Upskilling to decrease delay to diagnosis in rheumatology

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Inflammatory arthritis can have a significant impact on those living with it and early treatment has been shown to improve outcomes. The physiotherapist, working in a clinical setting where people with undiagnosed inflammatory arthritis might present, has a crucial role in early identification and onwards referral. Considerations of how inflammatory arthritis presents in its early stages and how the physiotherapist can pick up on characteristic signs and symptoms are discussed in this article. Well-informed, thorough and inquisitive clinicians can and will lead to reduction in diagnosis delay.

LEARNING OUTCOMES
TO SUPPORT PHYSIO FIRST QAP

1 Understand the implications of delayed diagnosis in inflammatory arthritis.
2 Consider the role of first contact musculoskeletal practitioners in ensuring inflammatory arthritis is picked up at the earliest possible opportunity.
3 Gain a framework of assessment techniques to pick up early inflammatory arthritis and develop networks of support in implanting these.

Introduction

Working in the musculoskeletal (MSK) field means a combination of diagnostics and rehabilitation. For this article, the aim is to consider the vital role MSK clinicians have as diagnosticians and sign-posters in supporting the early identification of inflammatory arthritis. Too often, patients experience unnecessary delays to diagnosis and treatment for their inflammatory arthritis; these delays increase the burden of the disease and can have short and long-term consequences. This article outlines current delays to diagnosis and then highlights tools for the MSK clinician to support early diagnosis. Adding a specific inflammatory arthritis work-up to the patient assessment will assist in identifying the more common rheumatology-based MSK masqueraders.

Early inflammatory arthritis (EIA) is a "catch-all" term that covers initial presentations of a range of inflammatory MSK diagnoses that may follow a more generic inflammatory presentation in their early stages. A recent audit has shown that nearly every rheumatology service in the UK has an EIA clinic (British Society for Rheumatology 2021). These clinics are set up to allow triaged, urgent access for those patients thought to be presenting with signs of inflammatory MSK. Patients seen in EIA services might go on to receive a broad range of different diagnoses, but for this article we are going to focus on the three most commonly seen: rheumatoid arthritis, axial spondyloarthritis and psoriatic arthritis.

Axial spondyloarthritis

Axial spondyloarthritis (axial SpA) is a chronic immune-mediated rheumatic disease with a number of diverse characteristics, but classically characterised by inflammation and new bone formation predominantly in the axial skeleton. In addition to back pain, people living with axial SpA often experience fatigue, early morning stiffness, sleep disturbance and reduced function and / or mobility (Poddubnyy & Rudwaleit 2012). Extra-articular manifestations (EAMs) of axial SpA are often present and can be a pathway to diagnosis. These EAMs include uveitis, enthesitis, psoriasis, dactylitis and inflammatory bowel disease.

In the UK, it has recently been shown that, for someone living with axial SpA, it takes an average of nearly nine years from initial symptom onset to receipt of diagnosis (Zhao *et al* 2021). Reasons for this delay are multifactorial (McCrum *et al* 2019; Gregory *et al* 2022) and not all may be resolvable; however, aiming to reduce this delay to diagnosis is crucial as people with axial SpA are prone to significant amounts of pain and functional limitation (Martindale & Goodacre 2014; Martindale *et al* 2015). As axial SpA most often begins in early adulthood (Feldtkeller *et al* 2003), it can impact at the life stage where individuals are trying to establish careers and start relationships and families. People living with axial SpA who have had a delayed diagnosis also tend to experience a range of poorer outcomes including decreased spinal mobility, increased radiographic disease progression, poorer quality of life, greater likelihood of work disability, low mood / depression and higher direct and indirect healthcare costs (Yi *et al* 2020).

Research has found instances of missed opportunities for earlier referral to rheumatology, and this has been seen across consults with general practitioners (Al-Attar *et al* 2021) and physiotherapists (Steen *et al* 2021). It has also been suggested that other community-based healthcare professionals (HCPs) may have provided consultations where an earlier diagnosis and referral to rheumatology could have been made. Furthermore, the extra-articular manifestations associated with axial SpA could lead to initial suspicions of the diagnosis arising during a consult with opthalmology, gastroenterology, dermatology or other secondary care-based specialisms. Owing to the potential misdiagnosis of early axial SpA as fibromyalgia (Ogdie *et al* 2019), those living with undiagnosed axial SpA may present to specialist pain management services. Recently published, Europe-wide data, which surveyed more than 2,500 people living with axial SpA, found that the number of HCPs a patient sees before diagnosis significantly correlates with a longer delay to diagnosis (Garrido-Cumbrera *et al* 2022).

