37.20 ± 7.36 U/L for severe patients ($P = 0.03$). Correlation analysis showed that there was a positive association between serum ADA levels and disease activity ($r = 0.43$, $P = 0.02$). Receiver operating characteristic analysis showed that 38.5 U/L was the optimum cut-off point of ADA level for severe disease activity (sensitivity 60%, specificity 92%, area under the curve: 0.81).

Conclusion: The evaluation of serum adenosine deaminase level in patients with autoimmune hepatitis should be considered a useful biomarker in the monitoring of their disease activity.

REFERENCES

- [1] Hennes, E.M., et al., *Simplified criteria for the diagnosis of autoimmune hepatitis*. Hepatology, 2008. 48(1): p. 169-76.
- [2] Gao, Z.W., et al., *Serum adenosine deaminase activity is increased in systemic lupus erythematosus patients and correlated with disease activity*. Immunol Res, 2018. 66(2): p. 299-304.
- [3] Zamani, B., R. Jamali, and A. Jamali, *Serum adenosine deaminase may predict disease activity in rheumatoid arthritis*. Rheumatol Int, 2012. 32(7): p. 1967-75.
- [4] Doudkani-Fard, M., et al., *Sensitivity and specificity of adenosine deaminase in diagnosis of juvenile idiopathic arthritis*. Med J Islam Repub Iran, 2014. 28: p. 113.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.3679

AB1112

DIAGNOSTIC DELAY AND DAMAGE OF POLISH ADULT PATIENTS AFFECTED BY HEREDITARY AUTOINFLAMMATORY SYNDROMES

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Background: Autoinflammatory diseases (AIDs) cover a spectrum of diseases, which lead to chronic or recurrent inflammation caused by activation of the innate immune system, typically in the absence of high titre autoantibodies.¹ The most common monogenic AIDs are cryopyrin-associated periodic syndromes (CAPS), familial Mediterranean fever (FMF) and tumour necrosis factor receptor-associated periodic fever syndrome (TRAPS). In hereditary AIDs, chronic and recurrent inflammation can lead to both acute disease and irreversible damage.²

Objectives: To describe irreversible damage and diagnostic delay of AID in Polish adult patients (age ≥ 18).

Methods: We reviewed the records of 11 Caucasian (2 women, 9 men) and one female patient with Middle Eastern ancestry followed in our center from Aug 2012 to Jan 2019. We analysed demographic features, diagnostic delay, previous diagnosis and organ damage.³

Results: Eleven patients had documented variant mutation and AID diagnosis (6-TRAPS, 4-CAPS, 1-FMF). One patient with AA amyloidosis had negative genetic results. The mean age of the patients at the time of disease onset was 9.1 years (0.1- 37) and 33 years (16-62) at diagnosis. In all Caucasian patients diagnosis was established after the age of 18. Previous diagnosis was: JIA (2), AOSD (2), UCTD (4), vasculitis (1), seronegative RA (1), FMF (3 finally confirmed TRAPS) and allergy (3). Prior treatment included GCS (12/12), cDMARDs (7), antimalarials (6), colchicine (4), bDMARDs: tocilizumab-1, etanercept-2, adalimumab-1, CYC (2). After diagnosis 11 patients received IL-1 inhibitor, anakinra. Only one, 62 year old woman with TRAPS, did not need biological treatment. Only 3 TRAPS patients were free from damage accrual. We documented following damage categories: renal/amyloidosis (5 male cases), developmental (3 growth retardation), ear (severe hearing loss -3 CAPS cases). CINCA male patient at age 29 had multiple organ damage: neurological (epilepsy), severe hearing loss, severe ocular involvement (including optic nerve atrophy), joint restriction and deformity leading to complete physical disability. One FMF woman was advised elective abortion, one MWS had miscarriage. Two of 3 women had history of malignancy (one: breast cancer and ovarian cancer, and another thyroid cancer). No any mental

retardation occurred. During follow up 2 male patients with extensive amyloidosis died despite anakinra treatment.

Conclusion: AID are misdiagnosed and have high risk of damage. We advocate the need for efforts in order to increase awareness of AID to reduce the diagnostic delay. The frequency of malignancy in AID should be addressed in future international collaborative studies.

REFERENCES

- [1] Masters SL, et al. *Horror autoinflammaticus: the molecular pathophysiology of autoinflammatory disease*. Annu Rev Immunol 2009;27:621-68.
- [2] Federici S, et al. *Evidence-based provisional clinical classification criteria for autoinflammatory periodic fevers*. Ann Rheumatic Dis 2015;74:799-805.
- [3] ter Haar NM, et al. *Development of the autoinflammatory disease damage index*. Ann Rheum Dis 2017;76:821-830

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.4948

Diagnostics and imaging procedures

AB1113

RELATION BETWEEN RESTRICTIVE PULMONARY FUNCTION TESTS AND ULTRASONOGRAPHIC CHANGES OF ASYMPTOMATIC ANTERIOR CHEST WALL JOINTS IN RHEUMATOID ARTHRITIS PATIENTS

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Background: Ultrasonography can detect different changes in anterior chest wall (ACW) joints in patients with Rheumatoid Arthritis (RA) even before being clinically manifested.⁽¹⁾ Pulmonary functions may be affected during the course of RA due to interstitial lung problem or chest wall problem.⁽²⁾

All studies usually demonstrate the interstitial pulmonary affection in RA but the chest wall joints is usually underestimated by the rheumatology community. Up to the best of our knowledge, there are no previous studies about the relationship between ultrasound detected subclinical changes in ACW and the pulmonary functions in RA patients.

