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Insights and Innovations: A Review of the GRAPPA 2023 Trainee Symposium

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ABSTRACT. The Group for Research and Assessment of Psoriasis and Psoriatic Arthritis (GRAPPA) 2023 annual meeting started with the trainee symposium. This symposium showcased the exceptional research activities of dermatology and rheumatology trainees in the field of psoriatic diseases (PsDs). The following report is a summary account of the 5 oral presentations and 21 poster presentations that earned the privilege of being featured at our annual meeting. These presentations span a comprehensive spectrum, encompassing basic/translational, clinical, and outcomes research, which collectively underscore GRAPPA's profound impact on both national and international fronts in the realm of PsDs.

Key Indexing Terms: GRAPPA, psoriasis, psoriatic arthritis

Introduction

Prioritizing and championing trainee research in psoriatic diseases (PsDs) remains a fundamental tenet of the Group for Research and Assessment of Psoriasis and Psoriatic Arthritis (GRAPPA). GRAPPA has had a long commitment to highlighting trainee research at its annual meeting. This year's trainee symposium collected an array of scholarly contributions from around the globe. Nearly 50 abstracts were submitted from 13 countries, with the highest abstract submissions from the UK, USA, and Brazil. Abstracts were selected based on scientific merit and relevance to PsD research. A distinguished panel of 14 expert reviewers dedicated their time and expertise to meticulously assessing the abstracts. The 5 abstracts attaining the highest scores were awarded with oral presentations and 21 abstracts were allocated to poster presentations.

Drs. M. Elaine Husni, Lihi Eder, and April Armstrong chaired the 2023 trainee symposium, in which 5 rheumatology and dermatology trainees who were selected as oral poster presenters discussed their work during the GRAPPA annual meeting to other trainees and GRAPPA members. The 21 trainees with posters presented them during the poster tour section of the annual meeting. Building a network through this symposium empowered budding rheumatology and dermatology researchers to nurture their research interests. The topics covered during the symposium, ranging from basic/translational to clinical and outcomes research, reflected the expansive and pervasive influence of GRAPPA in both national and international domains within the sphere of PsDs.

The following is a summary of all the oral presentations and poster presentations from the 2023 trainee symposium. Full abstracts can be reviewed at the GRAPPA website: https://www.grappanetwork.org/abstracts-2023.

Trainee symposium oral presentations

1. Regulatory role of Janus kinase (JAK) signaling on keratinocytes and fibroblast-like synovial cells: Novel mechanisms for JAK inhibitors in PsD, presented by Ruchi Shah from Mather, California, USA

The aim of this translational study was to test the hypothesis that interleukin (IL)-9/IL-22–induced Janus kinase and signal transducer and activator of transcription (JAK-STAT) signaling regulates the proliferative cascades of keratinocytes (KC) and fibroblast-like synoviocytes (FLS) in PsD, which drives inflammatory plaque and pannus formation. The researchers cultured FLS derived from patients with psoriatic arthritis (PsA; n = 10) and primary human KC with recombinant IL-9 and IL-22, plus or minus specific JAK inhibitors. They measured proliferation using MTT and CFSE dilution assays, cytokine and matrix metalloproteinase (MMP) production using ELISA, and JAK and STAT induction using immunoblot. In cultured FLS and KC, rIL-22 and rIL-9 induced increased phosphorylation of JAK1/tyrosine kinase (TYK) 2 and JAK1/JAK3, respectively ($P < 0.01$). Additionally, rIL-9 and rIL-22 induced FLS

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and KC proliferation as well as IL-6, IL-8, and MMP-3 production by FLS. Pan-JAK inhibitors and JAK1 and TYK2 inhibitors reduced the IL-9– and IL-22–mediated proliferation of KC and FLS as measured by MTT assay and CFSE dilution assay, respectively. These JAK inhibitors also blocked IL-6, IL-8, and MMP3 production by FLS ($P < 0.01$). In summary, this study provides novel insights into the role of JAK-STAT signaling on pannus/plaque formation and demonstrates novel mechanisms for JAK inhibitors in PsD.

