Connecting the Dots: Thinking Fast, the Pavlovian Reflex, and Delays in Diagnosing Axial Spondyloarthropathy

By Philip A. Baer, MDCM, FRCPC, FACR

Axial spondyloarthropathy (AxSpA) is unfortunately characterized by delays in diagnosis estimated to still be in the range of 5-9 years, despite decades of fruitful work developing classification and diagnostic criteria, and the widespread availability of HLA-B27 testing and magnetic resonance imaging (MRI). While studies indicate that the prevalence of AxSpA is close to that of rheumatoid arthritis (RA), I still note that I can count my RA patients by the hundreds, but my AxSpA patients only by the tens. Where are the missing patients? Perhaps their symptoms are so mild they escape medical attention, or are handled by self-management, or these patients look to chiropractors, physiotherapists, physiatrists, osteopaths, and other practitioners for relief.

Meanwhile, I note a recent trend of referrals arriving to evaluate patients over age 50 regarding incidental radiographic findings of "sacroiliitis" with the query being whether they might have AxSpA.

Two such patients were seen recently on consecutive days. One was a 67-year-old woman with diabetes and a lumbar spine X-ray report stating "sacroiliac (SI) joint sclerosis and spurring are seen bilaterally. Radiologist opinion: Significant degenerative changes around the SI joints bilaterally. Ankylosing spondylitis should be considered or sacroiliitis." When I saw her, she had a history of numerous work-related back injuries, with chronic mechanical pain and absolutely no evidence of AxSpA. For good measure, a negative human leukocyte antigen B27 (HLA-B27) test accompanied the referral.

The next day, I saw a 68-year-old man with referral for "recently increasing back pain and stiffness. X-rays show DISH (diffuse idiopathic skeletal hyperostosis). Could they have ankylosing spondylitis (AS)?" No HLA-B27 test provided this time, and the X-ray report indicated "DISH, lumbar degenerative disc disease (DDD), and mild SI joint degenerative spurring and sclerosis. No specific evidence of AS." The patient stated he was prediabetic, though glucose and A1c levels were all normal. The history indicated that, for the last two years, but not before, he has noted a very mild chronic tightness in the mid and lower back, worse after exertion, such as gardening and bending over, for about a day or so. He did not require any medication or other treatment for it. Examination showed mildly restricted spinal motion. Final diagnosis: DISH.

There seems to be a Pavlovian reflex active here, where the mention of sacroiliitis on an X-ray report triggers an automatic rheumatology referral. The presence of the word "degenerative" immediately before sacroiliitis" does not appear to negate this reflex. This is all very similar to receiving referrals for what is clearly osteoarthritis (OA), accompanied by lab work demonstrating another unfortunate rheumatology reflex, with anti-nuclear antibodies (ANA), rheumatoid factor (RF), and sometimes extractable nuclear antigen (ENA), anti-double-stranded DNA antibodies (anti-dsDNA) and complement studies all having been inappropriately ordered. We can speculate on the root causes of these reflexes: lack of education on musculoskeletal (MSK) disorders throughout medical training, practitioner burnout, and the fee-for-service treadmill of primary care are common thoughts.

In the end, we have a problem of resource mismatch and misallocation. As a rheumatologist, my doors are open to AxSpA patients for whom we have a panoply of advanced therapies ("The right patient getting the right treatment at the right time"). At the same time, instead, my referrals are now commonly older patients with mechanical low back pain and degenerative findings in the SI joints ("The wrong patient seeing the wrong consultant," while taking up a scarce rheumatology consult slot). While relatively a trivial issue in an individual practice, this is the same issue that results in emergency departments being backed up with patients requiring admission, while up to 20% of in-patients in Canadian hospitals do not require acute care but are waiting for alternate levels of care.

Conditioned reflexes and "thinking fast" are fundamental principles of psychology and behavioural economics, respectively. "Thinking, Fast and Slow" is a superb book by Daniel Kahneman covering his Nobel Prize-winning work with Amos Tversky, which explains human behaviour in many common situations. Thinking fast relies on heuristics and generally means

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CIORA Research Projects of the Past, Present, and Future

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The Canadian Initiative for Outcomes in Rheumatology cAre (CIORA) hosted a webinar featuring six CIORA projects from the Past, Present, and Future. Investigators discussed their findings, next steps, and how their research impacted rheumatology care and their careers. The webinar is available on demand in the CRA Portal.

Dr. Laëtitia Michou presented her 2014 CIORA Grant: Measuring the Impact of an Innovative Educational Intervention in Inflammatory Arthritis: A Natural Evolution of the *Centre Hospitalier Universitaire (CHU) de Québec's* multidisciplinary Information Session.

This study aimed to determine whether patients with active rheumatoid arthritis (RA), either starting on or changing biological or targeted synthetic disease-modifying antirheumatic drugs (b- or tsDMARDs), demonstrate better self-management safety skills three months after receiving an educational intervention compared to usual care.

Between October 2015 and October 2018, this open-label, randomized-controlled trial included 107 RA patients who were on treatment or in whom b- or tsDMARD therapy was changed. Group 1 received initial additional intervention with an educational DVD and one teleconference. Group 2 received usual care and was offered the intervention after three months. At each visit, the patients completed the BioSecure questionnaire measuring self-care safety skills, a behavioural intention questionnaire, and the Beliefs about Medicines Questionnaire (BMQ).

No significant difference was observed in the Biosecure score at three months. After pooling the first three-months data in Group 1 and the last three-months data in Group 2, the mean score of the BioSecure questionnaire increased to 7.10±0.92 after the group received the educational intervention (p<0.0001). The rate of appropriate behavioural intention increased from 76% at baseline to 85% at six months. There was no change in the BMQ.

Conclusion:
An educational DVD followed by a teleconference seems to improve the self-care safety skills of RA patients in practical situations.

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not thinking at all, leading to reflex responses such as sacroiliitis = rheumatology referral. The conditioned reflex described by Pavlov in his dogs operates very similarly, such that a ringing bell can trigger salivation in anticipation of being fed, in the absence of any food. Pavlov won the Nobel Prize in Medicine in 1904 for his work. Interestingly, it is controversial whether Pavlov really used a bell in his experiments. Per Wikipedia, the bell imagery is attributed to one of Pavlov's rivals and contemporaries, the Russian neurologist Vladimir Bechterev (or Bechterew). Completing the circle, Bechterev was one of the first clinicians to describe ankylosing spondylitis in 1893[1], which formerly carried the eponym Bechterew's disease. Surely, he could never have imagined how much difficulty we would still be experiencing, over a century later, in diagnosing this condition and the spectrum of AxSpA disorders.

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Reference:
1. Bechterew W. "Steifigkeit der Wirbelsaule und ihre Verkrummung als besondere Erkrankungsform". *Neurol Centralbl.* 1983; 12: 426–434.