

Evidence in Action

Are You Influenced by the Medical Information Your Patients Bring You?

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A patient brings you a file containing MRI results from a recent medical visit.

In your training as a chiropractor, you remember one of your instructors telling you that you should never accept the patient's own interpretation of his or her medical information, and that you should also not allow yourself to be influenced by the medical information a patient brings to you. But you wonder if having specific forms of information somehow influences your ultimate treatment decisions. For example, if a patient brings in imaging files for you to read, and those files contain hard diagnostic information, does that then direct the therapy you later choose?

Your thoughts might be:

As a physician, I am trained to look at each person individually and not to be influenced by what others may have told that patient about his or her condition. But I know that I often rely on the data provided by outside physicians when I begin to make decisions regarding therapy. I wonder, does having that information properly influence the decisions I make? Or does it perhaps lead me to make shortcuts in my thinking as a result of what those tests and findings reveal? Most physicians would not consider this, and would simply use the information. But how much is it influencing what I do?

An evidence-based consideration:

This is a form of bias. There are numerous biases that may occur in the practice setting. In the situation described here, the potential bias is known as an *expectation bias*. This occurs when an evaluator is influenced by knowledge of certain features of a case. Typically, this is also a problem in studies that are looking into the reliability of diagnostic tests, and it is not the only source of bias.¹⁻³ There can also be *ve-*

rification bias, which occurs when the decision to carry out a gold standard test is influenced by the results of the test that is being evaluated.

You find the following study:

Suri P, Hunter DJ, Katz JN, Rainville J. Bias in the physical examination of patients with lumbar radiculopathy. *BMC Musculoskeletal Disorders* 2010;11:275 doi:10.1186/1471-2747-11-275.

Objective: Diagnostic tests are critical to proper and effective clinical decision-making. We would like to use tests that we know are free from bias and that we might generalize to all of our patients (thus demonstrating good internal and external validity). But all physicians must decide which of the physical examination findings they have found are applicable to the patient. In this study, the goal was to examine the potential effects of bias due to advance knowledge of lumbar imaging findings, and to see if it would affect treatment decisions.

Methods: In this study, the authors used a cross-sectional comparison. They divided the performance of the physical examination into one group that had advance knowledge of the lumbar MRI findings (known as the non-independent group) and one that did not have such advance knowledge and was blinded to the imaging result (the independent group). The lumbar imaging findings included a diagnosis of nerve root impingement. The entire population was drawn from a hospital outpatient clinic. Patients were older than 17 years of age and had lower-extremity pain of at least 12 weeks' duration. All patients recruited for this study had lumbar disc herniation confirmed by MRI. Sensitivity and specificity were calculated for both groups for 4 sets of the examination: 1) provocative testing, 2) motor strength testing,

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3) pinprick sensory testing, and 4) deep tendon reflex testing.

Results: Only the perceived sensitivity of sensory testing was higher when examiners had prior knowledge of MRI results (20% v. 36%, $p=0.05$). In all other sensitivities and specificities, the exam components showed no significant differences between the 2 groups.

Conclusion: In general, prior knowledge of the lumbar imaging findings does not introduce bias into these components of the physical examination except for pinprick sensory testing. As the authors note, “The effect of bias due to prior knowledge of lumbar MRI results should be considered when an isolated sensory deficit on examination is used in medical decision making.”

Comment: Suri and colleagues⁴ conducted a cross-sectional comparison of performance characteristics of a physical examination where one group of physicians was blinded to the results of an MRI, compared with one group that was not blinded. The reference diagnosis was the presence of nerve root impingement in patients with lumbar radiculopathy. In this study, participants received a standardized physical examination, which included the following procedures as part of the examination: provocative testing, motor strength testing, pinprick sensation testing, and deep tendon reflex testing. All had received a minimum of T1- and T2-weighted MRI in the sagittal and axial planes. Sensitivities and specificities (with 95% confidence intervals) were calculated for each

of the four components of examination in both groups.

Results of this study found that only in the case of pinprick sensory testing was the sensitivity higher with prior knowledge of MRI results. In all of the other groups, there was no difference. In other words, prior knowledge of lumbar MRI results may introduce bias into the pinprick sensory test part of your examination of patients suffering from lumbar radiculopathy.

What does this mean to you?

When you read this study, you found that for the most part, having advance information about patients in terms of their MRI results does not seem to influence your examination findings, save for one small part of the examination. If you ever do an examination that consists solely of sensory testing, this should be considered. But you are aware that the chance of that occurring is small because you are a thorough practitioner who conducts complete examinations on all new patients—who are the ones most likely to bring recent MRI findings with them.

Note on terms used:

Sensitivity: The ability of a test to correctly identify people who have a target disorder.

Specificity: The ability of a test to correctly identify people who do not have the target disorder. ■

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References

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