2. Exploring pharmacogenetic variants for predicting response to tumor necrosis factor inhibitor therapy in patients with PsA, presented by James Sullivan from Cleveland, Ohio, USA

The objective of this study was to determine if tumor necrosis factor receptor 2 (TNFR2) rs1061622 polymorphisms (T/T, T/G, or G/G genotypes) are associated with responsiveness to TNF blockade in patients with PsA. This study identified patients treated with TNF inhibitor (TNFi) therapy who were enrolled in an institutional longitudinal PsD cohort and genotyping of these patients was performed. The final cohort included 161 patients with PsA. Nonresponse to TNFi therapy was defined as discontinuation of the original TNFi agent within 12 months of starting the medication; patients were excluded if treatment discontinuation was due to insurance/cost or adverse reaction. A multivariable logistic regression model of treatment response by rs1061622 polymorphisms status adjusting for relevant covariates was generated. A total of 52% of patients were T/T genotype, 42% T/G, and 4% G/G. Among the 23% of patients who discontinued therapy, 6% had T/T genotype, 38% had T/G genotype, and 86% had G/G genotype ($P < 0.001$). Using logistic regression, a G allele was associated with a 5-fold higher likelihood of treatment discontinuation (adjusted odds ratio [OR] 4.87, 95% CI 2.1-11.4). The authors concluded that patients with PsA with at least 1 G allele for TNFR2 rs1061622 had a lower likelihood of responding to TNFi therapy, suggesting a potential role for pharmacogenetic profiling in predicting treatment response in PsD.

3. Transient receptor potential melastatin 4 gain-of-function mutation increases bone marrow–derived dendritic cell migration in vitro and enhances inflammatory features of Western diet–induced psoriasiform dermatitis in mice, presented by Omar Alzayat from Sacramento, California, USA

Transient receptor potential melastatin 4 (TRPM4) is a cation channel that is expressed in dendritic cells (DCs) and plays a role in migration. The goal of this study was to determine if a TRPM4 inhibitor (compound 5) can inhibit DC migration, and if transgenic mice expressing a gain-of-function (GOF) TRPM4 mutation (Het GOF TRPM4) have enhanced inflammatory skin symptoms in a Western diet–induced psoriasis (PsO) model. Wildtype (WT) and Het GOF TRPM4 mice were fed a Western diet or control diet for 6 weeks, and histologic assessment of mouse ears and skin was performed. Bone marrow DCs (BMDCs) from WT and Het GOF TRPM4 mice were cultured in the presence of CCL21 and compound 5 and migratory activity was assessed using a filter-based chemotaxis assay. The results revealed that Het GOF TRPM4 mice exhibited increased skin inflammation when fed with the Western diet compared to control diet. BMDCs from Het GOF TRPM4 mice showed increased migration compared to WT BMDCs. Finally, compound 5, the TRPM4 inhibitor, similarly reduced migration from Het GOF TRPM4 and WT BMDC. The authors concluded that TRPM4 GOF mutations enhance features of PsD and increase capacity for migration in DCs, suggesting that TRPM4 inhibition may be a new potential therapeutic strategy for PsD.

4. Genome-guided proteomic analysis identified biomarkers for the conversion from PsO to PsA, presented by Courtney Carroll from Salt Lake City, Utah, USA