Rheumatoid arthritis

Rheumatoid arthritis (RA) is an immune-mediated inflammatory disease. Whilst joint disease is a classic characteristic of RA, there is also a significant morbidity as a consequence of extra-articular comorbidities associated with systemic inflammation (Stack *et al* 2019). A 2009 national report extolled the cost-effectiveness of early aggressive treatment of RA (National Audit Office 2009). In the same year, the National Institute for Health and Care Excellence (NICE) Clinical Guideline 79 emphasised the importance of early diagnosis and treatment of RA (NICE 2009) and this has since been updated in Clinical Guideline 100 (NICE 2018). The requirements for early diagnosis and for the improved outcomes attained by early, aggressive treatment are better established in RA than in axial SpA. There is said to be a "therapeutic window of opportunity" in early RA (van Nies *et al* 2015) and this benefit of timely treatment has been one of the driving factors in a dramatic reduction in delay to diagnosis in RA over the past two decades (Hay *et al* 2018; Stack *et al* 2019). Whilst the current reported average delay to diagnosis in RA is three to six months (Simons *et al* 2022), there remains a key role for first contact practitioners to identify all potential cases to ensure even those with less obvious presentation get access to early treatment.

The National EIA audit is linked to the targets of NICE Quality Standard 33 (2020), regarding time to diagnosis. Data is collected for patients with a diagnosis of rheumatoid or rheumatoid pattern arthritis at three time points across 12 months, assessing waiting times, time to treatment, clinical response to treatment, provision of education and patient-reported outcomes. The target waiting times for this audit are:

- within three working days of presenting in primary care – suspected persistent synovitis affecting more than one joint, or the small joints of the hands or feet, are referred to a rheumatology service.
- within three weeks of referral to rheumatology service – assessment for suspected persistent synovitis to be carried out.

Further guidance on persistent synovitis can be found in NICE Quality Standard 33 (2020) and includes the following symptoms:

- persistent (not resolving within three to four weeks):
  - pain
  - swelling
  - heat
  - early morning stiffness lasting more than 30 minutes and often recurring after longer periods of rest
  - loss of function of the affected joint.

The guidance also states that occasionally the joints may be red, but that this is unusual, and that the person may have systemic symptoms of inflammation, which can include:

- malaise
- fever
- sweats
- fatigue
- weight loss.

The latest National EIA audit draft report shows that many areas of the UK are struggling to achieve the timelines to diagnosis set out in NICE Quality Standard 33 (2020). Most of these delays may well be systematic and, in relation to the period audited, could be due in part to COVID-related pressures on rheumatology services across the UK. However, the ability for HCPs to correctly identify early presentations and equally not to overburden rheumatology services with inappropriate referrals would be a key part of improving audit outcomes and, crucially, getting the right patients seen in EIA clinics in a timely fashion to allow the early aggressive treatments that have been shown to improve long-term outcomes.

Psoriatic arthritis

Psoriatic arthritis (PsA) is an immune-mediated rheumatic disease. Having already discussed the axial SpA diagnoses, here the focus is on PsA which is just one of the more common peripheral spondyloarthritis diagnoses (figure 1). The peripheral arthritis of PsA or peripheral SpA is significantly different to that seen in RA. Involvement tends to be asymmetrical and there is a tendency towards enthesitis, as well as a more classic joint-based impact. When considering the hands, RA tends to spare the distal interphalangeal (DIP) joints, whereas PsA / peripheral SpA will leave distinctive changes on the affected DIP joints. Many patients with

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PsA have axial disease that is concurrent with their peripheral arthritis (Feld *et al* 2018). The main distinguishing factor in PsA is of course psoriasis, but a diagnosis of PsA can be made when the psoriasis is in a blood relative, not necessarily during the patient assessment.

