

Your Spinal MRI Report May Not Say What You Think It Does!

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When your orthopaedic surgeon refers you to have an MRI examination of your spine, the actual procedure and the films are made under the direction of a radiologist, a physician who specializes in X-ray examinations. The radiologist then “reads” the films and prepares the report, which is for the referring physician. Usually, the radiologist has only meager clinical information. The clinician knows all the details of the history and the physical examination and all the reasons why the MRI study was ordered.

When the radiologist “reads” the MRI films, many features may be described in detail. In many cases the normal findings are described, if by chance, they may be important. This is sometimes called descriptive radiology. This descriptive approach does not attempt to derive a final conclusion or diagnosis.

In many cases, it is left to the physician to decide what is, and what is not important. “Clinical correlation is advised” is a term frequently used.

The Magnetic Resonance Imaging –MRI for short,– is an elegant technology, which provides an extremely detailed view of the structure and the function of the spine. The vertebra and discs, as well as the spinal cord and nerves, may be displayed in several modes. It is literally all there to see. The sensitivity of a good quality MRI is close to 100%. Unfortunately, it also picks up a lot of things that are not important or may be present, but irrelevant. Several pub-



Figure 1: MRI of the neck (viewed from the side) showing the cervical vertebra, the discs and the spinal canal. The base of the brain continues downward as the spinal cord. A large herniation from the disc between the fifth and sixth vertebra is pressing on the spinal cord and nerve root. However, the patient had no significant symptoms – an example of a false positive MRI.

lished clinical trials of spinal MRI's have shown that nearly 50% of normal patients without symptoms have abnormal findings on the MRI.(1,2) These findings include bulging and herniated discs, spinal stenosis, facet arthritis and degenerative discs. These findings increase in frequency as we get older but even teenagers are not excluded. Conversely, patients with severe back pain may have a normal MRI.

This means that the MRI has a specificity of about 50% or in other words, there is a false positive rate of nearly 50%. An HIV test or a pregnancy test with 100% sensitivity, but a 50% specificity (false positive) rate would not be acceptable.

Patients attempting to read the radiologist's report of their MRI often become confused or alarmed by the description. Individuals have come to believe that their spine is seriously damaged and that they are in imminent danger of being permanently crippled. In this belief, they may avoid activities or even leave their work to avoid further damage. This creates an avoidable and unnecessary disability. In the great majority, these findings are normal for that individual's age group and the back pain, for which the MRI was performed, can be helped with ordinary medical care.

It is important to understand that the aging process in the spine begins in early adulthood and is usually seen in the discs, which darken and then begin to bulge. This process usually has nothing to do with back pain. In the majority of cases, it is not possible to accurately pinpoint the specific structure in the spine, which is causing the pain. The diagnosis of "back pain" is the most appropriate diagnosis.

It is suggested that you ask your doctor to sit down and explain the MRI and the radiologist's report in terms that you understand.

1. Boden, S.D., et al: Abnormal magnetic resonance scans of the lumbar spine in asymptomatic subjects; a prospective investigation; *Journal of Bone and Joint Surgery* 72: 403-415, 1990.
2. Jensen, M.C., et al: Magnetic resonance imaging of the lumbar spine in people without back pain; *New England Journal of Medicine*; 331:69-73, 1994.