

Setting an interdisciplinary framework to improve functional outcomes in Axial Spondyloarthritis: A commentary on "The Future of Axial Spondyloarthritis Rehabilitation: Lessons Learned From COVID-19"

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Dear Editor,

We read with great interest the recently published article by Barnett R. and Sengupta R. "The Future of Axial Spondyloarthritis Rehabilitation: Lessons Learned From COVID-19", which we consider highly informative as it emphasizes the emerging challenges and adaptations in axial spondyloarthritis (SpA) rehabilitation imposed by the COVID-19 pandemic restrictions and describes the benefits and barriers of digital technologies implementation. We would like to share our perspective from Portugal and how we addressed the rehabilitation of axial SpA patients during the pandemic.

The COVID-19 pandemic has undeniably highlighted existing gaps in the health services framework and access to healthcare. Axial SpA patients were among the most affected by missed rheumatology appointments and loss of follow-up, which had subsequent adverse effects on function and quality of life (1). Despite digital technologies gaining *momentum* in current rehabilitation medicine with immense enthusiasm being shared by many professionals, due to the complexity related to axial SpA evaluation, management, and rehabilitation, digital interventions should be carefully considered as robust evidence of their implementation and populations' digital awareness are still lacking, as demonstrated by Barnett et al. Additionally, the digital infrastructure of many countries' national health services, including Portugal's, is not sufficiently optimized to plan a blended in-person and digital service provision, as proposed by the article, or even a multimodal rehabilitation program as many professionals are not sufficient digital literate. The authors identified digital exclusion as a crucial factor to be considered when establishing a rehabilitation protocol. In fact, Portugal ranks 16th (below the European Union average), in the Digital Economy and Society Index, an indicator of individuals' digital skills, connectivity, integration of digital technology, and digital public services (2).

Therefore, our Department of Physical Medicine and Rehabilitation and the Department of Rheumatology of Vila Nova de Gaia/Espinho Hospital Center developed a protocol to refer, in an early, periodic, and structured method, patients with a confirmed diagnosis of axial SpA and moderate to severe functional limitation requiring conventional physiatrist treatments, in addition to the timely pharmacological therapy initiated and monitored by a rheumatologist. By establishing this protocol, we aim to prevent structural damage progression, reduce disease activity, and, ultimately, improve the health-related quality of life of patients whose functionality and social participation would have stayed impaired (3, 4).

In fact, axial SpA is a complex chronic disease characterized by axial inflammatory involvement, particularly of the sacroiliac joints, spine, and, less often, costovertebral joints, being inflammatory low back pain the primary clinical manifestation. Peripheral manifestations (arthritis, enthesitis, and dactylitis) may occur, as well as extra-articular manifestations, namely uveitis, psoriasis, or cardiopulmonary complications (5). Hence, the functional impact of axial SpA centers on the loss of mobility of the spine, reduction of pulmonary function due to chest expansion limitation, and deconditioning either due to chronic corticosteroid therapy or due to a hyperinflammatory status. At a more advanced stage of the disease, the intervertebral fusion leads to substantial biomechanical adaptations, such as loss of lordotic curvature and subsequent thoracic hyperkyphosis resulting in gradual impairment in functionality and participation in activities of daily living (ADL) (6).

A comprehensive clinical and functional evaluation should be, then, pursued, requiring the patient's physical presence as clearly supported by the authors. Patient education, smoking cessation, regular exercise practice, or, in selected

cases, supervised therapeutic exercise and pharmacological treatment is an evidence-based multimodal treatment approach that has already proven its benefits on pain and inflammatory activity, structural damage progression, joint mobility, aerobic capacity, and overall quality of life (5, 6).

Thus, our protocol allows the immediate referral to a supervised patient-tailored multimodal rehabilitation program, designed by physiatrists, for patients aged between 18 and 65 years, with significant functional limitations and moderate to severe disease activity (*Bath Ankylosing Spondylitis Disease Activity Index* > 3.5 or *Ankylosing Spondylitis Disease Activity Score* > 2.1) with pharmacological therapy stable for, at least, three months (5, 8). Selected patients will be inquired about their physical activity routine and smoking habits. If any patient reports respiratory symptoms, a pulmonary function evaluation and respiratory muscle strength assessment should follow, which will indicate inspiratory muscle training (9).

Since recent evidence has shown the paradoxical effect of exercise in this patient population, also well exposed by Barnett et al., our rehabilitation program is set as specifically suitable for axial SpA patients (11), and incorporates aerobic exercise (step-aerobic exercises), flexibility (static stretching exercises), and resistance training (assisted and isometric exercises) (9, 10) with the assistance of physical modalities such as thermotherapy and ultrasound (4, 12) to achieve the rehabilitation goals of pain and stiffness control, optimization of joint range of motion, improvement of strength and flexibility, maximization of ADL independence, among others (4, 5).

Upon its completion, a full reassessment is made by the physiatrist to determine the rehabilitation program's effectiveness on disease activity, radiographic progression, functionality, and health-related quality of life. For the reasons exposed above, we do not foresee the implementation of digital interventions yet, nonetheless, we plan to encourage our patients to daily monitor their physical activity and implement the necessary lifestyle changes (1).

Despite the role digital technologies might have in the future, a close collaboration between patients and healthcare professionals is still key to the success of an axial SpA rehabilitation program, mainly when recovering from the COVID-19 pandemic which interrupted treatments and delayed diagnosis. Therefore, our interdisciplinary framework has the potential to optimize the support and rehabilitation care of axial SpA patients.

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