The objective of this study was to identify rare genetic variants associated with PsA and use proteins related to these candidate genes to identify predictive biomarkers for PsA in patients with cutaneous-only PsO. The authors performed whole-exome sequencing on 1214 patients with PsO to identify rare genetic variants that confer a moderate to high risk of PsA. Firth penalized Cox proportional hazards regression was used to examine the association between genes and PsA risk, and the results were confirmed in an independent cohort of 4533 patients with PsO. Using the SomaScan protein assay (SomaLogic), the authors assessed candidate protein markers in 87 converters (patients who initially enrolled with cutaneous-only PsO and were subsequently diagnosed with PsA) and 98 controls (patients with cutaneous-only PsO who had been followed for at least 10 years without converting to PsA). Linear regression was used to assess the association of biomarkers with PsA conversion. The gene-based analysis identified *osteoclast-stimulating factor-1* (*OSTF1*) as a gene with genome-wide significance in the primary cohort (multiple-testing corrected P [P_c] = 0.01, hazard ratio [HR] = 27.4) and secondary cohort (P_c = 0.04, HR = 14.2). Three candidate proteins were significantly associated with PsA conversion: *OSTF1* ($P = 0.002$), tartrate-resistant acid phosphatase (TRAP; $P < 0.001$), and transcobalamin-1 (TCN1; $P < 0.001$). ACP5 and TCN1 remained significant in a multibiomarker regression. Based on this study, the authors identified *OSTF1* as a novel PsA susceptibility gene and 3 proteins related to osteoclast regulation and cobalamin binding as being associated with the development of PsA.

5. Single-cell sequencing reveals shared CD8+ T cell clones between skin and synovial tissue in PsA, presented by Lucy E. Durham from London, UK

The authors of this study hypothesized that T cell clonality may be shared in the skin and joints of patients with PsD. They used single-cell RNA sequencing of paired skin and synovial tissue (n = 35,491 cells from n = 6 patients with PsA) to assess T cell clonality and phenotype. The authors found marked phenotypic differences between CD8+ T cells in the skin vs the joints; a significantly higher percentage of CD8+ T cells in the skin resided in T_{RM} cell clusters and expressed IL-17 compared to the synovial tissue CD8+ T cells. Despite the phenotypic differences, there was significant overlap of T cell clones; 156 CD8+

T cell clones and 44 CD4+ T cell clones were shared between the skin and joint. T cells expressing the same T cell receptor between skin and joints were more likely to have identical phenotypes. Based on these results, the authors concluded that the T cell infiltrate in skin and synovium is linked in terms of T cell clonality, suggesting the possibility that T cells migrate between the skin and the joint to propagate inflammation across both sites.

Poster presentations

1. Pain mechanisms in PsA: Differentiating inflammation-related pain in enthesitis using ultrasound in comparison to functional magnetic resonance imaging, presented by Ummugulsum Gazel from Ottawa, Ontario, Canada

The aim of this study was to compare fMRI features in patients with PsA with and without entheseal inflammation on ultrasound (US) to determine if there was a differential response to pain stimuli depending on the mechanism of entheseal pain. The authors compared 2 patient groups: (1) those with Achilles enthesitis on exam and positive US, and (2) those with or without Achilles tenderness on exam but negative US. fMRI was performed on patients in each group before and after pain stimulus was applied to the Achilles. Patients who were US positive had more neural activity when processing pain than US-negative patients. With induction of pain, US-positive patients had significantly more activity in brain regions related to movement, body representation, and pain compared to the US-negative group. In summary, patients with inflammatory enthesitis on US process pain differently than those who are US negative, confirming that US can differentiate pain mechanisms.

2. Evaluation of liver fibrosis in patients with PsO and rheumatoid arthritis treated with methotrexate using transient elastography, presented by Daniela Kampel Stolnicki from Rio de Janeiro, Brazil

In this cross-sectional study, the authors used transient elastography (TE) to compare the presence of liver fibrosis (LF) in patients with PsO and rheumatoid arthritis (RA) treated with methotrexate (MTX) and to determine the association of LF with various clinical features. Adult patients with either PsO or RA treated with MTX, who were not using biologic therapy, were included in the study. TE fibrosis scores (F0 to F4), liver biochemistries, and BMI were assessed. A total of 135 patients (PsO: 63; RA: 72) were included. A total of 19 (14.1%) had LF (PsO: 15, RA: 4). Patients with PsO were 6.2 times more likely to have significant LF by TE compared to those with RA. A significant association was found between BMI and TE scores. In summary, PsO and obesity were significantly associated with LF as measured by TE, though cumulative dose of MTX was not. The authors concluded that further research is needed to better assess risk factors related to the use of MTX.

