Dynamic Chiropractic



# MR Neurography: Can This New Technology Appraise Chiropractic Objectively?

Editorial Staff

Bradley Jabour, MD, chief of neuroradiology: MR neurography may be able to image the potential benefits of chiropractic manipulations, if this could be used as a tool to evaluate the intrinsic changes that the nerve roots may show."

Cervical imaging: an MRI (left), and an MR neurograph. Note: The original print of the MR neurograph is fairly grainy, but one clearly sees the nerve network. When scanned to newsprint, however, the clarity of the image is lost.

Ever since the dawn of the first adjustment, chiropractors have sought an objective way to demonstrate the effects of manipulation on the nerves. From the days of B. J. Palmer up to the present, subjective evidence has been much easier to come by. Currently, there is very little objective evidence to show just how chiropractic care impacts the nervous system and the tissues and organs it serves. This is obviously at the very heart of chiropractic philosophy.

A new technology offers some hope of objective examination to the chiropractic research community -- MR neurography. MR neurography is based on the same concepts as magnetic resonance imaging (MRI), but can isolate the normal and pathologic nerves. MR neurographs have the ability to show the nerve groups and highlight any swelling or edema.

One of the pioneers of MR neurography is Bradley A. Jabour, MD, chief of neuroradiology at the Medical Imaging Center of California. Dr. Jabour, whose facility in Santa Monica specializes in imaging of the brain, spine, head, and neck, has been working with General Electric, the University of California at Los Angeles (UCLA), and others in the field to develop proprietary coils and software that make MR neurography possible.

To do MR neurography, careful attention to detail needs to be applied by the imaging specialist. Dr. Jabour uses the latest neurographic sequences, always maximizing the imaging plane to match the desired nerve to be imaged. For example, if the brachial plexus is to be scanned, careful selection of the correct scan planes and the neurographic sequences needs to be customized. Advances with surface coils and imaging protocols are being investigated at multiple locations, according to Dr. Jabour. Further exciting advances will also occur when dedicated surface coils that are able to do small field-of-view imaging in multiple planes become widely available.

A number of problems associated with compression of the brachial plexus or sciatic nerves can be imaged, such as in thoracic outlet syndrome, secondary to scalene muscle hypertrophy, or due to fibrous bands and/or webs at the thoracocervical junction. Evaluation of the effects of degenerative disease in the spine and their relationship to the exiting cervical nerve roots will also provide further evaluation in the role of MR neurography.

According to Dr. Jabour, MR neurography can be used to "detect nerves that are under pressure distally or proximally." When asked if he believes this new technology could show changes in nerves after chiropractic adjustments, Dr. Jabour, like all good clinical researchers, gives a

guarded response:

> "I don't know what physiological changes the chiropractic manipulation may or may not have on the nerves. But I would imagine that any therapy or intervention could be examined by MR neurography of the nerves as an objective tool prior to manipulation and after manipulation. MR neurography may be able to image the potential benefits of chiropractic manipulations, if this could be used as a tool to evaluate the intrinsic changes that the nerve roots may show."

Dr. Jabour is right on the cutting edge with his developments in MR neurography. In fact, it will be several months yet before the completion of the initial research needed to help formulate a pilot study of chiropractic manipulation. Conducted correctly, a pilot study would tell researchers how to go about devising a comprehensive study that would provide the evidence needed to truly put manipulation to an objective test.

Dr. Jabour cautions that even with all of the recent advances, MR neurography may still not be able to demonstrate what the chiropractic profession is looking for. Nevertheless, thee pioneering techniques are opening up new and exciting methodologies for evaluating chronic pain patients. The next few years will continue to bring new advances.

*Editor's note:* Questions regarding MR neurography may be directed to Dr. Bradley Jabour at: (310) 829-9788; fax: (310) 829-3460.

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