Delay to diagnosis in PsA is estimated at around two-and-a-half years, with shorter delay experienced by those living with more obvious signs of psoriasis (Karmacharya *et al* 2021). The authors later suggested that approximately 60% of patients had psoriasis before PsA (Karmacharya *et al* 2022), which means that around 40% did not have obvious psoriasis signs and it is this group who will most likely experience a delay in PsA diagnosis.

Application in daily practice

Based on the need for early diagnosis of inflammatory arthritis, what can we as frontline MSK practitioners do to improve early detection and onwards referral to rheumatology?

There have been a number of initiatives in recent years that are certainly worth considering incorporating into daily practice and, here, suggestions for potential questions or scripts that might be adopted within a MSK workload for identifying rheumatology masqueraders during history taking will be explained and shared. The benefits of early diagnosis strongly suggest these scripts, or checks, should be a part of the standard assessment for all patients, in much the same way that MSK clinicians have embraced the habit of regularly screening for cauda equina.

Focusing first on axial SpA, we are much indebted to the excellent work of the National Axial Spondyloarthritis Society (NASS) and its most recent publication of a broad screening criteria for potential early disease. The SPINE screening tool was put together based on previous research and recommendations for early identification and combines previously recognised signs and symptoms of early inflammatory back pain, whilst condensing the number of questions that might be asked.

The acronym expansion is as follows:
S – Symptoms starting slowly
P – Pain in the lower back
I – Improves with movement
N – Night-time waking
E – Early onset (before the age of 40 years).

Whilst the SPINE screening tool is a brief overview of the elements to be investigated, there are others that should be considered in cases that aren't clear-cut. An example of these extra components can be seen in figure 2 and includes reference to the SPADE tool (Habibi et al 2016) which is the work of Rudwaleit and colleagues (2006). The sample inflammatory back pain (IBP) pathway splits the process of detecting early IBP into five key questions, similar to the SPINE tool, but with added elements within it to support appropriate early onwards referral. In addition to the SPINE acronym, NASS has recently launched a public facing interactive symptom-checker available at **https://www.actonaxialspa.com/symptoms-checker/** which asks the following questions:

1. Did your back pain start before the age of 40?
2. Did your back pain develop gradually?
3. Has your back pain lasted more than three months?
4. Do you experience stiffness in your back in the morning for at least 30 minutes?
5. Does your back pain improve when you move around?
6. Does your back pain improve when you rest?
7. Do you have pain in your buttocks, which moves from one buttock to the other?
8. Do you wake in the second half of the night because of your back pain?

Early detection is always going to lead us to a situation where one could be accused of over-referral and it's worth being mindful of the published data regarding this. In the physiotherapy world, Becky Adshead is a leading light on axial SpA and has been running her clinics for early inflammatory back pain for more than 10 years. She consistently shows a conversion rate of patients identified with axial SpA to be around 30% (Adshead *et al* 2020), which indicates that around 70% of the new patient cases assessed in her clinic are found not to have axial SpA at the time of assessment. However, one could still consider that the wide gateway of triage to allow early access to referral for the 30% who do end up with the diagnosis is a worthwhile use of time for earlier identification, faster treatment and improved outcomes.
When applying the principles of early