3. Difficult-to-treat PsA: Lack of response to methotrexate and prolonged treatment breaks predict refractory disease, presented by Devika Dua from Coventry, UK

In this retrospective analysis, the authors used the European Alliance of Associations for Rheumatology (EULAR) definition of difficult-to-treat (D2T) RA to identify factors associated with D2T PsA. The charts of 200 patients with PsA were reviewed to identify patients who met D2T criteria, and additional demographic and disease factors were collected including pattern of disease at presentation, cumulative disease activity (skin, tender joints, swollen joints, patient and physician global assessment on a visual analog scale), radiographic damage, response to conventional disease-modifying antirheumatic drugs (DMARDs), and response to biologics. Cluster analysis using the K-means cluster algorithm was performed. A total of 30/200 patients (15%) met the D2T definition. Four factors were associated with patients with D2T PsA: (1) complete lack of response to MTX therapy, (2) prolonged treatment breaks, (3) high cumulative tender and swollen joints, and (4) high cumulative patient and physician global VAS.

4. Effectiveness of sequential lines of biologic and targeted synthetic drugs in PsD: A systematic review, presented by Charlotte E. Gollins from Bath, UK

In this systematic review, the authors assessed the effectiveness of biologic or targeted synthetic DMARDs (b/tsDMARDs) beyond first line in adults with PsD. A systematic search of the literature was undertaken using MEDLINE, Embase, and bibliographic searches. A total of 2666 abstracts were identified, and 177 full texts were reviewed; 32 studies and 3 abstracts met eligibility criteria. In PsA, 12 studies were included; 5 studies assessed second-line and 7 studies assessed third- and later-line b/tsDMARDs. Effectiveness decreased after first-line treatment but clinical response in subsequent lines of b/tsDMARDs varied from second-line onward. In PsO, 20 studies were included. Similar effectiveness was often found in first- and second-line treatment, with varying clinical response to third line and beyond. The authors concluded that b/tsDMARDs can be effective at third line in PsA and second line in PsO. They noted the need for prospective studies to better understand the clinical response to advanced lines of treatment in PsD.

5. The association between sonographic imaging phenotype and clinical phenotypes in patients with active PsA, presented by Jessica Gutierrez from Toronto, Ontario, Canada

The aim of this study was to assess whether sonographic imaging phenotypes were associated with clinical features and disease outcomes in patients with PsA. The authors enrolled patients with PsA and peripheral manifestations who were about to start treatment. Disease activity in various PsA domains was assessed using validated outcome measures through physical examination, laboratory tests, and patient questionnaires. US was used to assess inflammatory and structural lesions. A total of 135 patients with PsA (48.9% female) were enrolled. Synovitis score correlated with peritenonitis, tenosynovitis, new bone formation, and erosion scores (all $r > 0.4$) as measured by US. Swollen joint count strongly correlated with synovitis and peritenonitis scores. Sonographic peritenonitis and tenosynovitis were the features that correlated the most with dactylitis. Clinical enthesitis (by the Spondyloarthritis Research Consortium of Canada [SPARCC]) and patient pain did not strongly correlate

with any feature or sonographic domain. The authors concluded that although discordance exists between imaging and clinical features of PsA, US can help understand PsA heterogeneity.

