

Psoriatic Arthritis and the Spine

A patient guide

In brief: Psoriatic arthritis is a chronic inflammatory arthritis associated with the skin condition psoriasis, and in a substantial minority of those affected it involves the spine. This spinal form, known as axial psoriatic arthritis or psoriatic spondylitis, is the focus of this page. It belongs to the family of conditions called the spondyloarthritides, the same family that contains ankylosing spondylitis, and it shares with them a tendency to cause inflammatory back pain, inflammation where ligaments and tendons attach to bone, and, over many years, new bone formation that can stiffen and in places fuse the spine. Yet psoriatic spondylitis has a character of its own. It is often more asymmetrical than ankylosing spondylitis, it produces a coarser, more irregular kind of bony bridge between the vertebrae, it does not always involve the joints at the base of the spine in a symmetrical way, and it is less consistently linked to the genetic marker HLA-B27. From the perspective of a spinal surgeon, the importance of psoriatic spondylitis lies less in the everyday inflammatory aching and more in the long-term architectural consequences of an inflammatory ankylosing process: the gradual stiffening of the neck and back, the occasional instability at the top of the neck, and the altered mechanics of a spine that has, in part, lost its natural flexibility.

What psoriatic spondylitis is, seen from the spine

Psoriatic arthritis is a systemic inflammatory disease that arises in some people who have psoriasis, the common scaling skin condition. Most of the public discussion of psoriatic arthritis concerns the skin and the peripheral joints, the fingers, toes, knees and so on, but the disease has another face that is the concern here: its involvement of the axial skeleton, meaning the spine and the joints that anchor it to the pelvis. When the inflammation settles in this region it is termed axial psoriatic arthritis, or psoriatic spondylitis, and it is one expression of a broader group of related conditions known collectively as the spondyloarthritides.

In the spine, the disease behaves as an inflammatory rather than a purely mechanical problem. The inflammation tends to centre on the entheses, the points where ligaments, tendons and joint capsules anchor into bone, and on the joints at the back of the spine and at the junction with the pelvis. Over time this inflammation can be followed by a repair process in which the body lays down new bone. It is this new bone, building up around the edges of the vertebrae and across the ligaments, that gives the condition its long-term significance for the structure of the spine, because in its advanced form it can bridge the gaps between vertebrae and reduce the spine's natural mobility.

The central idea worth holding on to is that psoriatic spondylitis is part of the same broad family as ankylosing spondylitis and is driven by a similar interplay of inflammation and new bone formation, yet it tends to express itself in a more patchy, asymmetrical and variable way. This combination of familiarity and difference runs through everything that follows.

How common spinal involvement is in psoriatic arthritis

Spinal involvement is far from rare in psoriatic arthritis, although the figures quoted vary widely because researchers have defined and detected it in different ways. Depending on whether the diagnosis rests on symptoms, on plain X-rays, or on more sensitive scans, estimates of how often the spine is involved range from roughly a quarter to as many as two-thirds or even seventy per cent of people with psoriatic arthritis.

The wide spread is informative in itself. When axial involvement is judged purely on a patient reporting inflammatory back or neck pain, the figure tends to be higher. When it is anchored to definite changes visible on imaging and confirmed by an expert reviewer, the figure falls. A recent large international study that incorporated expert assessment of the scans concluded that a little under thirty per cent of people with psoriatic arthritis had

genuine axial involvement, a more conservative figure than some older estimates. Long-running clinic cohorts, notably the long-term studies from Toronto, have reported that more than half of patients describe axial symptoms over time, while a smaller proportion show definite changes on imaging.

What these varying numbers share is the message that the spine is a common site for psoriatic arthritis to settle, that it is frequently under-recognised, and that the gap between symptoms and imaging findings is wider here than in many other conditions. It is also worth noting that axial involvement is sometimes present in people who have relatively little back pain, and conversely that not all back pain in someone with psoriasis is due to the disease.

