Dynamic Chiropractic

DIAGNOSIS & DIAGNOSTIC EQUIP

Diagnostic Spinal Ultrasound -- The Wave of the Future

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Editor's note: Dr. Dishman is responding to Dr. Arthur Croft's article, "Diagnostic Spinal Ultrasound: Too Good to Be True?", from the September 12, 1995 issue of Dynamic Chiropractic. For another response to Dr. Croft's article, see Dr. Bruce Haggart's commentary in this issues "We Get Letters and E-Mail."

Dr. Arthur raises questions and concerns about this relatively new spinal imaging procedure. It is of course well known that musculoskeletal diagnostic ultrasound (DUS) over many years has been very well documented and accepted around the world. For example, shoulder injuries of all types, carpal tunnel, etc., in many ways provides certain information better and less costly than MRI. All upper and lower extremities reliably demonstrate soft tissue pathology often in unique aspects.

On the other hand, spinal DUS has a way to go before it attains the high standard stated in the Mercy Guidelines. Dr. Croft is correct in cautioning DUS interpreters to be much more conservative in their interpretation of spinal images. It has been my privilege to own a DUS unit and to have attended seminars from California to Florida to learn everything available about the chiropractic application of this incredible procedure during the past year. I know almost enough to realize how much more there is to learn. In discussing with other more experienced physicians the problems as presented by Dr. Croft (and others, such as Dr. Deborah Pate) we all agree to the need for proper documentation in identifying and distinguishing pathological representations produced on printed photos or videotape.

Such claims as appear in the advertising media may be misleading concerning reliability along with acceptable levels of validity, specificity, and sensitivity.

For example, how reliable is the identification of the following?:

1. bulging disc/HNP
2. muscle bleeding
3. recent vs. prior damage/injuries
4. facet joint inflammation/pathology
5. nerve root sheath irritation
6. anterior longitudinal ligament damage (as seen in hyperextension injury)
7. spinal canal stenosis
8. other

There is a fairly high level of confidence in assessing muscle ruptures, swelling, spasm, inflammation (myofascitis), cysts, etc., where DUS reliably shows these conditions quite well in all areas of musculoskeletal anatomy.

Dr. Croft correctly points out the dearth of literature showing research studies on spinal disorders. Most of the observations of mundane back complaints have been made by chiropractors who own their machines and operate them in the course of their usual office practice. Some are disposed

toward making fairly scientific observations and some are not. It is surprising how much one can understand having a sincere desire to learn, pursuing the process with determined diligence. There are no "real experts" on spinal sonography, but I am certain there will be in the not too distant future. Few textbooks on spinal sonography have been published and they are difficult to obtain. I believe we are now in the process of writing the books. In truth, who is better qualified to document soft tissue disease than skillful, competent chiropractors?

Spinal DUS is a new procedure using a scientific method to visualize anatomy beneath the skin. What is there to take its place? The equipment produces interpretable images not unlike x-rays. With more knowledge, skill, experience, and training we may develop a broader and deeper understanding which will allow improved interexaminer reliability. We all would like to have had more of this work done for us. Dr. Croft cites a few such studies which suggest that spinal DUS may be a satisfactory "screening tool for either CT or MRI" provided that cost remains well below that of MRI. One article published in Spine (Kamei et al., 1990) revealed in a sample of N=80 that 40 cases of suspected HNP were found on DUS and confirmed at surgery (50 percent) with an overall diagnostic confirmation of 78 percent, compared with CT myelograms showing 90 percent accuracy. DUS also showed 60 percent of the 40 nonoperated patients had positive findings. There was no nondiseased group evaluated to assess sensitivity or specificity. He would also like a blinded study, etc.

It is a given that establishing a "nondiseased" sample is difficult, invasive, expensive, and perhaps improbably for some time to come. An MRI (the so-called "gold standard," though not pure gold) study of 98 asymptomatic people in the New England Journal of Medicine discovered a high prevalence of bulges, protrusions, and extrusions. Fifty-two percent of the study group without symptoms had bulging of at least one intervertebral disc. Their concern is that this may too often be the reason for unnecessary spinal surgery.

Consider the advantages of DUS imaging over other established imaging techniques as quoted from the literature:

- accurate imaging of soft tissue at a minimal cost
- immediate diagnostic feedback
- "full multiplanar capability"
- accurate measurement of lesions
- no ionizing radiation
- no known adverse effects
- simple to perform with complete patient comfort
- low cost
- ability to examine a patient with an acute injury
- different from other diagnostic tools that have come to pass in that it is already a time tested, medically accepted imaging device.
- real-time imaging (observe motion, muscle contraction, etc.)
- easy to perform follow up examination to assess healing or progress
- objective evidence or not of soft tissue injury
- best cost/risk/information ratio

Please understand this does not come from advertising material. It comes out of the peer review literature. It does not address the issue of ignorant misuse, incompetence, secondary gain or any of that. A dispassionate evaluation of the actual merits of this procedure in a chiropractor's office is the issue.

In summary and conclusion it is clear that there is a spate of increasing claims flooding the

advertising media which should be seen more as zeal than hard data. That is not to say that the hard data which is extant is not enough to move ahead. It should be remembered that there is a competitive edge in every field of endeavor. It would be naive to ignore this fact. One may apply the procedure the moment the instrument arrives in the office. One may begin to make split screen comparative images of the normal and then the abnormal symptomatic side. One may notice obvious differences quickly and subtle differences with experience over time. One may attend many educational seminars. One may wish to rent instead of buy a unit. One may choose the egghead/ivory tower approach and struggle with the historic delays of grantsmanship/funding and unending rhetoric. My approach would be to get on the road and start the journey one foot in front of the other and observe everything along the way. It's very interesting and there are maps that lead to one destination after another. The many hundreds of bibliographic references are growing as we speak.

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