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AbstractBook

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THE NEW COVID WARRIORS AND THEIR ACHILLES HEELJ. Bacarese-Hamilton¹, E. Iliopoulos¹, H. Shishtari¹, J. Dalrymple¹, T. Y. Kwan¹¹University College Hospital, London, London, UK

Objective: During the strict lockdowns and subsequent restrictions enforced during the coronavirus pandemic, many people turned to outdoor exercise to escape their homes. We believe this has created a new class of amateur sportsperson: the COVID Warrior.

Methods: All patients with U/S confirmed Achilles tendon ruptures between April and November of 2019, 2020 and 2021 (before, during and after the lockdown) were included in the study. Partial ruptures and reruptures were excluded.

Results: A total 60 cases were identified from April 2019 to November 2021 (54 during our specific time periods), an average of 1.8 per month. The mean age of the cohort was 37 (± 12) years, 72% were male and 8% smoked. 13 patients were treated operatively (22%), 43 nonoperatively (72%) following our local policy, and four were treated elsewhere. There was no significant difference between the time periods for these ($p=0.963, 0.467, 0.413$ and 0.12 respectively). In the 2019 period of interest there were 10 cases (averaging 1.3/month); in 2020 there were 10 (1.3/month); and in 2021 there were 34 (4.3/month): the incidence rose by 250% in 1 y. During the first national lockdown there was only one case (0.3/month); the period between lockdowns had 1.8/month (rise of 500% to prelockdown levels); the second period of lockdown had 0.8/month (fall of 56%). The highest months were after reopening in April 2021 with a rate of 8/month (rise of 500% compared to pre-COVID levels).

Conclusion: Our experience suggests that people have either taken up exercise to escape lockdown rules, or more likely, have deconditioned during these periods before returning to previous activity levels, leading to a rising number of tendo-achilles ruptures. These are the new COVID Warriors.

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SAFE DISTANCE OF A PROXIMAL FEMORAL SHAFT FRACTURE FROM THE PROXIMAL LOCKING SCREW IN RETROGRADE INTRAMEDULLARY NAILING: A MECHANICAL STUDYC. A. Santos¹, A. C. Apalisoc¹¹Philippine Orthopedic Center, Quezon City, Philippines

Objective: Femoral shaft fractures located supraisthmally have been considered a relative contraindication for retrograde intramedullary nailing because of the high strain surrounding this

area. However, there have been no biomechanical studies verifying this. The objective of this study was to determine the shortest distance of a proximal femoral fracture to the more distal proximal locking screw that would not lead to failure.

Methods: Nine fourth generation composite femurs were instrumented with retrograde nails with two locking screws proximally and distally. Fracture gaps were made at 1-, 2-, and 3-cm from the more distal proximal locking screw. 700-N cyclic loading was applied axially at 3 Hz for 1 million cycles.

Results: All 9 femurs did not fail after 1 million cycles. There were no significant differences among the 3 groups in fracture gap displacement, coronal and sagittal angulation, and nail-to-cortex distances. All 3 femurs in the 1-cm group had toggle of 3° of internal rotation and loosening of the more distal proximal locking screw holes after 1 million cycles.

Conclusion: Fractures as close as 2 cm from the more distal proximal locking screw can be safely fixed with retrograde intramedullary nailing. The contact loading of the cortical bone in the subtrochanteric area provides load sharing, which decreases the stresses carried by the proximal locking screw. Fractures located 1 cm or less decrease the contact area for loading, thereby increasing the stress carried by the more proximal locking screw. Extra caution is advised for retrograde nailing of fractures located 1 cm or less.

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FEATURES OF MORPHOLOGICAL AND FUNCTIONAL CHANGES OF THE HEART VALVE APPARATUS IN PATIENTS WITH RHEUMATIC DISEASESN. V. Aleksandrova¹, V. A. Aleksandrov²¹Research Institute of Clinical and Experimental Rheumatology named after A.B. Zborovsky, ²Volgograd State Medical University, the Dept. of Hospital Therapy, Volgograd, Russia

Objective: To assess the severity of cardiac valve calcification by echocardiography in patients with various rheumatic diseases.

Methods: Cardiac ultrasound (Accuvix V10, Samsung Medison, South Korea) was performed in 30 patients with osteoarthritis (OA) of the knee (22 women; mean age, 54.3 \pm 19.8 year old; mean duration, 8.25 \pm 5.39 y), 57 patients with rheumatoid arthritis (RA) (50 women; mean age, 50.5 \pm 10.1 years old; mean duration, 9.2 \pm 6.8 y), and 60 patients with systemic lupus erythematosus (SLE) (55 women; mean age, 36.32 \pm 15.27 years old). When assessing the degree of calcification of aortic (AV) and/or mitral

(MV) heart valves, the following grading was used: 0 - no calcification, grade I - no significant calcification, grade II - moderate calcification, grade III - significant calcification of heart valves.