6. Expression of synovial tissue–homing receptors on circulating mononuclear phagocytes in PsA, presented by Joseph Hutton from Cambridge, UK

The authors of this study sought to understand the interactions that drive circulating mononuclear phagocyte (MPS) migration to the joint in patients with PsA. They isolated peripheral blood mononuclear cells from patients with active, treatment-naïve PsA (n = 5) and healthy controls (n = 5). Monocytes and DCs were purified and sequenced to a high depth using SmartSeq2. Gene expression changes were assessed using gene set enrichment, and results were validated using multiparameter flow cytometry and mass cytometry. Circulating MPS in PsA are enriched for transcripts that favor adhesion, migration, and production of PsA-related cytokines. Mass cytometry revealed a subset of circulating monocytes that express synovial tissue–homing markers that were expanded in patients with PsA; macrophages in PsA synovial tissue expressed similar homing markers. In summary, this study revealed the presence of circulating MPS that are primed for homing to synovial tissue and production of disease-relevant cytokines in PsA.

7. Predicting response to therapy among patients with PsA: Results from the British Society for Rheumatology PsA Register (BSR-PsA), presented by Stephanie Lembke from Aberdeen, UK

The goal of this study was to identify predictors of b/tsDMARD treatment response using the BSR-PsA, which recruits patients across the UK who satisfy Classification for Psoriatic Arthritis (CASPAR) criteria for PsA and are commencing treatment. Patients were either b/tsDMARD-naïve or starting a b/tsDMARD they had not received previously. Clinical data were collected from medical records and patient-reported outcomes by questionnaires. Predictors of treatment response (PsA Response Criteria [PsARC] at 3 months) were examined. A total of 403 participants were included. In univariable analysis, factors predicting PsARC response included a higher level of education, being employed, concomitant conventional synthetic DMARD use, and worse skin and nail disease. Longer disease duration, prior history of b/tsDMARDs, concomitant steroids, poor sleep, high fatigue, and poorer self-reported quality of life were associated with a decreased likelihood of achieving treatment response. The multivariable analysis identified poor sleep, longer disease duration, physician global disease skin assessment, and onycholysis as independent predictors of PsARC. The authors concluded that the results of this study may help clinicians consider nonpharmacologic interventions to help optimize patient outcomes.

8. Arthralgia with risk of progression to PsA in a large cohort of patients: Role of ultrasound, presented by Mareco Jonatan from La Plata, Argentina

The objective of this prospective cohort study was to estimate the frequency of arthralgia with risk of progression to PsA (ARP-PsA) and to assess clinical, laboratory, and imaging predictors. The study included patients over the age of 18 with arthralgia, and baseline clinical, imaging, and sociodemographic data were collected. The presence of PsO and family history was investigated, and this group was then evaluated at 1 year to determine if they developed PsA. A total of 119 patients with ARP-PsA were included in the study, 34 of whom developed PsA at 1 year. By multivariate analysis, combination of PsO plus family history, synovitis by power Doppler US, US enthesopathy, and tender joint count predicted the development of PsA.

9. A cytokine signature from monocyte-derived macrophages predicts response to apremilast in patients with PsA, presented by Antonio Tunutti from Milan, Italy

The objective of this study was to investigate the ex vivo effects of apremilast on monocyte-derived macrophages in patients with PsA. A total of 23 patients with PsA starting apremilast were enrolled and 21 patients with osteoarthritis (OA) served as controls. Peripheral blood monocytes were isolated at baseline and after 4 months of treatment, and monocytes were differentiated into M1 or M2 macrophages. Cytokines were assessed by real-time (RT)-PCR and ELISA. Responder status was assessed by Disease Activity Index for Psoriatic Arthritis (DAPSA). In M1 macrophages, baseline IL-23 expression was higher than in OA. Responders had higher TNF and IL-1β compared to nonresponders ($P = 0.03$). At 4 months, IL-23 expression decreased in responders ($P = 0.03$), whereas inflammatory cytokines trended toward being increased in nonresponders (P = not significant). The authors concluded that high baseline expression of IL-1β, TNF, and IL-23 from M1 macrophages was associated with response to apremilast in patients with PsA.

