**WS13.1** The effect of PPI usage on bone health in children with cystic fibrosis (CF)

M.F. Roddy1,2, B. Elnazi2, P. Greally2, 1AMCH, Clinical Nutrition and Diabetics, Dublin, Ireland; 2AMCH, Cystic Fibrosis Department, Dublin, Ireland

Introduction: The FDA recently issued a broad safety communication regarding the possible increased risk of osteoporosis-related bone fracture with the use of PPI’s. PPI’s are regularly used in CF for treatment of GORD and to help with the efficiency of PERT. And as osteoporosis is a co-morbidity of CF we aimed to assess if there was any relationship between PPI and bone density in children with CF.

Methods: A retrospective review of PPI usage and dxa scans was conducted. Sixty-four children with mean age of 11 (1.8 SD) were included in study. PPI usage and duration was recorded. Dxa scans were carried out on the Lunar DPXL-PED. Bone mineral density (BMD) was recorded and bone mineral apparent density (BMAD) was calculated. FEV1 was also recorded. Minitab Statistical Package was used to analyse the data.

Results: Twenty-two (35%) of children were on PPI’s. Duration of use ranged from 1 to 4 years. PPI usage had a marginally significant negative effect on BMD [Z score mean of −0.31 (no PPI) and –0.94 (on PPI), p = 0.05]. PPI had no effect on BMAD [Z score of 0.17 (no PPI) and –0.37 (on PPI), p = 0.08]. The duration of PPI had no influence on BMD or BMAD (p = 0.71 and p = 0.51). There was no difference in FEV1 between the two groups (means of 75% and 76%, p = 0.84).

Conclusion: PPI’s may be prescribed more frequently in sicker patients and thus could explain the marginal difference found between groups. However this is not the case here as FEV1 did not differ. Therefore further larger studies are needed in this area. In the meantime, clinicians should be aware of their potential risk when considering PPI therapy and should use the lowest effective dose and duration necessary.

**WS13.2** Cystic fibrosis bone disease: is there a need for an earlier evaluation?

F. Majio, A. Allemand2, F. Alghisi1, E. Montermitro1, S. Bella1, R. Giampaolo2, V. Lucidi1,1 Bambino Gesu Children’s Hospital, Cystic Fibrosis Unit, Rome; Italy; 2Bambino Gesu Children’s Hospital, General Pediatrics, Rome, Italy

Introduction: While even recent data confirm that osteopenia and osteoporosis are very common in adults with cystic fibrosis (CF), no data are available about bone status in children. Quantitative bone ultrasound (QUS) has been used as a method to identify reduced bone mineral status in children with disturbance of growth or disorders affecting bone health. QUS has also been used in adults with CF showing good specificity.

Methods: We performed phalangeal quantitative ultrasound examination in patients with classical CF aged 3 to 6 years and in a group of control. The device used (DBMS Sonic, IGEA, Carpi, Modena, Italy), based on the transmission of ultrasound through the proximal phalangeal diaphysis calculates raw data and Z-scores for amplitude-dependent speed of sound (AD-SoS) and bone transmission time (BTT).

Results: We enrolled 30 patients with CF aged 3 to 6 years (15 males, 15 females, mean age 4.7±1.7 years) and 100 non-CF outpatients (46 males, 54 females, mean age 4.3±1.8 years) coming to hospital for acute events (mainly acute cough). AD-SoS value was similar in both CF and control groups (Z-scores −0.1±1.7 and 0.3±1.1, respectively) whereas BTT was significantly lower in CF group than in control group (Z-scores −0.07±0.8 and 0.24±0.7, respectively, p = 0.05).

Conclusion: Although our data need to be supported by larger studies we found significantly lower BTT values in children with cystic fibrosis than in healthy children. In the absence of risk factors for osteoporosis such as diabetes, glucocorticoid use, malnutrition this result may reflect the role of CFTR dysfunction on bone tissue suggesting the need to anticipate the evaluation of bone status in early age.

