The State of Spine Care in the United States

Opinion of a Recovering Interventional Spine Physiatrist

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When I was a resident physician in physical medicine and rehabilitation in the 90 s, one of our residents disclosed to me that he wanted to be a spine specialist. "You know," he said, "nobody knows what causes back pain and how to treat it right; you can't go wrong in this field." As an aspiring spine physiatrist, with lofty dreams about spine medicine, it was not what I wanted to hear. Since my fellowship in spine medicine, immediately after the residency, practicing exclusively spine medicine for as many years, I know his words are as true now as they were then.

Spine care in the United States is like 'the Wild West'— anything and everything goes. Patients with low back pain (LBP) receive varied investigations[1] and treatments depending on whom they visit. If the patient comes to me, an interventional spine physiatrist, I may be biased toward offering injection treatment. In my experience, a surgeon may offer surgery, even if MRI shows age-related degenerative changes of the spine, irrespective of whether those changes correspond to the clinical picture. If a village healer cares for the same patient, he or she might be treated with snake oil and may have similar or even better results. Snake oil does not have iatrogenic risks associated with many other treatments, especially if they involve needles or knives. My disclosure: I do not have any shares with the snake oil business.

What is wrong with our spine care? Let me begin with history-taking and physical examination. "Just listen to your patient; he is telling you the diagnosis"—the medical maxim that is attributed to Sir William Osler in the late 19th century is still true today. History-taking is an art and the mainstay of clinical decision-making in medicine. This is becoming woefully inadequate with fast-paced medicine and an overreliance on advanced technology. This has been relegated to a few templated sentences. History is the story of a unique patient—a story with unique insight into the patient's potential pain generator, distress, and disability. Patients do not visit us because they have disc bulges, degenerative disc disease, HIZs, or Modic changes. They seek help because they feel pain, have numbness or weakness, and cannot do things they need to do or enjoy doing, and they are worried. We need to listen. This is also an opportunity to recognize their level of anxiety, underlying depression, or any other psychosocial situation that might be related. Patients often present in different ways with the same clinical condition based on their psychological makeup. We must pick up these cues with careful history taking to clarify the potential pain generator and develop differential diagnoses. We then perform a physical examination to strengthen the clinical diagnosis. Diagnostic testing should be ordered only after a thorough history and meticulous physical examination. When we evaluate our patients carefully with a logical sequence, every patient becomes a learning tool and we become better clinicians in the process. Instead, we often start with imaging. We may then end up treating the images, and the patient will be forgotten. MRI can be extremely helpful for diagnosing serious spinal conditions, but is also a very sensitive test that often shows clinically insignificant abnormalities.[2]

Some spine providers, especially those who perform invasive spinal procedures, often entertain the idea that we must find a clear structural cause of LBP and be able to fix it. In our perceived cutting-edge medical science, this is very appealing to our patients who are desperate for a fix. There is another group, many of whom are researchers, who believe we cannot establish a clear pain generator in most LBP,[3] and therefore there is no definitive fix to the problem; it must be managed.[4] We do not yet have criterion standard diagnostic tests to identify specific pain generators definitively for most causes of LBP[5] and most of the LBP are nonspecific.[6] With proper history, physical examination, image correlation, and some laboratory tests, where appropriate, it is not difficult to rule out those rare serious causes of LBP such as cancer, infection, fracture, and so on, so that we can step back and not sweat about finding and fixing this benign condition and instead discuss with our patients about how to mitigate.

