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Update on the Axial Involvement in Psoriatic Arthritis (AXIS) Project

Murat Torgutalp[1], Denis Poddubnyy[2], and Dafna D. Gladman[2]

ABSTRACT. Psoriatic arthritis (PsA) is an inflammatory disease associated with psoriasis, often affecting both peripheral and axial skeletal structures. Axial symptoms affect a significant portion of individuals with PsA. The Axial Involvement in Psoriatic Arthritis (AXIS) study, a multinational, multicenter cross-sectional study conducted under the umbrella of the Group for Research on Psoriasis and Psoriatic Arthritis (GRAPPA) and Assessment of SpondyloArthritis international Society (ASAS), aimed to establish a unified definition and classification criteria for axial involvement in PsA. The study enrolled 409 patients from 41 centers across 19 countries. Comprehensive clinical and imaging assessments were conducted for each patient including radiographs and magnetic resonance imaging of the sacroiliac joints and spine. Imaging data were reviewed by both local investigators and a central imaging committee. Final judgment on the presence or absence of axial involvement was made by investigators following evaluation of all data by the investigators and the central expert imaging team. Axial involvement was assessed to be present in 112/409 patients (27.4%). Data analysis is ongoing and the full study results are expected shortly. This update was presented at the GRAPPA 2024 annual meeting.

Key Indexing Terms: axial involvement, GRAPPA, psoriatic arthritis, psoriasis, spine

Introduction and study rationale

Psoriatic arthritis (PsA) is an inflammatory rheumatic disease that is frequently manifested in individuals with psoriasis (PsO). PsA affects both peripheral musculoskeletal (MSK) structures and the axial skeleton, which involves the sacroiliac joints and spine. Axial involvement has been reported in 25% to 70% of patients with PsA, depending on the criteria used.[1] Registry data indicate that axial involvement in PsA is associated with increased disease activity and has a negative effect on quality of life.[2]

The classification of axial involvement in PsA is a subject of ongoing scientific debate. Terms such as "PsA with axial involvement" and "axial spondyloarthritis with PsO" are used to describe this condition. Although there is some overlap in the features of these entities, previous studies and hypotheses regarding the pathogenesis of axial involvement in PsA suggest it may be distinct from axial spondyloarthritis (axSpA).[3,4] Moreover, it remains unclear whether treatment responses for axial involvement in PsA can be extrapolated from studies on primary axSpA, as few studies have focused specifically on this aspect of PsA. For instance, interleukin 23 inhibitors have shown efficacy in treating PsO and peripheral PsA but are not effective in treating primary axSpA.[5,6] There is a need for standardized criteria and nomenclature for axial involvement in PsA to facilitate research and treatment development.

In response to this need, in 2018 the Assessment of SpondyloArthritis international Society (ASAS) and the Group for Research and Assessment of Psoriasis and Psoriatic Arthritis (GRAPPA) jointly initiated efforts to develop a consensus definition of axial involvement in PsA.[7]

Aim and objectives

Given the current absence of a PsA cohort with comprehensive imaging data, the Axial Involvement in Psoriatic Arthritis (AXIS) study aimed to establish a prospective cross-sectional cohort to derive unified nomenclature and classification criteria for axial involvement in PsA. The study's main objectives are as follows:

- To determine the frequency of axial involvement in patients with PsA based on both local and central assessments
- To identify the frequency of active inflammatory and structural changes in the axial skeleton on imaging
- To identify clinical, laboratory, and imaging factors associated with axial involvement in PsA

Study design and population

The AXIS study is a multinational, multicenter cross-sectional investigation involving patients with PsA. The study population consisted of adult patients with a confirmed diagnosis of

[1]M. Torgutalp, MD, MSc, Department of Gastroenterology, Infectious Diseases and Rheumatology (including Nutrition Medicine), Campus Benjamin Franklin, Charité – Universitätsmedizin Berlin, Berlin, Germany; [2]D. Poddubnyy, MD, MSc, D.D. Gladman, MD, Division of Rheumatology, Department of Medicine, University Health Network and University of Toronto, Toronto, Ontario, Canada.

D. Poddubnyy and D.D. Gladman contributed equally to this work.

Address correspondence to Dr. D.D. Gladman, Toronto Western Hospital, 399 Bathurst St. 1E-410B, Toronto, ON M5T 2S8, Canada. Email: dafna.gladman@utoronto.ca.

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PsA fulfilling the Classification Criteria for Psoriatic Arthritis (CASPAR) criteria. Patients had to have a history of MSK symptoms for up to 10 years and to not have received biologic or targeted synthetic disease-modifying antirheumatic drugs.

