differentiation of RA, PsA, and gout are presented. The presentation will be case-based, and participants will have the opportunity to test their knowledge.

Disclosure of Interests: Kay-Geert Hermann Paid instructor for: MSD, AbbVie, Novartis, but less than 10.000€

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SP0099 MRI DIFFICULT CASES OF THE AXIAL SKELETON

Lennart Jans. Ghent University Hospital, Radiology, Gent, Belgium

MRI has revolutionized the assessment of axial spondyloarthritis (SpA) in clinical practice. MRI of the sacroiliac joint is a cornerstone for diagnosis and classification, MRI of the spine may help with difficult cases as spinal changes may antedate sacroiliac changes and indicate disease burden. In daily practice, however, the interpretation of axial MRI is challenging. Experience has tempered the initial enthusiasm as the limitations of the ASAS criteria in daily practice become evident.

Firstly, the ASAS criteria are intended to classify patients with 'back pain' of more than 3 months' duration and with onset before 45 years of age as having axial SpA. In other patient groups, however, sacroiliitis on MRI as defined by ASAS has a lower sensitivity and specificity.

Secondly, the definition of a 'positive' MRI for sacroiliitis is validated to limited extent only. MRI of the sacroiliac joint requires inflammatory changes to meet the criteria, without a clear quantitative requirement. Bone marrow oedema lacks sensitivity and specificity as MRI findings suggestive of sacroiliitis may be produced by non-inflammatory disorders, a point that remains poorly investigated.

Thirdly, structural changes in the sacroiliac joints are not taken into account in the ASAS criteria. The diagnostic performance of MRI of the sacroiliac joint could be improved by including structural lesions, but to date this is not the case.

Fourthly, spinal imaging is not included in the ASAS criteria. MRI of the spine is considered 'positive' when at least 3 inflammatory or several structural lesions are present, with a sensitivity and specificity similar to those of the sacroiliac joints. The difficulty here is the lack of data. It has not been reliably shown that inflammation proceeds syndesmophyte formation and MRI seems incapable of accurately evaluating treatment response. Only about 4% of patients with 'negative' sacroiliac MRI are reclassified based on positive spinal MRI findings.

Clinicians should be aware of unreasonable expectations on MRI. If MRI findings are considered in isolation the findings are not reliable. The diagnosis of SpA can only be made by an expert if patient's history, clinical examination, laboratory findings, and imaging studies converge. When solving difficult cases, collaboration is key: clear communication between rheumatologist and radiologist is mandatory. Radiologists should withstand the pressure to call if a patient has SpA or not based on MRI alone.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.8507

THURSDAY, 13 JUNE 2019

15:30:00 – 17:00:00

Ultrasound advanced I

SP0100 US OF THE HAMSTRING – CLINICAL APPLICATION + DEMO

David Andrew Bong. Instituto Poal de Reumatologia, Universitat de Barcelona, Rheumatology; Anatomy, Barcelona, Spain

Ultrasound of the Hamstring Muscle Complex-Clinical Application + DEMO
The hamstring muscle complex (HMC) are the "brakes" of human bipedal ambulation and are susceptible to injury during concentric contraction. Although common in sports medicine practice, a recent systematic review of severe hamstring injuries (grade II-III) suggests that greater than 10% of these severe injuries are non-sports related and disproportionately affect older women. Musculoskeletal ultrasound (MSKUS) is one of the basic imaging techniques utilized to detect and define these injuries and eliminate other potential causes of posterior thigh pain. This presentation will discuss the clinical application of MSKUS of the HMC in rheumatology/musculoskeletal medicine and offer a systematic anatomically-based method of examining this important non-articular region.

Disclosure of Interests: None declared

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SP0101 US FOR ASSESSING LUNG INVOLVEMENT IN RHEUMATIC DISEASES – CLINICAL USE + DEMO

Andrea Delle Sedie. University of Pisa, Rheumatology Unit, Pisa, Italy

Background: Evaluation of interstitial lung disease (ILD) is always difficult (low sensitivity for X-ray and pulmonary function tests or high level of radiation for HRCT): ultrasound (US) has recently shown interesting results on truth, discrimination and feasibility. Due to the thickening of interlobular septa for edema or fibrosis, US beam can interact with those structure and produce artifacts on the screen: B-lines (BL) and pleural line irregularity (PLI). A positive correlation between BL and HRCT has been established both in systemic sclerosis patients and in other patients with ILD; more recently similar results have been published by using PLI as a finding for US assessment in patients.

