

## Bone health, an often forgotten comorbidity in systemic lupus erythematosus: a comment on the new recommendations

We read with great interest the 2019 update of the European League Against Rheumatism (EULAR) recommendations for the management of systemic lupus erythematosus (SLE) published by Fanourakis *et al.*<sup>1</sup> We would like to compliment the authors with their efforts to formulate updated recommendations which will help to improve the management of patients with SLE. They focus on different domains and introduce new concepts on disease treatment and management. The recommendations also deal with comorbidities, a huge problem in SLE patients, providing recommendations for the management of the antiphospholipid syndrome, infections and cardiovascular disease risk assessment and management. As the authors underline, the management of comorbidities in SLE is a key target to reduce damage accrual, disability and mortality. However, we believe that also osteoporosis and fractures should be considered as a relevant comorbidity in patients with SLE and recommendations regarding the prevention and treatment of osteoporosis and fractures should be included in a future update of the EULAR recommendations for the management of SLE.

Osteoporosis and fragility fractures occur frequently among SLE patients, being also present in juvenile SLE patients, men and premenopausal women, population groups usually at low risk. SLE is associated with an increased risk for osteoporosis and vertebral fractures, with a prevalence of morphometric vertebral fracture ranging from 14% to 50% in patients with a mean age around 40.<sup>2</sup> In particular, a recent very large, population-based study on over 47 000 patients reported SLE to be associated to a twofold increased risk for fracture, threefold in case of lupus nephritis. Of great importance, this risk was only slightly attenuated by correction for glucocorticoid (GC) use.<sup>3</sup>

Fragility fractures are at reason included in the damage index and are associated to disability and reduced quality of life.<sup>4</sup>

The pathophysiology of bone involvement in SLE is complex, determinants of bone loss in SLE are various and accounting for the effects of inflammatory mediators, metabolic alteration, hormonal status, medications and altered habits (eg, sun exposure avoidance). Moreover, also disease activity has been linked to bone loss, in particular in terms of number of flares and high damage index, outcomes more reliable of a chronically active or more severe disease.<sup>5</sup>

There are unmet needs regarding bone health in SLE patients.

First, there are no clear indications for a careful screening for low bone mineral density and asymptomatic vertebral fractures in patients with SLE considering also traditionally low-risk subgroups of patients such as premenopausal females, males and young patients unless they are taking GCs following general GC-induced osteoporosis guidelines.<sup>6</sup>

Common risk assessment tools for fragility fractures like the fracture risk assessment tool (FRAX) score (<http://www.shef.ac.uk/FRAX>) do not include SLE but only rheumatoid arthritis as risk factor and, therefore, they are not accurate in the SLE context where they underestimate the risk. Moreover, using the FRAX tool for calculating fracture risk in SLE patients has additional disadvantages: the tool does not comprise the evaluation of the risk factors for falls and the presence of prevalent vertebral deformities, while prevalent vertebral fractures are frequent

in SLE patients. In addition, the FRAX tool takes GC use but not (cumulative) GC dosage into account. Finally, the FRAX instrument was developed for postmenopausal women only and is not valid in individuals previously treated with bisphosphonates. Only a recent new tool which was developed in Italy, the derived FRAX (DeFRA) (<https://defra-osteoporosi.it/>), does include SLE in the risk assessment algorithm. Of note, both those scores are validated for patients above the age of 40 and 50 years.

In our opinion, future recommendations for the management of SLE need to address these issues acknowledging the problem and giving indications for a more precise evaluation and management of comorbidities such osteoporosis and fracture risk in SLE patients besides recommendations for other important comorbidities which are already captured in the 2019 updated recommendations.

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