Inflammatory back pain and the pattern of symptoms

The characteristic symptom of psoriatic spondylitis, as of the other spondyloarthritides, is inflammatory back pain. This is a particular pattern that differs from the more familiar mechanical back pain of wear and tear.

Inflammatory back pain tends to begin gradually, often before the age of forty-five, to be worse with rest and in the second half of the night, to be associated with prolonged morning stiffness lasting more than half an hour, and to improve with movement and exercise rather than to be aggravated by it. Pain that wakes a person in the early hours and eases once they are up and moving is the classic story.

In psoriatic spondylitis this pattern is present, but it is often less pronounced and less consistent than in ankylosing spondylitis. Studies comparing the two have found that people with axial psoriatic arthritis report inflammatory back pain somewhat less often, and tend to have less restriction of spinal movement, than those with classic ankylosing spondylitis. Buttock pain, a feature that reflects inflammation of the joints at the base of the spine, is also reported less frequently. A proportion of people with psoriatic spondylitis have changes on their scans without prominent back symptoms at all, which is one reason the condition can be missed.

The neck deserves particular mention, because cervical involvement is a recognised and sometimes prominent feature of psoriatic spondylitis. Neck pain and stiffness can occur, and in some individuals the cervical spine is affected out of proportion to the rest of the back. Alongside the inflammatory features, people with psoriatic arthritis may also experience inflammation at the heel and elsewhere, swelling of an entire finger or toe, and of course the skin and nail changes of psoriasis, all of which form part of the wider picture that helps identify the condition.

How it resembles, yet differs from, ankylosing spondylitis

Because psoriatic spondylitis and ankylosing spondylitis belong to the same family and share a basic mechanism, they are frequently compared, and the comparison is illuminating. The two conditions overlap a great deal, and in some individuals they can be difficult to tell apart, yet several differences have emerged consistently from the research.

The first concerns symmetry. Ankylosing spondylitis tends to be a symmetrical disease, marching up the spine in a fairly orderly way and typically involving both of the joints at the base of the spine, the sacroiliac joints, to a similar degree. Psoriatic spondylitis is more often asymmetrical and patchy, may involve the sacroiliac joints unevenly or on one side more than the other, and can skip parts of the spine, sometimes affecting the neck while sparing the lower back, or appearing in the spine without obvious involvement of the sacroiliac joints at all.

The second concerns the appearance of the new bone. As both conditions heal their inflammation, they form bony outgrowths that bridge between vertebrae, called syndesmophytes. In ankylosing spondylitis these are classically fine, vertical and delicate, growing up the edge of the spine like slender bridges and, in advanced cases, producing the smooth "bamboo spine". In psoriatic spondylitis the bony bridges tend to be coarser, chunkier and more irregular, often jutting out sideways from the vertebra rather than running neatly along its edge. These are sometimes called non-marginal or para-syndesmophytes, and their bulky, asymmetrical look is one of the more useful clues that distinguishes the two on an X-ray.

The third concerns genetics. The genetic marker HLA-B27 is present in the great majority of people with ankylosing spondylitis but in only a minority of those with psoriatic spondylitis. Psoriatic spondylitis can occur whether this marker is present or absent, and its presence or absence is associated with two somewhat different patterns of disease: one resembling classic ankylosing spondylitis, often beginning earlier in life and carrying the marker, and another beginning later, more often in women, less linked to the marker, and more closely tied to the peripheral and skin features of psoriasis. A fourth, more recently described difference is that the soft tissues around the spine, the ligaments themselves, appear to be especially involved in psoriatic spondylitis, a "ligament-centric" pattern that helps to explain the coarser, more spread-out new bone.

The sacroiliac joints and the base of the spine

The sacroiliac joints, where the lowest part of the spine, the sacrum, meets the pelvis, are an important site in all the spondyloarthritides, and psoriatic arthritis is no exception. Inflammation here, known as sacroiliitis, is one of the recognised features of axial disease, and it can be a source of buttock and lower back pain.

