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LETTER TO THE EDITOR

Whole-body MRI in the early detection of multifocal osteonecrosis

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To the Editor,

We read with great interest the paper by Huang and colleagues entitled "Value of whole-body magnetic resonance imaging for screening multifocal osteonecrosis in patients with polymyositis/dermatomyositis" published recently in *BJR*.[1]

In that paper, the authors accurately underlined the benefits offered by whole-body MRI as a reliable tool for the early identification of osteonecrosis in patients with polymyositis and dermatomyositis. They demonstrated that osteonecrosis is a common complication in patients treated with different therapies including high doses of corticosteroids. The authors found a correlation between the occurrence of osteonecrosis and the administration of corticosteroids; however, as suggested by them, the real incidence of osteonecrosis in these patients, as well as the clinical implications of its early diagnosis through whole-body MRI, remains unclear.

The use corticosteroids is one of the main risk factors for osteonecrosis, which is the result of thrombosis due to a drug-related hypercoagulable state. Corticosteroids have been successfully included in several treatments, especially for rheumatic and haematologic disorders. Clinicians have focused on the use of favourable toxicity therapy profiles to reduce the long-term side effects related to treatments. Nevertheless, osteonecrosis is probably one of the most underestimated complications for several reasons. First, it is not a life-threatening condition. Second, MRI is the best imaging modality to detect osteonecrosis but regional MRI allows studying a single site at a time as underlined by Huang and colleagues.[1] Finally, osteonecrosis may also be asymptomatic in case of epiphyseal locations, thereby remaining unknown as long as it progresses to articular surface collapse and osteochondral fragmentation, with the occurrence of secondary degenerative arthropathy.[2]

In the study by Huang and colleagues, the authors found osteonecrotic lesions in 11.6% of the patients, although most of the patients with newly diagnosed polymyositis/dermatomyositis did not receive corticosteroids. Of note, all patients with osteonecrosis received corticosteroids before the whole-body MRI scan. However, only 5 of 38 joints affected by osteonecrosis were symptomatic. Previous studies have demonstrated the high incidence of multifocal osteonecrosis in patients with lymphoma and the potential role of whole-body MRI in the early detection of osteonecrotic lesions in these patients.[3] In a recent study performed on patients with Hodgkin lymphoma treated by high doses of corticosteroids, whole-body MRI was able to detect very high incidence of osteonecrosis a few months after the start of treatment.[3] In that study, 57% of the patients with osteonecrosis were symptomatic and all of them had epiphyseal osteonecrotic lesions. Conversely, only one patient with epiphyseal osteonecrosis was asymptomatic, probably because osteonecrosis was located in the shoulder, which is conventionally considered a non-weight-bearing joint.[3] In their study, Huang and colleagues did not specify if osteonecrotic lesions were located in metadiaphyseal or epiphyseal regions, which could explain the low rate of symptomatic osteonecrosis. The management of osteonecrotic lesions is strictly related to their location since metadiaphyseal osteonecrosis has limited clinical consequences, as bone collapse does not occur, while the involvement of the articular surface might lead to osteochondral fragmentation and bone collapse.

Whole-body MRI is a radiation-free technique with high reliability in rheumatic and haematologic imaging.[4,5] Considering the high accuracy of MRI in the early identification of osteonecrosiswhole-body MRI allows all potential sites of osteonecrosis to be studied in a single examination and may improve the prognosis for the patients' joints. The early detection of epiphyseal osteonecrosis may provide an opportunity for treatment of the damaged joints before prosthetic replacement becomes the only treatment option.[6] Indeed, alternative and less invasive therapeutic strategies may be adopted in these patients, such as core decompression, bone grafting and osteotomies, or conservative therapies with the reduction of weight bearing on the affected joint, such as hyperbaric oxygen therapy, extracorporeal shock wave therapy, anticoagulative treatment or alendronate.[6] Among these, hyperbaric oxygen therapy has been shown to be particularly effective, as it stimulates angiogenesis, increases oxygen delivery to bone tissue and reduces marrow oedema, thereby improving venous drainage and increasing the available oxygen for ischaemic bone.[6]

In conclusion, we acknowledge the study by Huang and colleagues for highlighting a common and undervalued complication of treatments with high doses of corticosteroids. The scientific community should spread awareness about the high risk of osteonecrosis in patients treated with high doses of corticosteroids. We feel that whole-body MRI is a safe and reliable tool that should be used to monitor patients at high risk for osteonecrosis, as it allows for the early identification of patients with osteonecrotic lesions that should be promptly referred to orthopaedists to provide opportunities for early intervention. Furthermore, the absence of ionizing radiations is of paramount importance especially in patients undergoing repeated examinations. We believe that further studies should be performed to better identify the additional risk factors which might contribute to the occurrence of osteonecrosis in order to select patients who need to be strictly monitored.

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