research within the field in lay language the patients can experience self-empowerment and the need for patient education can be met.

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The cost-opportunity of screening: osteoporosis in the general population

INCIDENCE OF CLINICAL FRAGILITY FRACTURES IN POSTMENOPAUSAL WOMEN WITH RHEUMATOID ARTHRITIS. A MULTICENTRIC CASE-CONTROL STUDY

C. Gómez Vaquero1, J. M. Olmos2, J. L. Hernández3, D. Cerda2, C. Hidalgo3, J. Martínez López4, L. M. Arboleya Rodríguez5, J. Aguilar del Rey6, S. Martínez Pardo6, I. Ros7, X. Suris10, D. Grados Canovas11, C. Beltrán Audera12, Barcelona, Spain; Universitario Reina Sofía, Córdoba, Spain; Marqués de Valdecilla, Medicina Interna, Santander, Spain; Hospital Universitario Fundación Jiménez Díaz, Madrid, Spain; Hospital Universitario Central de Asturias, Oviedo, Spain; Hospital Universitario Virgen de la Victoria, Málaga, Spain; Hospital Universitario Mutua de Terrasa, Terrassa, Spain; Hospital Son Llàtzer, Palma, Spain; Hospital General de Granollers, Granollers, Spain; Hospital d’Igualada, Igualada, Spain; Hospital Universitario Miguel Servet, Zaragoza, Spain; Hospital General Mateu Orlla, Mas-Monerca, Spain; Hospital Universitario Reina Sofia, Córdoba, Spain; Hospital Clínico de Barcelona, Barcelona, Spain; Hospital Universitario de Gran Canaria Dr. Negrín, Las Palmas de Gran Canaria, Spain; Hospital Universitario de La Princesa, Madrid, Spain; Hospital Universitario La Paz, Madrid, Spain; Hospital de Sant Rafael, Barcelona, Spain; Hospital Universitario Doctor Peset, Valencia, Spain; Servicio de Asesoría en Estadística, Instituts d’Investigació Biomèdica de Bellvitge-IDIBELL, L’Hospitalet de Llobregat, Spain

Background: Incidence of clinical fractures in rheumatoid arthritis (RA) is not as well-known as hip or vertebral fracture incidence. Objectives: To estimate the incidence of clinical fragility fractures in a population of postmenopausal women diagnosed with RA and compare it with that of the general population; 2. To analyze the risk factors for fracture.

Methods: 330 postmenopausal women with RA from 19 Spanish Rheumatology Departments, randomly selected from the registry of RA patients in each center. The control group consisted of 660 Spanish postmenopausal women from the general population.

Results: Median age of RA patients was 64 yrs. vs. 63 yrs. in controls (ns). Evolution of the disease was 8 yrs. 78% and 76% had RF and ACPA+, respectively. 69% of patients were in remission or low activity. 85% had received glucocorticoids and methotrexate and 40% at least one biological DMARD. We identified 105 fractures (87 fragility and 18 traumatic) in 75 patients. Fifty-four patients and 47 controls had at least one major fracture (MF) (p < 0.001). Incidence of MF was 3.55 per 100 patient-year in patients and 0.72 in controls. Risk factors for MF in RA patients were age, previous fracture, parental hip fracture, postmenopausal period, hip BMD and cumulative dose of glucocorticoids. In controls, risk factors were age, at menopause and lumbar BMD.

Among RA-associated factors, MFs were associated with erosions, disease activity and disability. Previous fracture in RA patients was a strong risk for MF (HR: 10.37 [95% CI: 2.95-36.41]).

Conclusion: Between 3 and 4 of every 100 postmenopausal women with RA have a major fracture per year, four times more than the general population. Disease activity and disability associated with RA, the cumulative dose of glucocorticoids and mainly previous fracture are associated with the development of fragility fractures.

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CLUSTERING OF FRACTURE FRACTIONS BY SITE IN PATIENTS REFERRED FOR BONE MINERAL DENSITY ESTIMATION: AN OBSERVATIONAL STUDY

M. Day1, M. Bukhari1, Institute of Ageing and Chronic Disease, University of Liverpool, Musculoskeletal Biology I, Liverpool, United Kingdom; Aintree University Hospital, Liverpool University Hospitals NHS Foundation Trust, Academic Rheumatology, Liverpool, United Kingdom; Royal Lancaster Infirmary, University Hospitals of Morecambe Bay NHS Foundation Trust, Rheumatology, Lancaster, United Kingdom

Background: Fragility fractures (FF) are those resulting from mechanical forces equivalent to a fall from standing height or less [1]. They most commonly occur in the spine (vertebrae), forearm, and femur, but also occur at other sites. Prevalence markedly increases with age, due to age-related and menopause-related bone loss. FF cause substantial pain and disability, and are associated with decreased life expectancy. While many studies have investigated risk factors associated with FF, there are few data on the association between FF sites in at-risk patients.

Objectives: 1. Establish the most common sites of FF in patients presenting for bone mineral density (BMD) estimation. 2. Identify patterns of co-existing FF in the above cohort by applying cluster analysis.

Methods: We retrospectively reviewed the clinical records of 28868 patients presenting for BMD estimation at a district general hospital in North West England, 2004-2016, identifying those who had sustained one or more FF. Site(s) of FF were recorded for each patient, categorised as: ankle, elbow, femur, forearm, humerus, pelvis, ribs, spine, tibia or fibula (recorded as “tibfib”). Cluster analysis was performed on fracture sites, using Jaccard similarity coefficient. Results were plotted on a dendrogram and divided into clusters, as per results derived from elbow and silhouette cluster methods.

Results: Out of 28868 patients presenting for BMD estimation, 11003 were identified as having sustained one or more FF. 84.6% patients were female, with overall mean age 67.5 years and median T-score: -1.12 SD. The most common site of FF was the forearm (n=5045), most commonly co-existing with fractures of the tibia or fibula. Frequencies of the most common and co-existing FF sites are shown in Figure 1 (top). Cluster analysis identified 3 clusters: ankle and elbow; forearm, tibia/fibula, ribs, and spine; pelvis, femur, and humerus. The second half of Figure 1 displays the dendrogram of cluster analysis results, with Jaccard similarity measure.

Conclusion: We applied cluster analysis to a large cohort of patients presenting for BMD estimation. Our results are in keeping with previous studies demonstrating the FF to most commonly occur in the forearm, and in those with osteopenia (T-score: -2.5 < -1 SD) [2]. To our knowledge, this is the first study to apply cluster analysis to sites of FF. Results may be due to differences in cortical and trabecular bone structure, and have potential to aid prevention, monitoring, and management in at-risk patients.
