

Risk Factors of Osteoporosis in Rheumatoid Arthritis Patients; Glucocorticoid, Inactivity, or Nutrient Deficiencies

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Increased risk of bone loss and fracture in patients with rheumatoid arthritis (RA) is well-known by previous studies [1,2]. This increased risk for osteoporosis and fracture is explained by several causes. To begin with, the corticosteroids often prescribed for the treatment of RA can trigger significant bone loss. In addition, pain and loss of joint function caused by the disease activity and deformity can result in inactivity, further increasing osteoporosis risk [1,2]. Some studies also show that bone loss in RA may occur as a direct result of the disease [3]. In addition to the factors described above, there are a number of traditional risk factors for fracture that are not specific to RA because onset of RA tends occur later in life of women, with a peak around the age of menopause. These include being female, increasing age, a postmenopausal state, being underweight, cigarette smoking, high alcohol intake and increased falls risk [1,4].

Progress in the diagnosis and evaluation of osteoporosis has led to a greater awareness of this major health problem of RA patients. However, recent studies have suggested that, despite our growing understanding of these diseases, screening and management for preventing bone loss in RA patients are underutilized [5,6]. Patients with RA, especially those taking corticosteroids or with persistent high disease activity, must have their bone mass assessed with bone mineral density (BMD) testing [7]. RA patients at high risk for the development of osteoporosis and related fractures should receive education for diet and supplements in calcium and vitamin D as well as an anti-osteoporosis treatment [7].

The evidence of a link between dietary intakes and fracture risk is not sufficiently secure to make firm recom-

mendations, with the exception of calcium and vitamin D. For other aspects of the diet, accumulating evidence suggests that current healthy-eating advice to decrease sodium intake, to increase potassium intake, and to take more fresh fruits and vegetables may be beneficial [8]. Several components of fruits and vegetables are possibly positively linked at levels within the normal range consumed (e.g., alkalinity, vitamin K, phyto-oestrogens, potassium, magnesium, boron). Evidence from physiological and clinical studies is largely lacking, and the data are often difficult to interpret because of potential size-confounding or bone remodelling transient effects.

Patients with RA are considered to be at nutritional risk for many reasons. One cause of poor nutritional status in this patient population is thought to be the result of the weight loss and cachexia linked to cytokine production [9]. In patients experiencing chronic inflammation the production of cytokines, such as interleukin-1 β and tumor necrosis factor- α , increases resting metabolic rate and protein breakdown. The effects of RA medications that are taken long-term may also compound these nutritional problems. Additionally, prolonged use of non-steroidal anti-inflammatory drugs may be associated with conditions such as gastritis or peptic ulcer, frequently reducing absorption of nutrients. The most commonly deficient vitamins and minerals in RA patients are vitamin B6, vitamin B9 (folic acid), vitamin B12, vitamin C, vitamin D, vitamin E, calcium, magnesium, zinc and selenium [10]. Although, food is always the preferred source for vitamins and minerals, it may be essential to use supplementation to assist in counterbalancing the outlined deficiencies and improving nutritional status for patients

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with RA. However, to date, there have been no human clinical trials that convincingly prove or disprove the efficacy of antioxidant use.

Another study to identify the association between nutrient intake and bone BMD in RA patients was performed recently [11]. The authors used Korean National Health and Nutrition Examination Survey (K-NHANES IV, V) database and identified 220 postmenopausal RA patients and 320 controls. In the comparison between RA patients and non-arthritis people, there was no significant difference in the dietary nutrient intake. In the subgroup analysis for RA patients, the authors found insufficient intake of nutrients such as β -carotene, potassium, riboflavin, and vitamin C in postmenopausal RA patients was associated with low bone density. It showed the importance of dietary intake of fresh fruits and vegetables in RA patients to prevent bone loss.

Interesting result was about the β -carotene. The dietary intake of β -carotene was low in postmenopausal RA patients with osteoporosis compared to that of patients without osteoporosis [11]. Carotene is a carotenoid compound responsible for giving fruits and vegetables their orange pigment. It is a powerful antioxidant to help protect against cancer and aging. The β -carotene is converted to vitamin A as needed in our bodies. Vitamin A supplements took a big issue in 2002 when the Nurses' Health Study linked high intakes to hip fractures in postmenopausal women [12]. Specifically, in those consuming at least 6,600 IU of "preformed" vitamin A a day from food and supplements, the risk of hip fracture nearly doubled. However, some studies indicated vitamin A intake affects negatively on bone mineral density as long as the serum 25(OH)D concentration is low or vitamin D intake is insufficient [13,14]. Therefore, the potential bone problems are posed only by preformed vitamin A, not β -carotene and it is not important to people taking enough vitamin D.

This study, however, is not conclusive that those nutrients intake have key role in the bone health of RA patients because of some limitations of this study; small sample size, cross-sectional study design, and lack of data about vitamin D intake, corticosteroids use, and disease activity. Nevertheless, as the authors pointed out, this study is meaningful to investigate the overlooked topic of nutrition in RA patients for their bone health. Further study with prospective observational study and interventional study will provide more definite association between nutrient intake and bone health in RA patients.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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