BL has been recently defined by the OMERACT as a vertical hyperechoic reverberation artifact that arise from the pleural line, extend to the bottom of the screen without fading, and move synchronously with lung sliding, while PLI has been defined as a loss of regularity that may be associated with an increase in thickness, focal, diffuse, or nodular.

A low number of BLs has been described in healthy subjects but they are generally confined to the posterior and lower part of the thorax.

Up to now, many different scanning protocols have been used to assess BL or PLI in patients, providing similar results.

Conclusion: US lung evaluation is a useful and feasible imaging technique.

Disclosure of Interests: Andrea Delle Sedie Speakers bureau: Abbvie, UCB, Celgene, MSD

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SP0102 US FOR SYNOVIAL BIOPSIES – CLINICAL RELEVANCE AND SAFETY + DEMO

Andrew Filer. University of Birmingham, Institute of Inflammation and Ageing, Birmingham, United Kingdom

Background: The introduction of ultrasound guidance to access synovial tissue samples has facilitated a rapid growth in tissue-related research. Ultrasound guidance enables operators to use less invasive approaches compared to a gold standard direct vision arthroscopy procedure while maintaining the quality of samples obtained. Patients find the procedures easy to tolerate and are willing to undergo repeat biopsy, facilitating the analysis of tissue samples in clinical trials and experimental medicine studies. Advanced analytic techniques including single cell analytics are now being used to exploit the tissue samples obtained in order to provide dramatic leaps in understanding of synovial pathology.

Objectives: In this session the key aspects of the dominant techniques in use will be presented, including safety, patient tolerability and quality of output. The research and clinical utility of synovial biopsy will be discussed. Sonographic approaches to the major techniques will then be illustrated through video demonstrations, and competencies required to undertake training will be discussed alongside current EULAR initiatives for training. Finally, examples of research outputs generated through synovial biopsy will be explored alongside the logistics required to deliver such clinical studies.

Disclosure of Interests: None declared

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THURSDAY, 13 JUNE 2019

17:30:00 – 19:00:00

Fighting and fixing: from initiation to resolution of inflammation

SP0103 T LYMPHOCYTES AND INNATE IMMUNE CELLS BALANCE MUSCLE REGENERATION AND AUTOIMMUNITY

Patrizia Rovere-Querini. IRCCS Ospedale San Raffaele and Università Vita-Salute San Raffaele, Laboratory of Innate Immunity and Tissue Remodelling, Italy

Background: The skeletal muscle is the largest cellular compartment of the organism. It represents an immunologically unique or a "non classical" immunological privileged site, being normally protected from the noxious effects of inflammation. The molecular events that control the homeostatic response to acute muscle injury are however poorly understood. The available information indicates that it involves the cross-talk among various cell populations, which i) perceive the muscle damage and release alert signals, which attract and activate inflammatory cells and progenitor cells ii) organize and maintain regeneration and tissue repair. The scenario is possibly even more complex during inflammatory idiopathic myositis (IIM) in which the immune privilege fails to protect the environment and

muscle cells undergo continuous cycles of death and regeneration as a consequence of the pressure of the immune response targeting antigens preferentially expressed within regenerating fibers (1, 2).

Objectives: I will review recent evidence on the relative role of unconventional cellular and molecular pathways activated in the tissues of subjects with IMM and in relevant experimental models of skeletal muscle regeneration and autoimmunity, focusing on the action of antigen-specific and regulatory T cells and immune cells populations of innate cells.

Methods: Review of available published data and of data recently generated on the topic.

Results: Muscle necrosis and the ensuing inflammation was consistently associated in mice with up-regulated expression of bona fide autoantigens targeted in patients with IIM, in particular of histidyl-transfer RNA synthetase (HisRS). Phagocytosis of HisRS-expressing apoptotic myoblasts and appropriate inflammatory costimuli are necessary to elicit the production of anti-HisRS autoantibodies and to jeopardize muscle regeneration. Soluble pattern recognition receptors, and in particular the prototypic long pentraxin PTX3 play a critical role in preventing the accumulation of cell debris in the inflamed skeletal muscle, restricting the immunogenic potential of dying and regenerating myofibers.

Conversely the local expression of type I IFN is necessary for the prolonged autoantibody response and for the maintenance and spreading of the immune-mediated muscle damage, as demonstrated using IFN α / β R-null mice (3-5). A specialized population of regulatory T (Treg) cells, has been recently characterized in the inflamed and regenerating muscle, which influence both the immune response, by promoting the M1-to-M2 switch, and the activation of precursor/stem muscle cells. Treg cells control the efficacy of muscle repair and might be involved in preventing the systemic effects of the autoimmune response generated as a consequence of the disruption of the immunologically protected environment of the skeletal muscle (6, 7).