Some of our patients may think that doctors are like gods, and some of us, subconsciously, do not want to disappoint them. It then becomes very difficult for us to tell them honestly, looking straight into their eyes that we do not know. And "fixing" a condition, for which we do not have a clear pain generator, is impracticable. It takes knowledge, wisdom, passion, courage, and a keen sense of doing what is right for our patients. Even then, it may become a futile effort to bring them into reality. It is much faster and takes no effort to just tell them they have some "disease" in their back and then afford them some intervention—works for both parties. And if we keep telling them they have "arthritis," "degenerative disc disease," "bulging disc" or something sinister about their back, they will naturally develop a fear of activities and exercise—making their condition worse. We need to assure them appropriately that they do not have any serious condition that could be life-threatening or paralyzing. We must convince them that pain does not equate to harm. Confrontation of this fear leads to reduction of fear avoidance over time, while avoidance leads to the maintenance or exacerbation of fear, which may generate a phobic state.[7] Pain psychologists can be of great help in trying to undo the fear-avoidance behavior that we might have inadvertently helped grow in our patients. Also, some of our chronic pain patients may develop central sensitization resulting in a shift of brain representation from nociceptive to emotional circuits.[8] We should be mindful of this before considering an invasive procedure. Even if we successfully treat the

structural cause of pain, the patient may not achieve the expected outcome because of central sensitization. Guidelines recommend consideration of psychological therapies such as cognitive-behavioral therapy, biofeedback, progressive relaxation, mindfulness-based stress reduction, and combined packages of physical and psychological treatment.[9–11]

We often forget to discuss with our patients an extremely important point: the natural history of their condition. If their condition is not serious and there is no threat to life or limbs, and they know that the natural history is favorable, many may consider the tincture of time and benign neglect. We often feel obligated to offer an intervention when a patient visits us. The right action to take in such a situation is to assure the patient about the benign nature of the condition with proper advice and offer no other intervention. It is a disservice to our patients if we do not clearly and honestly inform them about the natural history of their condition while offering invasive treatment.

Evidence indicates that we are ordering unnecessary imaging, and performing unnecessary spinal injections and surgeries. Ordering an MRI without proper indication may lead to expensive and potentially unnecessary investigations and invasive procedures.[12] A systematic review established that lumbar imaging for LBP without indications of serious underlying conditions does not improve clinical outcomes.[13] During 1994 to 2005, there was a 300% increase in the number of MRIs performed for LBP in Medicare patients, a 200% increase in spinal fusion, and a 600% increase in the cost of epidurals for Medicare patients; work disability for back pain increased.[14] Most reviews and guidelines in the last two decades indicate that we do not need imaging of the lumbar spine without very specific reasons, and spinal injections have no or extremely limited role in axial LBP. Many invasive procedures are being performed for LBP associated with age-related degenerative changes with no good evidence of efficacy and there is incongruence between industry goals and clinical goals.[15] There is fair evidence from randomized trials that, for LBP, fusion is no more effective than intensive rehabilitation with a cognitive-behavioral emphasis.[16] Agency for Healthcare Research and Quality reports that, in 2011, spinal fusion was the highest aggregate hospital cost of any surgical procedure in the United States. The rate of back surgery in the United States is at least 40% higher than in any other country, twice the rate in Australia, New Zealand, most of Europe, and Canada, and over five times that in England and Scotland.[17]

Our understanding of the etiology, diagnostic process, natural history, and treatment philosophy differs tremendously among different specialties within spine medicine. Some of us often develop a tunnel vision within our own specialty "silos" and are blindfolded by dogmas and unrealistic beliefs in the way we diagnose and treat LBP. Some of our medical societies are built around these dogmas and they proliferate our conditioned knowledge. The health care industry capitalizes on this. And this is a slippery slope. Some of our patients, unassumingly, travel into and among different silos; some, by sheer luck, get proper evaluation and treatment for the very first time. Their backs do not necessarily get fixed, but they receive the most honest advice and appropriate treatment and are empowered to manage their chronic condition. Others continue to move from silo to silo, eventually receiving appropriate care after unnecessary investigations and treatments. Some may not be as fortunate; ending up with so-called "failed back syndrome," the end of the road for patients who were needlessly operated on—often turning a benign recurring condition into a nightmare of lifetime agony, doomed to a downward spiral of anxiety, depression, and disability, causing an enormous cost burden to the healthcare system.