Study procedures

Eligible patients were recruited prospectively and underwent comprehensive clinical examination and standardized imaging studies, including radiographs and magnetic resonance imaging (MRI) of the sacroiliac joints and spine. The study involved 2 central committees: an imaging committee and a clinical committee.[7]

Central imaging review process. The central imaging committee comprised rheumatologists and MSK radiologists with expertise in PsA and axSpA. One radiologist and 1 rheumatologist independently reviewed all radiographs and MRIs, providing a global evaluation for each imaging modality and indicating their level of confidence regarding the presence or absence of axial disease as a manifestation of PsA on a −5 to +5 numeric rating scale, along with a narrative report. If there was disagreement, another radiologist who had not participated in the initial review adjudicated the imaging modality.

Central clinical review process. The 4 members of the central clinical committee then reviewed all the cases considering all clinical, laboratory, and imaging information as well as the central imaging committee's reports. Each case was independently assessed by 2 central clinical reviewers. Adjudication was warranted when disagreements arose in answer to the global question, "Are the clinical, radiographic, and MRI findings taken together consistent with a diagnosis of axial involvement in PsA?"

Final investigator assessments. Local rheumatologists initially completed their own assessment of inflammatory changes on imaging and determined the presence or absence of axial involvement together with the level of their confidence in this. After evaluating all data, including the central imaging review reports, the local rheumatologist reported a final global assessment and their confidence level to indicate whether the patient's clinical, radiographic, and MRI presentation was indicative of axial involvement in PsA.

Current status of the project. A total of 428 patients were screened, and 409 patients were enrolled in the AXIS study between July 2021 and November 2023 from 41 centers in 19 countries. The mean age of participants in the AXIS cohort was 46.9 (SD 13.0) years, and 216 (52.8%) were male.

The final investigator assessment revealed 112/409 participants (27.4%) with axial involvement. Data analysis is still ongoing and the complete study results are expected shortly. Subsequently, criteria for axial disease in PsA for application in the research setting, which are currently under development, will be validated in the context of the AXIS study.

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COMPETING INTERESTS

DP has received research support from AbbVie, Eli Lilly, Janssen, Novartis, Pfizer, UCB; consulting fees from AbbVie, Biocad, BMS, Eli Lilly, Janssen, Moonlake, Novartis, Pfizer, and UCB; and speaker fees from AbbVie, Canon, DKSH, Eli Lilly, Janssen, MSD, Medscape, Novartis, Peervoice, Pfizer, and UCB. DDG has received grant support and/or consulting fees from AbbVie, Amgen, BMS, Eli Lilly, Janssen, Novartis, Pfizer, and UCB. MT declares no conflicts of interest relevant to this article.

ETHICS AND PATIENT CONSENT

Institutional review board approval and patient consent were not required.

PEER REVIEW

As part of the supplement series GRAPPA 2024, this report was reviewed internally and approved by the Guest Editors for integrity, accuracy, and consistency with scientific and ethical standards.

REFERENCES

1. Poddubnyy D, Jadon DR, Van den Bosch F, Mease PJ, Gladman DD. Axial involvement in psoriatic arthritis: an update for rheumatologists. Semin Arthritis Rheum 2021;51:880-7.
2. Mease PJ, Palmer JB, Liu M, et al. Influence of axial involvement on clinical characteristics of psoriatic arthritis: analysis from the Corrona Psoriatic Arthritis/Spondyloarthritis Registry. J Rheumatol 2018;45:1389-96.
3. McGonagle D, David P, Macleod T, Watad A. Predominant ligament-centric soft-tissue involvement differentiates axial psoriatic arthritis from ankylosing spondylitis. Nat Rev Rheumatol 2023;19:818-27.
4. Kwok TSH, Sutton M, Pereira D, et al. Isolated axial disease in psoriatic arthritis and ankylosing spondylitis with psoriasis. Ann Rheum Dis 2022;81:1678-84.
5. Braun J, Landewé RB. No efficacy of anti-IL-23 therapy for axial spondyloarthritis in randomised controlled trials but in post-hoc analyses of psoriatic arthritis-related "physician-reported spondylitis"? Ann Rheum Dis 2022;81:466-8.
6. Gladman DD, Mease PJ, Bird P, et al. Correspondence on 'No efficacy of anti-IL-23 therapy for axial spondyloarthritis in randomised controlled trials but in post-hoc analyses of psoriatic arthritis-related 'physician-reported spondylitis'?' Ann Rheum Dis 2023;82:e187.
7. Poddubnyy D, Baraliakos X, Van den Bosch F, et al. Axial Involvement in Psoriatic Arthritis cohort (AXIS): the protocol of a joint project of the Assessment of SpondyloArthritis international Society (ASAS) and the Group for Research and Assessment of Psoriasis and Psoriatic Arthritis (GRAPPA). Ther Adv Musculoskelet Dis 2021;13:1759720x211057975.