The incidence of undiagnosed coeliac disease in patients presenting with stress fracture to a tertiary referral centre

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Stress fracture aetiology is often multifactorial and laboratory blood tests (LBT) can unmask underlying metabolic bone risk factors and disorders. Coeliac disease (CD) is associated with low bone mineral density and an increased risk of fractures (1). In addition, there are rare reports of occult CD presenting with stress fractures (2). Anti-tissue transglutaminase antibody (TTG) testing has a high sensitivity and specificity for CD and is used as a screening test (3). This report examines the incidence of undiagnosed CD in patients presenting with stress fractures to a Sport and Exercise Medicine (SEM) clinic.

A retrospective analysis of 100 consecutive patients with radiologically proven stress fractures presenting to a single tertiary NHS SEM clinic was performed. Age, gender, fracture site, co-morbidities, TTG result and subsequent investigations were examined. Records were reviewed to confirm LBT, including TTG, had been performed at the time of diagnosis.

Seventy patients (70%) were female and mean age was 37 years (range 18-69). Metatarsal (35%) and tibial (21%) fractures were most common. TTG was performed in 85 patients. Two patients were excluded due to pre-existing CD. Five patients (5/83 (6%), mean age 38 years (28-57), 80% female) had a positive TTG; three of whom had CD confirmed by endoscopic biopsy and two are awaiting investigation. Four patients with a positive TTG underwent dual energy X-ray absorptiometry, with osteopenia (T-Score between -1.0 and -2.5) found in 75% of cases, although only one had a Z-score less than -2.0.

In this cohort, the incidence of undiagnosed CD was between 3.6% to 6%, with a prevalence between 5% to 7%, approximately 5-fold higher than UK population estimates. We recommend that TTG screening should be performed in all patients presenting with stress fractures to identify underlying CD. Further work is required to confirm this association and elucidate potential underlying mechanisms.

References:

1. Heikkilä K, Pearce J, Mäki M, Kaukinen K. Celiac disease and bone fractures: a systematic review and meta-analysis. J Clin Endocrinol Metab. 2015;100(1):25-34.
2. Gilbody J, Trevett M. Coeliac disease presenting with bilateral fibular stress fractures. Foot Ankle Surg. 2009;15(2):96-100.
3. Downey L, Houten R, Murch S, Longson D, Group GD. Recognition, assessment, and management of coeliac disease: summary of updated NICE guidance. BMJ. 2015;351:h4513.