Spine care in the United States is fragmented. In their landmark article, Porter and Lee proposed integrated practice units (IPUs) as a means for healthcare systems to achieve efficiency in the delivery of care. In an IPU, a dedicated team provides a full care cycle for the patient's condition.[18] Virginia Mason Institute has shown this in spine care by applying this concept. They used 23% less MRI and increased revenue by seeing 2300 new patients per year compared to 1404 in the older model, using the same space and with the same number of staff members with excellent patient satisfaction. Compared to the local average, their patients missed fewer days of work, from 9 to 4.3 per episode, and needed fewer physical therapy visits from 8.8 to 4.4.[19]

Our abilities, efficiencies, and overall professional success as employees are often judged by the number of patients we see and procedures we perform. We are hardly ever judged by the number of unnecessary investigations and procedures we have avoided by listening to our patients, performing meticulous physical examinations, deducing careful clinical correlations with image findings, and by honestly explaining to our patients the natural history of their condition—gently nudging them away from that elusive fix. The system is built upon doing more. No matter how much many healthcare industries pretend to keep our patients' interests first, sadly, this is not how the system works. Rather, the system encourages us to engage in a rat race at the expense of our patients.

To offer our patients the best out of us, we need to recognize our unique strengths and weaknesses among different specialties in spine care, keep an open mind, and allow the right provider to engage with the right patient. This will help to avoid unnecessary visits to other providers and reduce the risk of meaningless investigations and interventions. A qualified, experienced, and wise team member, preferably a noninterventionalist, can direct the right patient to the right provider at the earliest possible time in a transparent manner. An integrated multidisciplinary spine team with excellent communication and respect among team members has an inherent check-and-balance system. Regularly held multidisciplinary spine conferences among team members facilitate this approach. Such an integrated spine team also reassures referring providers that the most appropriate spine experts will see their patients.

Yes, there are great spine clinicians, including those who perform invasive spinal procedures. They see a limited number of patients per day and devote more time to their patients to listen to them, to explain the conditions they have, and the natural history of their conditions so that their patients can make the right decisions for themselves through careful guidance. They do not start with MRI; they start with their patients. They do not pretend to know exactly what is causing this chronic painful

condition, citing some made-up diagnoses—they admit what they do not know, and their patients appreciate that honesty and trust them even more. They assure their patients appropriately, that the condition is not life-threatening or paralyzing, and it helps take unnecessary loads off their patients' minds. They do not promise a cure or a fix; they instill hope and courage in their patients. They empower their patients to manage this chronic condition and encourage them to have a meaningful life, even with pain, not a simple task but immensely rewarding. My hats off to clinicians who care for patients.

Yes, investigations and invasive procedures have their place, and when used judiciously, they can be helpful. However, these investigations and invasive procedures do not apply in the realm of nonspecific LBP. Surgery can be a godsend in cauda equina syndrome, severe trauma with instability, infection, tumor, and severe decompensated deformity. Transforaminal epidural injection for lumbar radicular pain from disc herniation is highly effective[20] and can be as effective as microdiscectomy, and likely more cost-effective.[21] The clinical picture must fit clearly with imaging to support a structural cause before considering any surgery. Also, the patient should have a realistic expectation of the outcome of the intervention before embarking on a procedural pathway for optimal patient satisfaction.

We should only consider unbiased, well-conducted studies, and not introduce new investigations or treatments in clinical practice until efficacy, safety, and cost-effectiveness are proven. There is no room for specific invasive treatment for nonspecific LBP. We must listen to our patients. We must adopt a biopsychosocial approach. We must consider the natural history of the condition and inform our patients. Appropriate less invasive treatments should be considered first, as much as the condition allows. Spine care needs to be designed in an integrated fashion, keeping patients' interests first, uninfluenced by personal gain and pressure from the health industry. Evidence-based practice, wisdom, common sense, and empathy prevail. DO NO HARM.

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