Results: Ultrasound signs of calcification of various heart valves were significantly more common in RA patients (23/57; 40.4%) compared with SLE patients (14/60; 23.3%; $p=0.047$) and OA patients (5/30; 16.7%; $p=0.025$). A high prevalence of AV calcification of varying severity was noted in RA patients: in 82.6% of cases (19/23) vs. 40% (2/5) in OA ($p=0.046$) and 35.7% (5/14) in SLE ($p=0.004$). The incidence of MV calcification signs in the group of RA patients (12/23; 52.17%) did not differ from the group of SLE patients (6/14; 42.9%, $p>0.1$). The prevalence of cases with II-III degree calcification of cardiac valves (16/23; 69.6%) was observed in RA patients, in 21.7% of cases (5 patients) there were combined AV and MV lesions (no such patients were found in OA and SLE groups). The presence of autoimmune chronic inflammatory process is an independent sign of premature atherosclerosis formation, causes the highest risk of cardiovascular complications in RA patients and accelerates the processes of cardiac valve calcification.

Conclusion: Regular examination of patients with RA and SLE for early detection of morphological and functional changes in the heart and its valve apparatus with the use of simple and effective ultrasound criteria will help in choosing specific therapy and prevention of cardiovascular complications.

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SUCCESSFUL TREATMENT OF ANXIETY AND DEPRESSION IMPROVES RHEUMATOID ARTHRITIS TREATMENT RESPONSE

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Objective: Anxiety and depression significantly affect rheumatoid arthritis (RA) disease activity. Treatment with antidepressants (psychopharmacotherapy, PPT) could possibly lead to improvement in treatment response. Aim is to determine predictors of RA treatment response according to SDAI criteria.

Methods: 128 RA-patients (pts) were enrolled, 86% were women with a mean age of 47.4 ± 11.3 (M \pm SD) y. All pts met the full ACR criteria for RA. The SDAI treatment response criteria were used. Mean RA activity by SDAI was high (33.5 ± 15.5) at baseline. Anxiety and depressive disorders (ADD) were diagnosed in 123 (96.1%) of RA-pts in accordance with ICD-10 in semi-structured interview by a licensed psychiatrist. Severity of depression and anxiety was evaluated with MADRS and HAM-A, pain – with Brief Pain Inventory (BPI). Biologics treatment duration varied from 1-6 y, antidepressants from 6-96 weeks. RA-pts with ADD were divided into

the following treatment groups: 1 – conventional disease-modifying antirheumatic drugs (DMARDs) (n=39), 2 – DMARDs+PPT (sertraline or mianserine) (n=43), 3 – DMARDs+biologic DMARDs (bDMARDs) (n=32), 4 – DMARDs+bDMARDs+PPT (sertraline or mianserine) (n=9). Stepwise logistic regression analysis was conducted to determine predictors of treatment response.

Results: At 5-y endpoint in 83 RA-pts SDAI response rate was 73.5% (38.6% and 34.9% for major and minor improvement, respectively). Nonresponse rate was higher in DMARDs group (58%) vs. groups 2 (10.4%), 3 (23.8%) and 4 (0%), $p<0.05$. According to regression model, SDAI treatment response was associated with baseline BPImax (OR=1.42; 95%CI: 1.0-2.02), baseline SDAI (OR=1.08; 95%CI: 1.0-1.18), successful treatment of ADD (OR=7.07; 95%CI: 1.04-48.24) and younger age (OR=0.93; 95%CI=0.87-0.99).

Conclusion: Response rate was lower in DMARDs only group vs. bDMARDs and/or PPT groups. Younger age and successful treatment of anxiety and depression independently predict RA treatment response.

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GENETIC MODEL FOR PREDICTION OF OSTEOPOROTIC VERTEBRAL FRACTURE RISK IN WOMEN

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Objective: Early identification of individuals with high risk of osteoporotic vertebral fractures is very important for their prevention. Genetic predisposition is one of the strongest determinants of fracture risk. The purpose of present research was to develop genetic model for predicting risk of vertebral fractures in women with postmenopausal OP.

Methods: In total, 620 Belarusian women met inclusion criteria, of them 456 with OP and 164 controls. Using PCR, 57 variants located in 28 osteoporosis susceptibility genes were genotyped as previously described [1]. Genetic risk score (GRS) was calculated using multiple logistic regression analysis.

Results: We revealed statistically significant associations of *COL1A1* rs1800012, *COL1A2* rs42517, *VDR* rs7975232, rs1544410 and rs731236, *ESR1* rs9340799 and rs2234693, *MTHFR* rs1801133 gene variants with vertebral fracture ($p<0.05$). The negative GRS was allotted to the protective genotypes and positive – to the risk. The lowest value of the logistic regression coefficient was assigned to 1 point (rs2234693); rs1800012 and rs7975232 had the greatest impact on fracture risk (3 points); other variants