10. Characterizing the spectrum of spinal inflammation in PsA by in vivo 18F-FDG total-body positron emission tomography/computed tomography imaging, presented by Yasser G. Abdelhafez from Sacramento, California, USA

The objective of this study was to describe the spectrum of spondylitic changes seen from total-body positron emission tomography (PET)/computed tomography (CT) imaging using 18F-fluorodeoxyglucose F18 (18F-FDG) in patients with PsA. A total of 25 patients with PsA were recruited, of whom 8 had inflammatory back pain. All subjects underwent 18F-FDG total-body PET/CT. PET demonstrated abnormality in 1 or more of the described sites in 21 (84%) patients. Additionally, 20 (80%) patients showed spinal enthesitis and 5 patients had either symmetric or asymmetric sacroiliitis on PET. The authors concluded that spondylitic changes are common in PsA and that this may be clinically occult.

11. HLA class I alleles as a predictor of retention to treatment with IL-17 antagonists in a cohort of patients with PsA in Newfoundland, presented by Kaitlyn Kaltenberger from St. John's, Newfoundland and Labrador, Canada

The aims of the study were to determine whether HLA class I profiles had an association with retention to treatment with

secukinumab and to assess predictors of secukinumab drug retention. A retrospective analysis of a PsA cohort was performed, assessing drug retention at multiple intervals, and using various disease activity measures. Serologic HLA class I typing was also performed. A total of 27 patients were included, and overall retention was estimated at 56% at 36 months. HLA class I analysis was performed for 19 patients, and HLA A2 was negatively associated with time to discontinuation of secukinumab with Spearman correlation coefficient (ρ) –0.737 ($P = 0.04$). The authors concluded that HLA class I type may be associated with treatment retention among patients given secukinumab.

12. The determinants of radiographic progression in patients with early PsA: A longitudinal analysis of the Dutch Southwest Early Psoriatic Arthritis (DEPAR) real-world cohort, presented by Gonul H. Koc from Rotterdam, the Netherlands

The aim of this study was to define baseline clinical variables as determinants for radiographic progression in early patients with PsA. Data from the DEPAR study enrolling patients with early PsA were used. Radiographs from different timepoints were included and radiographic progression was defined as a change in total severity score (TSS) > 1.37 at any time in 3 years of follow-up. The progressive group (n = 59) had a significantly higher modified TSS (mTSS) compared to the nonprogressive group (n = 417) at diagnosis (17 [3-36] vs 0 [0-1]). In the multivariate analysis, older age and the presence of swollen joints were predictive of mTSS changes, whereas being female had a protective effect. In summary, baseline clinical determinants for radiographic progression in 3 years are older age, the presence of swollen joints, and the presence of erosive disease and joint space narrowing.

13. Development of the Generalized Pustular PsO Clinical Assessment Tool (GPP-CAT), presented by Nicole Mastacouris from New York, New York, USA

The goal of this study was to develop a tool to assess disease severity in generalized pustular PsO (GPP). Twelve dermatologists with expertise in GPP and 2 patients with GPP nominated 38 factors that could comprise a GPP severity assessment. Experts participated in an e-Delphi exercise to achieve consensus on items essential to assessing improvement after treatment of GPP in routine practice, by defining "Consensus In" items. "Consensus In" was achieved for 3 signs (body surface area, erythema, and pustulation) and 2 symptoms (skin pain and itch). These items were reviewed by 10 community-based dermatologists, all of whom agreed on the usefulness of the tool. The authors concluded that the GPP-CAT is a pragmatic tool to assess disease severity in practice, and it may be applied to decision making on treatment or in evaluating response to treatment in GPP.

14. The prevalence and incidence of PsO and PsA in England from 2009 to 2019: An observational study using primary care data, presented by Arani Vivekanantham from Oxford, UK

The objective of this study was to determine the prevalence and incidence of PsO and PsA in male and female individuals from 2009 to 2019 across all age groups in England. The authors used the Clinical Practice Research Datalink Aurum, a primary care electronic health record database that includes 20% of the English population. Diagnosis codes were selected by dermatologists and rheumatologists and cross-checked with published code lists to ensure total inclusivity. The prevalence of PsO and PsA in male and female individuals has increased annually and was highest among patients older than 65 years. The incidence of PsO decreased in male individuals over the study period and was stable in female individuals, whereas PsA incidence increased in both groups.