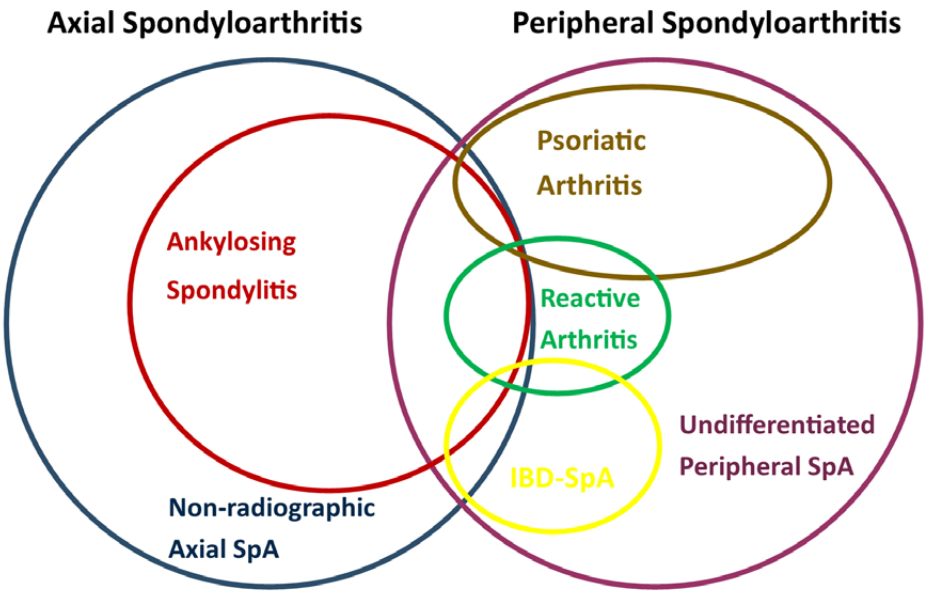

FIGURE 1: Spondyloarthritis terminology Venn diagram

detection for early treatment of RA and PsA, the recommendations in NICE Clinical Guideline 100 (NICE 2018) and Quality Standard 33 (NICE 2020) are good places to start. These NICE documents give clear indications of what should be referred onwards for assessment of potential EIA with three key questions:

1. Are the small joints of the hands or feet affected?
2. Is there more than one joint affected?
3. Has it been three months or more between the onset of symptoms and seeking medical advice?

This is obviously a more compact criteria than that considered for inflammatory back pain and, rather like the inflammatory back pain screening, there is a more extended version of the inflammatory early arthritis detection tool. A longer list has been validated by means of a Delphi process with worldwide EIA experts led by a team in Canada (Bell *et al* 2010), with a core set of dimensions and constructs created for EIA detection. The core dimensions were systematically derived from the literature and augmented by investigative team arbitration. Identified constructs were formulated into lay language questions suitable for self-administration. A three-round Delphi consensus panel of EIA experts and stakeholders evaluated the relevance of each question to EIA detection and suggested additional items, leading to a final list of 11 key questions:

1. Do you have pain in your joints?
2. Do you have pain in your wrists and hands?
3. Are your hands or wrists swollen?
4. Do you have trouble making a fist?
5. Are your joints stiff in the morning?
6. From the time you wake in the morning, does it take more than 60 minutes for your joints to move more freely?
7. Are the same joints involved on both sides of your body?
8. Have important activities in your life been affected because of bone or joint problems, such as having difficulty with personal care or having to make a change regarding leisure or work activities?

FIGURE 2: Example local IBP pathway taken from the National Axial Spondyloarthritis Society symptom checker

9. Have you ever been told that you have rheumatoid arthritis?
10. Does anyone in your family have rheumatoid arthritis?
11. Have you been diagnosed with a rash called psoriasis?

These questions can be seen to encompass both RA and PsA, with the patient-friendly language of question 11 being the start in considering PsA. For the MSK clinician who suspects PsA, there are additional assessment techniques to consider. As previously mentioned, psoriasis does not necessarily have to be found in the person themself to obtain a diagnosis, it could be identified in a blood relative, so asking about any relatives with "a rash called psoriasis" should be included where PsA is considered. An objective examination should also include inspecting some or all of the more common sites for psoriasis, i.e. the hair line, around the ear, the umbilicus and the anal cleft, as appropriate. In addition to skin changes, psoriasis can lead to distinctive changes to the nails with indications such as:

- pitting – discrete, well-circumscribed depressions on nail surface

- subungual hyperkeratosis – a silvery white crusting under the free edge of nail with some thickening of the nail plate
- onycholysis – a separation of the nail from the nail bed at the distal / free edge.

Having assessed for changes in the skin and nails, the next clue for PsA would be the unilateral or asymmetric nature of the joints involved. A positive squeeze test for the metacarpals or metatarsals would point towards some synovitis that may not have been noted on observation, or individual joint palpation. The other distinctive feature of PsA seen at the hands is dactylitis, where there is swelling along the whole length of the digit, primarily driven by inflammation of the flexor tenosynovium.