In ankylosing spondylitis, sacroiliitis is the rule, is usually present on both sides, and tends to be symmetrical. In psoriatic spondylitis the picture is more variable. Sacroiliitis is often present but is frequently asymmetrical or one-sided, may be less severe, and is sometimes absent altogether even when the rest of the spine is affected. This pattern of spinal involvement occurring without the expected symmetrical sacroiliitis is one of the features that marks psoriatic spondylitis out from its better-known relative.

The recognition of sacroiliitis matters because the joints at the base of the spine are difficult to assess on ordinary X-rays in the early stages, and changes there may be visible on more sensitive scans long before they appear on plain films. This is one of the reasons that imaging of this region forms part of the wider assessment of axial psoriatic arthritis, and it is a region where the disease and ordinary degenerative change can sometimes be hard to separate.

The neck, the atlantoaxial joint and cervical involvement

The cervical spine, the neck, holds a special place in any discussion of inflammatory arthritis and the spine, and psoriatic arthritis is capable of affecting it in two quite different ways. The first is the spondylitic process already described, in which inflammation and new bone formation gradually stiffen the neck, much as they do elsewhere in the spine. Cervical involvement of this kind is common in psoriatic arthritis, with some series reporting changes in a high proportion of patients, although it often develops later in the course of the disease.

The second, less common but more important from a structural point of view, is involvement of the specialised joint at the very top of the neck, the atlantoaxial joint. This is the joint between the first and second cervical vertebrae that allows the head to rotate, and it is stabilised by a ligament holding a peg of bone in place against the front vertebra. In inflammatory arthritis this region can become inflamed and the ligaments can loosen, allowing the joint to shift more than it should, a situation termed atlantoaxial instability or subluxation. This is most familiar in rheumatoid arthritis, but it is also described in psoriatic arthritis, where studies have reported atlantoaxial instability in a minority of patients with cervical involvement, alongside other forms of cervical instability lower in the neck.

This matters because the upper neck contains the junction between the brain and the spinal cord, and significant instability there carries the potential to affect these structures. For that reason the cervical spine receives particular attention in the assessment of inflammatory arthritis, and the recognition of instability is one of the situations in which the structural, rather than purely inflammatory, dimension of the disease comes to the fore.

The inflammatory ankylosing process and what it does to spinal mechanics

The feature of psoriatic spondylitis that most concerns a spinal surgeon is not the inflammation in itself but its long-term architectural consequence: the gradual conversion of a flexible, mobile spine into a stiffer, partly fused one. This is the ankylosing process, the same broad phenomenon that gives ankylosing spondylitis its name, and

although it tends to be patchier and less complete in psoriatic disease, the principle is the same.

A normal spine is a stack of mobile segments, each cushioned by a disc and guided by small joints, and this mobility allows the spine to absorb loads and distribute stresses. As inflammation heals and new bone bridges the gaps between vertebrae, segments that once moved independently become locked together. Where this occurs over several levels, a length of spine that was once a series of flexible links becomes a single rigid lever. Such a spine is stiffer, less able to bend and absorb shock, and the mechanical demands that were once shared across many moving joints become concentrated at the few remaining mobile points and at the boundaries between fused and unfused regions.

Two consequences follow from this in the wider spondyloarthritis literature. The first is that a rigid, ankylosed spine behaves differently under force than a normal one. A flexible spine can yield and recover; a long, fused, rigid segment cannot, and so a force that a normal spine would absorb may be borne very differently by an ankylosed one. The second is that the new bone formation and the underlying disease can be accompanied by changes in bone strength, so that the bone within an ankylosed spine is not always as robust as its outward stiffness might suggest. These are general principles described across the ankylosing spondyloarthritides rather than statements about any individual, and the extent to which they apply in psoriatic spondylitis depends heavily on how widespread the fusion has become, which in this condition is often less than in classic ankylosing spondylitis.

How psoriatic spondylitis is assessed and recognised

The recognition of axial psoriatic arthritis draws together the clinical story, the examination, the skin and nail findings, blood markers of inflammation, the genetic marker where relevant, and a range of imaging. No single test defines the condition; rather, a picture is assembled from several sources, and this is one reason the condition can take time to identify, particularly when the back symptoms are mild or the psoriasis is not prominent.