15. Patients developing inflammatory bowel disease before spondyloarthritis manifest significantly higher rates of enthesitis: Findings from a single-center real-life cohort, presented by Elisa Barone from Milan, Italy

The objective of this retrospective study was to analyze a cohort of patients with spondyloarthritis (SpA) and inflammatory bowel disease (IBD) and compare the clinical features of patients who developed rheumatologic manifestations (SpA > IBD) vs those developing IBD first (IBD > SpA). Patients with IBD and SpA (or PsA) were followed by a multidisciplinary team of gastroenterologists and rheumatologists. The analysis included 48 patients with SpA/PsA and IBD. Patients with IBD > SpA had significantly higher rates of enthesitis both at baseline ($P = 0.02$) and during the course of disease ($P = 0.04$) compared to SpA > IBD. Nearly half the patients (22/48, 46%) fulfilled PsA classification criteria, and these patients were more likely to have a history of multiple therapeutic failures ($P = 0.02$). The authors concluded that enthesitis may be the earliest clinical manifestation of SpA in patients already diagnosed with IBD based on the results of this real-world cohort analysis.

16. Usefulness of low-dose computed tomography in patients with PsO and PsA with nonspecific axial symptoms, presented by Serife Asya Germe from Ankara, Turkey

Low-dose CT (ldCT) has advantages over conventional radiography in showing spinal structural changes in axial SpA. The aim of this study is to determine the contribution of spinal ldCT to the diagnosis and assessment of disease severity in patients with PsO and PsA with nonspecific axial symptoms. A total of 116 patients with PsO with axial symptoms were included, of whom 47 had ldCT performed. Among patients with known PsA, 71% had axial disease by conventional radiography. When ldCT was used, 66.7% of patients with PsO and 85.7% of patients with PsA had axial disease. In summary, when patients with PsO and PsA with nonspecific axial symptoms were evaluated with spinal ldCT, new syndesmophytes were found in a significant proportion of patients.

17. Imaging morphological characterization of the axial manifestations of PsA, presented by Henriette Kading from Berlin, Germany

The aim of this observational study was to prospectively investigate comprehensive clinical and imaging morphological patterns in a well-defined cohort of patients with axial manifestations of PsA (axial PsA) from the German Spondyloarthritis Inception

Cohort (GESPIC). All patients in the cohort were seen by a rheumatologist and underwent conventional radiographs and MRI of the entire spine and sacroiliac joints. Extensive clinical and laboratory characterization was also conducted. A total of 104 patients with axial PsA were included, among whom 75% had inflammatory back pain. A total of 51% of patients had active sacroiliitis by MRI, whereas 71.6% had structural lesions and 57.9% had inflammatory spinal lesions. Notably, compared to patients with axial SpA, patients with axial PsA were less likely to be HLA-B27 positive (47.1%).

18. Effectiveness and factors associated with minimal disease activity in upadacitinib-treated patients with PsA: 24-week results of a real-life multicenter study (UPREAL-PsA), presented by Valentino Paci from Ancona, Italy

This observational, real-world study evaluated the effectiveness and safety of upadacitinib in a large multicenter cohort of patients with PsA. One-hundred twenty-six patients with PsA treated with upadacitinib at 10 Italian centers were evaluated at baseline, week 12 (W12), and week 24 (W24) for clinimetrics, laboratory tests, and adverse events. Biologic-naïve patients experienced faster responses by W12 than those who had previously failed biologics, though both groups experienced similar improvement by W24. Patients with axial or polyarticular PsA experienced more improvement than patients with peripheral or oligoarticular disease. The multivariate analysis demonstrated that male gender, biologic-naïve status, and high baseline C-reactive protein were associated with higher probability of achieving minimal disease activity response by W24. In this real-world study of upadacitinib in PsA, the authors identified predictors of response to upadacitinib at 6 months and reported efficacy in patients with axial disease or those with axial disease who were refractory to bDMARDs.