Objectives: To detect the relation between ultrasonographic changes of asymptomatic ACW joints and pulmonary function tests (PFTs) in patients with RA.

Methods: The study included 44 subjects (22 RA and 22 control) in whom 88 sternoclavicular joints (SCJ) and 44 manubriosternal joints (MSJ) were studied. None of the participants had a history of respiratory complaints such as dyspnea, chronic cough, or chest pain. High resolution Computed Tomography (HRCT) was done on the chest to exclude interstitial lung problem that may affect chest expansion and PFTs. Ultrasound (US) assessments were performed to detect synovitis, erosions, ankylosis, osteophytes, or Doppler signals. Chest expansion was measured. PFTs was done and included measurement of the forced expiratory volume in 1 s (FEV1), forced vital capacity (FVC), and the ratio of forced expiratory volume in 1 s to the forced vital capacity (FEV1/FVC). In RA group, DAS28 and Health Assessment Questionnaire Disability Index (HAQDI) were recorded.

Results: US detected subclinical changes of ACW joints in (74.2%) of RA patient with significant difference between total US changes in RA (74.2%) and control (21.2%) ($p < 0.001$). MSJ ankylosing and erosions were highly associated with limited chest expansion in RA group ($P < 0.001$). PFTs were found to be restrictive in 13 RA patient (59.1%) with mean of FVC (65.5±5.5)%, FEV1 (70.4±9.1)%, FEV1/FVC (80.1±2.6) with significant difference to control with mean of FVC (93.6±7.2)%, FEV1 (94.3±4.5)%, FEV1/FVC (95.1±2.4). These restrictive PFTs were associated with SCJ synovitis ($p = 0.04$), SCJ PD activity ($p = 0.04$), SCJ erosions (0.02) and highly associated with MSJ ankylosing and erosions ($p < 0.001$). All RA patients (100%) with MS ankylosing and erosions and SCJ PD activity by US had limited chest expansion and restrictive PFTs. Restrictive PFTs were associated also with limited chest expansion with mean of (2.3±0.5) with significant difference ($p < 0.001$) to non-restrictive PFTs in RA with mean of (5.2±1.4).

In RA group, ultrasonographic changes and restrictive PFTs were found to be higher with smoking, longer disease duration and high DAS28.

Conclusion: Our study demonstrated that ultrasonographic subclinical changes in ACW joints is associated with restrictive pattern of PFTs and limited chest expansion in RA patients.

REFERENCES

- [1] -Abdelrahman F, Mortada M, Abdul_Sattar A, et al; Annals of the Rheumatic Diseases 2017;76:733.
- [2] - Kalyani Praba P, Thamara Selvi K, Vijay Anand B, Saravanan A. Evaluation of lung function tests in rheumatoid arthritis patients. Natl J Physiol Pharm Pharmacol 2017;7(7):693-696.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.6487

AB1114 CALPROTECTIN IN SERUM AND SYNOVIAL FLUID AS A BIOMARKER IN ACUTE ARTHRITIS

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Background: There are increasingly data about the usefulness of calprotectin levels in chronic inflammatory arthritis and its relationship with prognostic factors. However, few data are available on its role in the diagnosis of acute arthritis.

Objectives: To evaluate the possible usefulness of testing plasma and synovial fluid (SF) calprotectin levels as a predictor of the final diagnosis behind an acute mono or oligoarthritis.

Methods: Longitudinal observational study. We included non-consecutive patients referred to the rheumatology emergency department with suspected mono or acute oligoarthritis for a period of 23 months. Patients with a previous diagnosis of inflammatory, infectious or neoplastic disease were excluded. All of them underwent diagnostic arthrocentesis and blood extraction simultaneously. The SF was evaluated under optical microscopy immediately for the study of microcrystals. Samples of SF were also routinely sent to microbiological culture, and calprotectin levels (SFC) and cell count were determined. In blood, the calprotectin level (SC), CRP and ESR were determined. The calprotectin level in plasma was determined by an automated fluoroenzyme-immunoassay technique on an ImmunoCAP250 analyzer (Thermo Fisher). All patients were followed until diagnostic confirmation. The statistical analysis was performed with the SPSS 22.0 program.

Results: 41 patients were collected, 28 men (68.3%) and 13 women (31.7%) with a mean age of 56.2 years (SD 17.6). The patients presented an average of 6.5 days of symptoms duration (SD 7), manifested as monoarthritis in 80.5% of the cases, with the knee being the most frequently affected joint (92.5%).

In all patients, SF culture was negative. The most frequent diagnosis was microcrystalline arthritis in 21 patients (13 gout and 8 pseudogout), followed by the forms of onset of different chronic inflammatory arthropathies (9). Another 8 patients presented a mechanical joint effusion, in 1 patient the final diagnosis was not collected and there were 2 patients who presented other diagnoses (viral oligoarthritis, pigmented villonodular synovitis).