Imaging plays a central role. Plain X-rays remain the standard way of demonstrating the established structural changes, the bony bridges between vertebrae, the changes at the sacroiliac joints and the squaring or fusion of the spine, and a number of scoring systems have been developed to record the extent of this damage. Their limitation is that they show only the late, structural consequences of disease, after new bone has formed.

Magnetic resonance imaging, the MRI scan, has transformed the assessment of these conditions because it can show the active inflammation itself, long before it becomes visible on an X-ray. On MRI, active disease shows as fluid-like signal within the bone, bone marrow oedema, at the corners of the vertebrae, around the sacroiliac joints and at the entheses where ligaments attach. Over time, healed inflammation can leave fatty deposits in the bone that are also visible. Studies using MRI in psoriatic arthritis have highlighted the prominence of inflammation at the entheses and within the spinal ligaments, consistent with the ligament-centric pattern noted earlier. Computed tomography, the CT scan, gives the most detailed view of the bony architecture and is particularly useful for examining established new bone, fusion and, where relevant, the upper cervical spine.

What the evidence shows about management

It is important to be clear that the management of psoriatic arthritis as a whole is led by rheumatology rather than surgery, and that the great majority of axial psoriatic arthritis is managed without any operation at all. The descriptions that follow report what the published literature and consensus recommendations observe about the field, and are not guidance for any individual; decisions in practice are made by the treating team and tailored to the person.

The medical management of axial psoriatic arthritis has been addressed by international consensus groups, in particular the Group for Research and Assessment of Psoriasis and Psoriatic Arthritis. Their reviews describe a stepwise approach drawn largely by extension from the evidence in axial spondyloarthritis, because dedicated trials in axial psoriatic arthritis have until recently been few. Anti-inflammatory medication, structured physiotherapy and exercise, and simple pain relief are described as first measures, with several classes of targeted

biological and other advanced therapies, including drugs that block tumour necrosis factor, drugs that block a signalling molecule called interleukin-17, and certain oral targeted agents, reported as options where the inflammation is not controlled by simpler means. The aim of these treatments, as described in the literature, is to control inflammation, relieve symptoms and, it is hoped, limit the progression of structural damage over time.

Spinal surgery has no role in treating the inflammation of psoriatic arthritis. Where surgery is described in the wider ankylosing spondyloarthritis literature, it concerns the structural complications of an advanced, rigid or unstable spine rather than the disease itself: significant instability at the upper neck, the management of fractures through a stiff, ankylosed spine, the rare situation of nerve or cord compression, or correction of a severe fixed deformity that interferes with forward gaze or function. These are uncommon situations, considered individually and weighed carefully, and they sit at the far end of a spectrum on which the overwhelming majority of axial psoriatic arthritis never arrives.

Outlook

The outlook in axial psoriatic arthritis is, for most people, considerably more reassuring than the word "ankylosing" might suggest, and it is generally regarded as a milder axial condition than classic ankylosing spondylitis. The structural changes tend to be patchier, the progression to extensive fusion is less common, and many people with axial involvement have only modest restriction over many years. Long-term clinic studies have even reported that back and neck symptoms can lessen over time in a proportion of patients, a more variable course than is usually seen in ankylosing spondylitis.

That said, the condition is genuinely variable, and a minority do develop more extensive spinal stiffening, prominent cervical involvement, or, rarely, instability at the top of the neck. The relationship between what is seen on imaging and what a person experiences is, as in much of spinal medicine, a loose one: scans can show changes in people with few symptoms, and symptoms can be prominent where the structural changes are modest. Across the field, the consistent themes are that psoriatic spondylitis is a distinct and individual member of the spondyloarthritis family, that its long-term significance for the spine lies in the inflammatory ankylosing process rather than the day-to-day aching, and that any individual outlook is a matter for assessment by the treating team rather than something that can be read from a single scan or category.