Osteoporosis and Vitamin D Metabolites

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Dear Sir,

Recently, an interesting and well-reasoned Editorial on osteoporosis and 1,25(OH)₂D₃ appeared in Nephron 44:161–166 (1986). It was based on a paper by Berlyne et al. [1] that postulated that functional annulment of the kidney with age could be an important factor in the genesis of osteoporosis. A few years ago, we considered the same possibility [2], but we have since concluded that it is erroneous.

Berlyne et al. [1] report that in their osteoporosis population (mean age 76.8 years), serum parathormone (PTH) is higher and calcitonin (CT) lower than in a healthy population with a mean age of 18. Today it is recognized that PTH increases and CT decreases with age [3, 4]. As for basal CT, no variations in osteoporosis have been found when patients are compared with a group of similar age [5]. PTH is reported to be increased by some authors, but only in 15% of patients [6]. Other authors communicate that in osteoporosis patients as a group, there is a reduction in the N-terminal fragment [7]. More recently, the middle molecule has also been found to be decreased [8].

The role of 1,25(OH)₂D₃ remains controversial, as was indicated in the Editorial, and no firm conclusions can be made. Although some authors report changes in the levels of vitamin D metabolites, others do not (see Editorial). Moreover, even if there are differences in the degree of osteoporosis with intestinal malabsorption of calcium, 1,25(OH)₂D₃ was shown to be ineffective in alleviating it [9]. In secondary osteoporosis, 1,25(OH)₂D₃ not only did not increment bone mass, but was found to be counterproductive [10].

Most studies of involutive osteoporosis do not indicate variations in kidney function when patients are compared with control groups of similar age and sex [11]. This does not mean that the association of diminished kidney function with low 1,25(OH)₂D₃ and decreased intestinal calcium absorption does not contribute to osteoporosis in these patients. What it means is that if no differences in kidney function are found in comparative studies of osteoporosis patients and controls of similar age, the decline in renal function with age is probably not an important factor in the development of osteoporosis. If it were, osteoporosis would be the most important bone lesion in uremia, and histomorphometric studies show that this is not the case.

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