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Editorial

Celiac Disease and Reduced Bone Mineral Density: A Link Deserving Attention

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EDITORIAL

Osteoporosis is defined as a systemic skeletal disorder with reduced bone mass density (BMD) and micro-architectural deterioration associated with higher bone fragility and fracture risk. In contrast, in osteopenia the BMD is also reduced, but without a significantly increased risk of bone fractures [1]. Common risk factors and conditions associated with osteoporosis and osteopenia are menopausal state, increased alcohol intake, smoking habit, previous bone fractures and chronic use of drugs potentially affecting bone metabolism (such as corticosteroids and SSRI) [1]. Some reports have linked the chronic use of proton pump inhibitors to an increased risk of bone fractures [2], potentially including also this class of drugs amongst risk factors for osteoporosis.

Celiac disease (CD) is an immune-mediated enteropathy triggered by the ingestion of gluten-containing grains in genetically susceptible persons, which is efficaciously treated with a strict life-time diet free from food containing gluten. CD affects about 1% of the Western population and it represents one of the most frequent causes of chronic intestinal malabsorption [3], as a result of small intestinal injury, leading sometimes to systemic disorders as for example iron deficiency anemia and altered bone metabolism, mainly due to nutritional deficiencies [3].

In the last twenty years, the coexistence of bone compromise and CD has been thoroughly investigated: low bone mass, osteoporosis, secondary hyperparathyroidism, and even osteomalacia may be observed in patients with CD [4].The bone damage in CD is probably multi factorial caused by local and systemic mechanisms: (i) First, calcium is malabsorbed due to mucosal atrophy; (ii) as a consequence secondary hyperparathyroidism occur to contrast hypocalcemia, leading to bone degradation by osteoclasts. (iii) As a result, calcium levels are normalized, but the price to pay is osteopenia or osteoporosis as a consequence of this bone remodelling. (iv) Finally, pro-inflammatory cytokines (interleukin-1, interleukin-6, tumor necrosis factor alpha) may increase the ratio between the ligand of receptor activator of NFkB and osteoprotegerin, a member of the tumor necrosis factor receptor family, again increasing the bone resorption by osteoclasts [4,5].

The prevalence of osteopenia or osteoporosis in patients with CD ranges from 40% to 75% [6]. This high prevalence makes reasonable to offer patients with newly diagnosed CD a screening investigation for BMD alterations. The currently accepted gold standard for BMD assessment is Dual Energy X-ray Absorptiometry (DEXA), an accurate, non-invasive method [7]. However, current guidelines suggest todo so only for specific subgroups of CD patients, as peri-post menopausal women, males aged more than 55 years, patients previous with fragility fractures [8].

A very recent paper observed overall BMD alterations in 60.3% of newly diagnosed adult celiac patients [9]: amongst the 214 adult newly diagnosed CD patients screened by Dual Energy X-ray Absorptiometry (DEXA), 42.5% and 17.8% CD patients had osteopenia and osteoporosis, respectively. Interestingly, this study further showed that underweight, male gender and age of 45 years were predictors for the coexistence of osteoporosis in newly diagnosed CD, thus indicating other subgroups of CD patients in whom DEXA scan might be beneficial. In particular, underweight patients had a 7.4-fold higher probability of presenting osteoporosis compared to patients with normal weight raising attention on the assessment of body mass index in the newly diagnosed CD patients.

In our opinion, the awareness about the high prevalence of impaired BMD in CD patients should be increased in order to offer to these patients a complete diagnostic work-up comprising the BMD assessment. Bone alterations, when present, may be efficaciously treated with calcium supplementation together with a strict gluten-free diet. This approach would ultimately lead to an early diagnosis of potentially present BMD alterations, reduce the risk of fractures and increase quality of life in CD patients.

GRANT

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REFERENCES

1. Kanis JA on behalf of the World Health Organization Scientific Group. Assessment of osteoporosis at the primary health-care level. World Health Organization Collaborating Centre for metabolic bone diseases. 2007.
2. Wang L, Li M, Cao Y, Han Z, Wang X, Atkinson EJ, et al. Proton Pump Inhibitors and the Risk for Fracture at Specific Sites: Data Mining of the FDA Adverse Event Reporting System. Sci Rep. 2017; 7: 5527.
3. Fasano A, Catassi C. Clinical practice. Celiac disease. N Engl J Med. 2012; 367: 2419-2426.
4. Zanchetta MB, Longobardi V, Bai JC. Bone and Celiac Disease. Curr Osteoporos Rep. 2016; 14: 43-48.
5. Tilg H, Moschen AR, Kaser A, Pines A, Dotan I. Gut, inflammation and osteoporosis: Basic and clinical concepts. Gut. 2008: 57; 684-694.
6. Scott EM, Gaywood I, Scott BB. Guidelines for osteoporosis in coeliac disease and inflammatory bowel disease. Gut. 2000; 10: 689-698.
7. Fouda MA, Khan AA, Sultan M. Evaluation in management of skeletal health in celiac disease: position statement. Can J Gastroenterol. 2012; 26: 819-829.
8. Hansen MA, Hassager C, Overgaard K. Dual-energy x-ray absorptiometry: a precise method of measuring bone mineral density in the lumbar spine. J Nucl Med. 1990; 31: 1156-1162.
9. Galli G, Lahner E, Conti L, Esposito G, SacchiMC, Annibale B. Risk factors associated osteoporosis in a cohort of adult coeliac patients prospectively diagnosed. United European Gastroenterol J. 2017; 5; A0613.

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