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Perspective

Assessment of Atherosclerosis and Impaired Bone Health in Patients with SLE

Margret Marina*

Department of Clinical Medicine, University of Cambridge, Cambridge, USA

DESCRIPTION

Osteoporosis and cardiovascular disease (CVD) have been recognised in the general population not just as coexisting ailments of the elderly, but also as inter-related disorders affecting both sexes. As a result, the hypothesis of a shared but unknown link in the pathophysiology of both organisms appears tempting. Previously, the osteoprotegerin (OPG)/receptor activator of nuclear factor kappa-B ligand (RANKL) axis was proposed as a common denominator. Indeed, the relevance of bone metabolism markers such as OPG or osteopontin to CVD has already been demonstrated. Furthermore, OPG-deficient mice had increased atherosclerosis, vascular calcification, and osteoporosis, as well as elevated circulating RANKL levels.

Some of the research participants had their carotid and/or femoral plaques detected using ultrasonography. Furthermore, intima-medial thickness (IMT) scores were measured at the same places in many SLE patients, and mean values were derived as previously described. An artery wall thickening was defined as an IMT score greater than 0.90 mm. In particular, the carotid (common carotid, bifurcation, and internal carotid) and femoral (common femoral and superficial femoral) arteries were assessed by ultrasound in each participant.

As previously described, the mean carotid artery IMT was characterised as the average of 36 IMT readings, and the mean femoral artery IMT was the average of 24 IMT readings. Plaque development was characterised as a focal protrusion that extended beyond 50% of the neighbouring wall. All study participants had their bone mineral density (BMD) measured using a dual X-ray absorptiometry QDR4500 (Hologic). BMD measurements were taken on the spine or hip, depending on age. Thus, BMD was assessed on the spine in patients aged 65 and younger, and on the hip in those aged 65 and older. The existence of osteoporosis or osteopaenia in postmenopausal women and males 50 years old was described by the WHO classification system as a T-score less than 2.5 SDs and 1 SDs, respectively, at either location of measurement.

The low BMD was established for premenopausal patients or men aged 50 years, are also considered to be poor BMD for chronological age. Semiquantitative examination of lateral radiographs of the thoracic and lumbar spine was used to identify asymptomatic vertebral fractures. Vitamin D deficiency was defined as blood 25-OHD (hydroxy- D) levels less than 20 ng/mL, while excessive PTH (parathormone)levels were set at 65 pg/mL, as previously proposed.

Demographic data (age, gender, and BMI), clinical and laboratory findings, disease activity/damage scores (SLEDAI: Systemic Lupus Erythematosus Disease Activity Index, SLICC: Systemic Lupus International Collaborating Clinics), current and prior medications, traditional risk factors for atherosclerosis and osteoporosis, and bone metabolism parameters were all meticulously recorded. All patients were also tested for standard CVD risk variables such blood cholesterol, triglyceride, and homocysteine levels, as well as bone metabolism markers like PTH and 25-OHD serum levels. Fasting conditions were followed when blood was obtained in the morning.

Traditional CV risk factors as well as disease-related characteristics have been demonstrated to account for plaque formation and/or artery wall thickness in SLE patients. BMD levels and atherosclerosis markers were found to be consistent with prior findings in SLE and Sjogren's syndrome.

Other research on SLE, however have not found a link between the two. The presence of hydroxyapatite crystals in atherosclerotic lesions, as well as osteoblast or osteoclast-like cells in the artery wall, as well as changes in the OPG/RANKL axis and Wnt signalling, may provide some pathophysiological insights relating CVD and osteoporosis.

Correspondence to: Margret Marina, Department of Clinical Medicine, University of Cambridge, Cambridge, USA, E-mail: marinamargret@gmail.edu

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