Artigo Original
Original Article

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Avaliação da densidade mineral óssea em doentes com fibrose quística

Evaluation of bone mineral density in cystic fibrosis patients

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Resumo

A esperança de vida dos doentes com fibrose quística (FQ) tem vindo a aumentar, sendo mais frequente a identificação de osteoporose. A patogénese de uma baixa densidade mineral óssea (DMO) na FQ parece ser multifactorial e o objectivo deste trabalho foi avaliar a prevalência de baixa DMO num grupo de doentes com FQ e a sua correlação com outros parâmetros avaliados.

O estudo incluiu 22 doentes com FQ com idades compreendidas entre os 14 e os 45 anos (média 26,3), dois dos quais transplantados pulmonares. A DMO foi avaliada por densitometria óssea ao nível da coluna lombar e do colo do fémur. Estes dados foram correlacionados com os valores séricos de 25-hydroxivitamina D, o IMC e o volume expiratório máximo forçado no primeiro segundo (VEM).

Abstract

Patients with cystic fibrosis (CF) have an increasing life span and osteoporosis has become a more recognised problem in these patients. The pathogenesis of low bone mineral density (BMD) in CF seems to be multifactorial and the aim of this study was to assess the prevalence of low BMD in a group of CF outpatients and to relate the findings with the variables studied.

The study included 22 patients aged between 14 and 45 years (mean age 26.3). Two of the subjects were lung transplant patients. BMD was assessed by dual-energy X-ray absorptiometry (DEXA) at the lumbar spine (LS) and femoral neck (FN). This data was correlated with serum 25-hydroxy vitamin D (25-OHD) levels, BMI and the forced expiratory volume in one second (FEV_1).

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Os valores da DMO (*Z-score* e *T-score*) variaram entre 0,6 e -6 e entre 0,5 e -6,7, respectivamente, a nível da coluna lombar e entre 0,6 e -3,9 e 0,6 e -4,1 a nível do colo do fémur. A média das concentrações séricas de 25-(OH)D (12,57 ng/ml) encontrava-se no limite inferior da normalidade (10-60 ng/ml). Em média os doentes não apresentavam malnutrição mas os valores de IMC variam entre 15,2 e 33,7 kg/m^2. Relativamente à função pulmonar, 64% dos doentes apresentavam VEM inferior a 80% e, destes, quatro tinham valores inferiores a 40%. Foi encontrada uma correlação positiva entre valores baixos de DMO e VEM, assim como entre valores de DMO e 25-OHD. Não houve correlação linear entre IMC e DMO.

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Palavras-chave: Fibrose quística, densidade mineral óssea, vitamina D.

BMD (Z-score and T-score) ranged from 0.6 to -6 and from 0.5 to -6.7 at LS; at FN the scores ranged from 0.6 to -3.9 and from 0.6 to -4.1. The mean serum 25-OHD concentration (12,57 ng/ml) was at the low end of the normal range (10-60 ng/ml). On average patients did not present with malnutrition, however BMI ranged from 15.2 to 33.7 kg/m^2. Lung function status was assessed by FEV_1; 64% of patients had FEV_1 below 80% and within this group four patients had a FEV_1 under 40%.
There was a positive correlation between low BMD and 25-OHD concentrations and also between BMD and FEV_1. There was no linear correlation between BMD and BMI.

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Key-words: Cystic fibrosis, bone mineral density, vitamin D.

Introduction

Low bone mineral density was first recognised to occur in patients with Cystic Fibrosis (CF) in the late 1970s[1] and much research has been performed investigating the prevalence, natural history, prevention and treatment of CF-related low bone mineral density (BMD).

The aetiology of low BMD in CF patients is likely to be multifactorial and includes malabsorption of vitamins and minerals, hormonal deficiencies, systemic glucocorticoid use, inflammatory cytokines in moderate/severe lung disease, nutritional status, decreased physical activity and CF-related diabetes[2].

Prevention and recognition of low BMD is important as the clinical consequence of fragility fracture can impact adversely on the health of the individuals. Vertebral and rib fractures are particularly detrimental, as sputum clearance can be compromised, resulting in pulmonary exacerbations. Furthermore, it is becoming increasingly common for patients to be refused lung transplantation if they have low BMD.

The purpose of this study was to assess bone mineral density in a cystic fibrosis outpatient clinic population and to investigate the relationship between BMD and forced expiratory volume in one second (FEV_1), body mass index (BMI) and 25-hidroxivitamin D (25-OHD) serum levels.