**WS13.3** Reduction in prevalence of osteoporosis and osteopenia in adult patients attending a regional UK centre: 2011 vs. 1999

A. Dwarakanath1, C. Etherington1, S. Daniels1, A. Morton1, H. White1, D. Peckham1, S.P. Conway1, 1Regional Adult Cystic Fibrosis Unit, St James’s University Hospital, Leeds, United Kingdom

Introduction: Reduced BMD is common in adults with CF. Its pathophysiology is multifactorial. With improved survival early prevention strategies and interventions to reduce risk factors may alter the natural course of CF-related bone disease.

Aim: To compare the prevalence of osteoporosis and osteopenia (WHO criteria) and associated risk factors in 2011 to previously published data [1] from the same centre.

Methods: BMD, clinical and demographic data (age, FEV1, BMI, CFRD, oral steroid use, transplant status) were collected from electronic patient records (EMIS®) in 2011 and compared to published data [1] from the same centre (1999).

Results: BMD data from 342 patients in 2011 (median age 28 yrs, FEV1 65% predicted, BMI 21.9) were compared to 114 patients [1] (age 24.5 yrs, FEV1 47% predicted, BMI 20.2). 42 patients (12%) in 2011 were post-transplantation vs. none in earlier cohort. No significant difference in CFRD or steroid use. The prevalence of patients with low BMD fell from 66% to 40%, p < 0.001; osteoporosis 18% to 5.8% (p < 0.001) and osteopenia 48% to 34.5% (p < 0.01). In the earlier cohort low BMD was significantly associated with male gender, disease severity and steroid use. In 2011 the odds ratio of developing low BMD was positively related to male gender (OR 2.7), disease severity and transplantation (OR 3.0) but not to oral steroid use.

Conclusion: Increased use of bisphosphonates and meticulous attention to nutrition, exercise and endocrine function has resulted in a significant reduction in the prevalence of low BMD. Those remaining most at risk are male patients with severe disease and those following transplantation.

Reference(s)

**WS13.4** Vitamin D levels among CF adults compared to general adult population in Canada

M. Mailho1, Y. Berthiaume1,2, M. Silviet-Carricart1, A. Jeanneret1, H. Mircescu1,2, R. Rabasa-Lhoret1,2,3, A. Lavose1, 1Centre Hospitalier de l’Universite de Montreal, CF Adult Clinic, Montreal, Canada; 2Universite de Montreal, Medecine, Montreal, Canada; 3Institut de Recherches Cliniques de Montreal, Montreal, Canada

Introduction: Compared to the general population, patients with cystic fibrosis (CF) are known to have lower vitamin D levels secondary to the malabsorption associated to CF. At our Montreal clinic the supplementation needed to maintain sufficient 25(OH)D levels (≥75 nmol/L) is doubled during winter months.

Objectives: Characterize 25(OH)D levels among our cohort and compare them with the 2007–2009 Canadian Health Measures Survey (CHMS).

Methods: Retrospective analysis of the latest data available of 25(OH)D level among 286 CF adults (53% male, 47% female). 18 to 57 years old (median 29). Mean BMI (kg/m²) was 23.78 for men and 22.55 for women (p = 0.008). Mean FEV1% predicted was 66.88 for men and 64.72 for women.

Results: Mean 25(OH)D value was 79.28 nmol/L (±23.66), women having a significantly higher 25(OH)D level than men (76.55) (p = 0.037). Compared to the CHMS (adults data), all of our age-groups had higher 25(OH)D levels: the 18–39 year old CF group (248 patients) had a mean value of 78.09 nmol/L compared to the 20–39 year old Canadian group with 65.0 nmol/L. The 40–57 year old CF group (38 patients) had a mean 25(OH)D serum value of 86.37 nmol/L compared to 66.5 nmol/L for the Canadian group.

Conclusion: Frequent monitoring of 25(OH)D serum values and Vitamin D3 supplementation increased during winter months, in addition to a close nutrition follow-up program, probably resulted in superior 25(OH)D serum values in our CF adult cohort.