Calprotectin values were higher in SF than in serum (mean 73,058 vs 824.75 µg/g). A high positive correlation was found between the SC and the CRP ($p < 0.05$, $r = 0.7$) whereas the correlation with the number of leukocytes in SF ($p < 0.05$, $r = 0.47$) and with the ESR ($p < 0.05$, $r = 0.5$) was moderate. The SFC was correlated with the CRP ($p < 0.05$, $r = 0.45$) and with the cell count in SF ($p < 0.05$, $r = 0.6$), but not with the ESR. Regarding the different diagnoses, SC was numerically higher in microcrystalline arthritis (1157 µg/g) compared to non-microcrystalline arthritis (862 µg/g), although these differences were not significant due to the low number of patients in each group.

Conclusion: Our preliminary results suggest that the analysis of SC could complement the information provided by a conventional analysis in the differential diagnosis of acute arthritis in situations in which an arthrocentesis is not possible. Studies with a greater number of patients and that include patients with septic arthritis are necessary.

Disclosure of Interests: Marta Aguilar-Zamora: None declared, L Montolio-Chiva: None declared, Isabel de la Morena Speakers bureau: Abbvie, Celgene, Pfizer, UCB, Ghebro, Roche, Sanofi, Janssen., José María López Ortega: None declared, Carlos Fedec Olmos: None declared, Ana V Orenes Vera: None declared, I Vázquez-Gómez: None declared, Elia Valls-Pascual: None declared, D Ybáñez-García: None declared, Á Martínez-Ferrer: None declared, A Sendra-García: None declared, I Torner-

Hernández: None declared, V Núñez-Monje: None declared, Juanjo J Alegre-Sancho: None declared

DOI: 10.1136/annrheumdis-2019-eular.7581

AB1115 OBESITY AND FLAT VERTEBRAE

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Background: Spine is a mechanical structure, in a young and healthy individual, under a radiological focus, disposes their vertebral bodies in harmony with their stature, and progressively increasing in magnitude from the cervical to the lumbar spine, in a range of vertical growth that it can exceed the horizontal (1).

It is postulated that the important obesity in the early stages of life, could modify the vertebral parameters by skeletal overloads, but the problem is that the current vertebral indexes do not measure a relation of the person height with his vertebra (2).

Objectives: Thus, to check whether the childhood obesity could modify the vertebral parameters, or it is accepted that it entails a loss of equivalent stature, and in this case would be necessary a study comparative of average height, or whether the harmony of the individual is accepted, it would be necessary to create an index that combine these variables to objectify if its value is a constant, and thus, eliminate the ambiguity of the observer.

Figure 1. With a chest lateral plate, not rotated, and in the eighth dorsal vertebra (VD8), by proximity to the Scheuermann kyphosis, we calculate his length (LVD8) and his height (HVD8), measured in mm. Thus, from the horizontal one of his pedicle, taken at that height and parallel to the vertebral plate with superior disc contact, LVD8 is 35.50mm. Drawing a line perpendicular to the previous one (90.1°), and measured from the most sclerous area of the vertebral plate with disc contact superior to inferior, passing through the midpoint of its length (17.74mm), we obtain a HVD8 of 20.69mm.

Methods: We selected a population of obese ($BMI \geq 35$), both sex, between 20 and 55 years old, in bariatric surgery protocol, with a significant obesity in their development. Was excluded any cause that could produce vertebral flattening. As a control group, was included any patient that went to outpatient visit of rheumatology, and which met the inclusion and exclusion criteria above, except obesity.

As variables, sex, age, body mass index (BMI), and with a chest lateral plate, not rotated, and in the eighth dorsal vertebra, we calculate his length (LVD8) and his height (HVD8), measured in mm. Figure 1.

Finally, we applied a comparative study of average of height and vertebral index (VI) results: $VI = 10 \times LVD8 / (HVD8 \times stature)$

Results: 90 patients were analyzed. 20 patients in the study group (22.2%): 48.1% female, 48.6 years old, 38.2 BMI, and VI 11.6 Meters-1 And 70 patients in the control group (77.8%): 51.1% females 45.15 years old, 26.2 BMI, and VI 11.2 Meters-1

The comparative analysis of averages does not show any significant differences in the index or in the stature of these patients.

Conclusion: It is a small study, and according to height or the created index, it does not seem that obesity in development modifies the overall height or the vertebral parameters. In addition, the index gives a stable value regarding the sex of both populations in the eighth dorsal vertebra.

REFERENCES

- [1] White AA, Panjabi MM. Clinical Biomechanics of the Spine. 2nd ed, Lippincott Williams & Wilkins, 1990.
- [2] Gooding CA, Neuhauser EBD (1965) Growth and development of the vertebral body in the presence and absence of normal stress. AJR 93:388.
- [3] Veiga C RM. Vértebra plana. Revisión de concepto y aproximación diagnóstica. Semin Fund Esp Reumatol. 2009;10(2):56-63.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.2966