19. The transcription factor Bcl11b: A new regulator of canonical and noncanonical nuclear factor-kB pathways, presented by Sara Parsa from Rotterdam, the Netherlands

Canonical and noncanonical nuclear factor-kB (NF-kB) pathways are stimulated by various cytokines. The goal of this study was to investigate the role of the Bcl11b transcription factor in the regulation of NF-kB pathways in the context of PsO. Online datasets of psoriatic and healthy skin samples were downloaded and expression of Bcl11b in an in silico analysis was measured. Clustered regularly interspaced short palindromic repeats (CRISPR)/CRISPR-associated protein 9 (Cas9) was used to knock down Bcl11b in cultured KC, and NF-kB gene expression was assessed. IL-17/IL-23 activation of KC was also assessed. Bioinformatic analysis revealed downregulation of Bcl11b among PsO skin biopsies compared to healthy skin controls. Expression analysis of NF-kB pathway genes indicated an upstream role of Bcl11b in both canonical and noncanonical NF-kB pathways. Cytokine stimulation showed that IL-17A can return the Bcl11b expression level to normal in Bcl11b knocked-down KC, in contrast to IL-23. In conclusion, this is the first study to our knowledge showing the importance of Bcl11b in PsO and NF-kB pathway regulation.

20. Prevalence of sternal bone edema in patients with SpA and PsA with axial involvement, presented by Natalia Soledad Rius from Buenos Aires, Argentina

The main objective was to determine and compare the prevalence of sternal edema and sterno-clavicular joint synovitis in patients with SpA and axial PsA and to correlate these findings with other clinical variables. Patients with SpA (by Assessment of SpondyloArthritis international Society [ASAS] criteria) and PsA (by CASPAR criteria) with clinical axial involvement were included, and various disease activity measures were performed. MRI and radiographs of the sacroiliac joint, cervical, thoracic, and lumbar spine were performed within 1 month of the clinical evaluation. A total of 45 patients with SpA and 34 patients with axial PsA were included, and 39% of patients with SpA and 26% of patients with PsA had sternal edema. Sterno-clavicular joint synovitis was found in 15% of SpA vs 7.4% in PsA ($P = 0.35$). There was no correlation between sternal edema and any disease activity measure or the presence of sacroiliitis. This study confirmed the high prevalence of sternal edema in patients with SpA and PsA.

21. Actigraphy-derived physical activity levels and circadian rhythm variables in patients with PsA: Relationship with disease activity, functional impairment, and mood, presented by Dylan McGagh from Oxford, UK

This pilot study aimed to investigate the relationship between disease activity, daily symptoms, and mood on physical activity and circadian rhythm in PsA. Adult patients with PsA were recruited from rheumatology clinics at a single center, and disease activity and functional impairment were assessed. Participants recorded their daily symptoms and mood on a smartphone app while wearing a triaxial accelerometer to measure time spent at different levels of activity. Variables reflecting the circadian rhythm of physical activity were also estimated. The relationship between baseline clinical status and physical activity volumes and circadian measures were examined using linear mixed effect regression models. A total of 19 participants were included; participants with active PsA spent more time being sedentary and less time in moderate-to-vigorous physical activity (MVPA). Higher mood scores were associated with less time in inactivity and more time in MVPA. Based on these results, the authors suggested that reduced physical activity levels in patients with active disease may contribute to the observed increased risk of cardiovascular and metabolic sequelae.

Conclusion

The GRAPPA trainee session was well attended, and the trainees received meaningful feedback on their research projects. The scientific input yielded exciting discussions and suggestions for future research. The next GRAPPA trainee symposium will be held in July 2024 in Seattle, Washington.

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