Conclusion: Identification of the pathways that are physiologically involved in restricting the onset and accelerating the termination of autoimmune responses targeting the skeletal muscle might be valuable for the identification of novel targets for molecular intervention in patients with IIM.

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Disclosure of Interests: Patrizia Rovere-Querini Grant/research support from: Adienne Pharma & Biotech

DOI: 10.1136/annrheumdis-2019-eular.8577

SP0104 THE JANUS-FACED GLADIATOR: NEUTROPHILS IN STERILE INFLAMMATION AND AUTOIMMUNITY

Markus Hoffmann. University of Maryland, School of Medicine, United States of America

Background: Neutrophils, and particularly neutrophil extracellular traps (NETs), have been connected with inflammatory and autoimmune diseases, such as RA, SLE, gout and many others. However, the outcome of a deficiency of NET-formation can be observed in chronic granulomatous disease and Papillon-Lefèvre

syndrome and is characterized by non-resolving inflammation and frequent autoimmunity.

Objectives: I will give an overview over pro- and anti-inflammatory effects of neutrophils and NETs, respectively, focusing on our results in gout and SLE.

Methods: We investigated the impact of NET-deficiency and/or neutrophil-depletion on animal models of SLE (pristane-induced lupus) and gout (MSU crystal-induced arthritis). Mechanistic studies were performed with isolated neutrophils from mice and humans.

Results: In experimental lupus and gouty arthritis neutrophil depletion or neutropenia worsens disease. Also mice strains with normal neutrophil numbers but defects in NET formation (NOX2 or PAD4-deficient mice) have exacerbated and unresolving inflammation.

Release of inflammatory mediators by stimulated neutrophils was highest at intermediate cell densities ($20-40 \times 10^6$ cells/cm³). Above such densities, mediator release by normal neutrophils was outweighed by proteolytic degradation via proteases expressed on aggregated NETs. Additionally, binding to aggregated NETs conferred protection of the serine protease neutrophil elastase (NE) against inactivation by α 1-antitrypsin (A1AT).

Conclusion: Although neutrophils are often regarded as archetypical pro-inflammatory cells, evidence is increasing that they can also exert anti-inflammatory and immunoregulatory function. Formation and aggregation of NETs and degradation of inflammatory mediators by serine proteases are important neutrophil tools to resolve gouty arthritis and other forms of localized inflammatory conditions. On the downside, NETs come at the price of collateral tissue damage and may cause occlusion of ductal structures.

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Disclosure of Interests: None declared

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SP0105 REGULATION OF AUTOANTIBODY ACTIVITY BY T CELL SUBSETS

Gerhard Krönke. University Hospital Erlangen, Internal Medicine 3, Erlangen, Germany

Our recent data show that the IL-23–T_H17 axis controls the intrinsic inflammatory activity of autoantibodies and thereby triggers the clinical onset of autoimmune arthritis in mice and humans suffering from rheumatoid arthritis. TH17 cells regulate expression of sialyltransferases in newly differentiating antibody-producing cells and determine the glycosylation profile and activity of immunoglobulin G (IgG) that is produced by the consecutively emerging plasma cells.

Disclosure of Interests: Gerhard Krönke Grant/research support from: Lilly, Pfizer, Speakers bureau: Novartis

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FRIDAY, 14 JUNE 2019

08:15:00 – 09:45:00

Seeing is believing: Nanotechnologies in tissue imaging

SP0106 LOOKING THROUGH MY BACK BONE

Matthias Gunzer. University Hospital, University Duisburg-Essen, Institute for Experimental Immunology and Imaging, Essen, Germany

Background: Because bone marrow is the source of all immune cells, knowing the blood supply of bones is essential to understand diverse mechanisms such as arthritic bone inflammation, anti-infectious immune defense or sterile inflammation.

Objectives: We wanted to clarify, how immune cells are able to function inside of the bone and also leave bones for peripheral functions.

Methods: Using an array of different imaging approaches and innovative animal models as well as insights from clinical studies in humans we have made the bone open to ways of studying, that have not previously possible.

Results: Using these methods we have defined an entirely new concept of how a closed circulatory loop is established in long bones. Thereby we show the mechanistic role of osteoclasts and define, how T cells and neutrophils use the system to fight against viral infection or invade ischemic tissue. This allows an integrated