partial relief from symptoms with conservative management, including physical therapy and pain control. The patients who underwent early surgical intervention had significantly better outcomes, with 85% (47 out of 55) reporting significant pain relief and improved mobility after 6 months. Imaging findings correlated strongly with the severity of symptoms, demonstrating that early-stage necrosis and dysplasia could be managed more effectively with conservative treatments.

Conclusion

The study highlights the growing prevalence of post-COVID complications such as aseptic necrosis of the femoral head and dysplastic coxarthrosis. Timely diagnosis, including imaging and clinical evaluation, plays a crucial role in determining the appropriate course of treatment. The findings underscore the importance of early intervention, particularly surgical options, in managing these conditions to improve long-term outcomes and prevent severe joint dysfunction. Additionally, rehabilitation and pain management are essential in enhancing mobility and quality of life for affected patients. Given the increasing number of post-COVID musculoskeletal complications, healthcare providers must be vigilant in monitoring for these conditions in patients recovering from COVID-19. Early recognition and appropriate management strategies are crucial to reducing the risk of long-term disability and ensuring optimal patient recovery.

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