Depression and Osteoporosis: A Study of 100 Patients

To the Editor: Osteoporosis is a disease of growing impact as the world population becomes older. Identification of factors that highlight its presence is important for early diagnosis and treatment. Body mass index, gender, sedentary behavior, smoking, and postmenopausal status are some of the factors that are taken into account when a physician assesses for this disease.[1] Depression should also be probed in this context.[2] An increased risk of osteoporosis in depressed patients is very important because it may lead to an increased fracture rate and premature frailty.

Method. To look for association of depression with osteoporosis, we studied 100 patients from a single rheumatology center. The project was approved by the local Committee of Ethics in Research, and all participants signed consent forms. The patients completed a questionnaire on depression (Center for Epidemiologic Studies Depression Scale [CES-D]),[3] the 12-Item Short-Form Health Survey (SF-12) for quality of life,[4] and the Katz index, which measures ability to perform activities of daily living independently.[5] Densitometry and epidemiologic data were obtained through chart review. Densitometry should be done at least 6 months before data collection by dual-energy x-ray absorptiometry.

The studied sample was 93% women, 90% were of European descent, 38% were smokers, and the mean age was 69.1 ± 8.1 years. Thirty-five percent had a diagnosis of osteoporosis, and 36% had osteopenia according to World Health Organization criteria.[6] All studied women were postmenopausal.

Results. Studying hip bone mass through *T* score and bone density measured in g/cm^2 by densitometry and correcting the values for age, gender, tobacco use, and ethnic background through multiple regression revealed no association with SF-12 or Katz index (all P = NS). However, a negative association with depression (CES-D score) was seen (P = .04 for *T* score and P = .02 for bone density measured in g/cm^2). Studying spinal bone mass showed no association of variables with either *T* score or bone density in g/cm^2.

Our results show association of depression with low bone mass at hip but not at spine. Low mineral density at hip is a predisposing factor for hip fracture, which can be an overwhelming disease, with an acute mortality rate of about 5% and a 1-year mortality rate of 15%–25%.[7] It has been shown that 20% of patients who suffer a hip fracture completely lose the ability to walk.[7] These fractures may also have a serious negative impact on the patient's mental state.

There are some explanations for the link between depression and osteoporosis. First, depressed individuals may have low levels of physical activity, reduced sunlight exposure (resulting in deficiency of vitamin D), and poor nutrition.[8] Second, they may also have increased levels of cortisol and proinflammatory cytokines such as interleukin (IL)-1, IL-2, IL-6, and tumor necrosis factor-α that are associated with greater bone reabsorption.[8] Finally, the use of antidepressants probably also contributes to its appearance. Serotonin (5-HT) reuptake inhibitors (SSRIs) are some of the most commonly used antidepressants. Functional 5-HT transporters have been found in the bone, so these medications may have implications for bone health, although studies in this area are still emerging.[8] Williams et al[9] found that SSRI use was associated with 5.6% lower bone mineral density at the femoral neck, with no differences detected at the spine corroborating our findings. Unfortunately, we have no data on the use of antidepressants in our study. Other central nervous system–active medications such as opioids, antipsychotics, anticonvulsants, and benzodiazepines increase the risk of falls and fractures, mainly in the elderly.[9]

We concluded that depression is a risk factor for low mineral density in the hip. Doctors who care for depressed patients should institute actions to prevent, to diagnose early, and to encourage treatment for osteoporosis.

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Potential conflicts of interest: None.

Funding/support: None.

Published online: May 18, 2017.

Prim Care Companion CNS Disord 2017;19(3):16l02062
https://doi.org/10.4088/PCC.16l02062