In addition to the suggestions for assessment and triage, it is worth considering making contact with the rheumatology team in your area. The National EIA audits and documents cases where inflammatory arthritis is queried and this has led to rheumatology teams across the UK having different criteria for access to their EIA clinics. The local rheumatology team and / or EIA clinic management should, therefore, be able to identify and share their particular interpretation of the triage and access criteria, as well as the logic behind it, and how it is allowing them to meet the national early inflammatory arthritis audit standards.

Conclusions

There is a temptation to combine the lists of questions in the various sources referenced in this article, but that may be doing our assessment for rheumatology MSK masqueraders a disservice. Asking such a large number of questions would be bulky if used in day-to-day practice and would irritate the clinician and patient alike. A better option would be to hone one's assessment of rheumatology MSK masqueraders and then rely upon the IBP or RA specific queries list. As with many areas of clinical learning / practice change, it might be that practitioners new to this type of inflammatory detection could start off with longer scripts, whilst those with more experience would be able to jump more readily to specific queries along the diagnostic pathways.

It would certainly be feasible for MSK clinicians to have set scripts, for instances where they suspect inflammatory arthritis in the patient's presentation. Elements of the considerations to add to subjective assessment will, of course, cross over into the objective assessment, especially regarding the detection of synovitis. However, the physical / objective signs of early inflammatory disease can be very subtle or, in the case of axial SpA, imperceptible.

Building close relationships with the local rheumatology team will be a crucial part of alleviating delays to diagnosis and is the one key action recommended for improving referral appropriateness and timeliness. The busy MSK clinician has many differential diagnoses to consider and the rarity of some inflammatory MSK diagnoses means that their early presentation will not usually be at all obvious. For those clinicians with many years of experience in assessing MSK conditions, it is worth relying on a "hunch" and expanding the assessment to include the recommended rheumatology diagnostic tools when the patient presentation doesn't fit what is "usual".

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Will is a Consultant Physiotherapist working for the Rheumatology team at Salford Care Organisation, part of the Northern Care Alliance NHS Foundation Trust. He co-chairs the recently formed and CSP-affiliated Rheumatology Physiotherapy Clinical Interest Group. Will has a strong showing in the four pillars of advanced AHP practice, teaching at multiple higher education institutions at master's level and supporting learning for medics, AHPs and nurses. He is a multiple published researcher including principal investigator roles and maintains a busy clinical caseload including leading pain and axial SpA services. Will has a passion for building community in his work roles and supports patient organisations including a professional advisory role in NRAS and regularly working with NASS.

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> "IT IS WORTH RELYING ON A 'HUNCH' AND EXPANDING YOUR ASSESSMENT TO INCLUDE THE RHEUMATOLOGY DIAGNOSTIC TOOLS WHEN THE PATIENT PRESENTATION DOESN'T FIT WHAT IS 'USUAL'"

REVIEW SUPPORTING QAP

This article is vital reading for all private practitioners across all disciplines, not only MSK. Owing to the potential consequences of delayed diagnosis, inflammatory rheumatological conditions need to be recognised early and appropriate measures taken. In addition, the quicker we accurately assess and follow the correct pathway, the better the long-term outcomes will be for the patient, and consequently for the practitioner and the clinic outcomes, as relevant referrals and management are put in place.

For many physios taking on the first contact role, especially at a time when some patients are having difficulty accessing their GPs, it is hugely important for us to be able to communicate accurately and appropriately if a patient is likely to have an underlying inflammatory rheumatological condition. We cannot deny the evidence that these opportunities for early diagnosis are often missed and we need to be the informed clinicians that reduce the incidence of misdiagnosis. For this, we need to be aware of local guidelines and NICE pathways.

For anyone looking to refer a patient with axial spondyloarthritis to their GP, some guideline referral letters can be found here **https://nass.co.uk/homepage/health-professionals/nass-allies/**

Finally, as Will highlights the most common presentations for rheumatoid arthritis, axial spondyloarthritis and psoriatic arthritis, together with some excellent assessment tips, we can use this as a useful review of how our patients may present with these conditions and of the questions that should be asked. Plus, we are reminded never to lose that gut instinct that if it is not right, it is not right!

Reviewer
Katie Knapton

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