

Discopathy

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Types of Disc Herniation:

- 1. Protrusion-** bulge base larger than the body.
- 2. Extrusion-** larger bulge
- 3. Sequestration-** prolapsed a piece of the disc is broken off and in the canal.

Manipulation and disc herniation:

- Manipulation has been shown in many studies to be an effective treatment for disc conditions.
- Side posture adjustments have about 1-2 degrees rotation which is not enough to cause a herniation
- 70% of herniations are progressive in nature.
- ** In fact sequestered patients get better if they can endure the pain long enough as metalloproteinases a family of digestive enzymes degrade the prolapsed portion of the disc and the condition will resolve itself.
- This is also if the patient doesn't have muscle atrophy, incontinence.
- The diet to decrease inflammation will also help decrease pain mediators.

Disc Degeneration:

- 70% are genetic inheritance along with environmental factors including mechanical loading and nutrition.
- Suspected genes, vitamin D receptor, collagen type IX, proteoglycans.

Internal Disc Disruption (IDD):

- 40% of all LBP have IDD
- Patients with unilateral and bilateral radiation to the lower extremities the pain arises from the disc.
- Research shows that the pain is a referred type and seems unrelated to direct nerve root compression or irritation by a disk fragment.
- A normal nucleus is intrinsically cohesive and resists herniation.
- Even in specimens w/ partially prolapsed completion of the herniation rarely occurs even after repeated flexion and compression.
- Ultimately it is possible for IDD to progress to disc herniation.
- ** This occurs if the inflammatory degradation extends along a radial fissure for the entire thickness of the annulus.
- The denatured, expressible nucleus may herniated through the outer annulus with compressive loading during a flexion.

Herniation by Compression and Bending:

- According to Bogduk direct compression loading of a lumbar motion segment does not cause direct damage to the disc.
- The weak link of the lumbar spine in compression is the vertebral endplates.
- The pressure created by a healthy disc during compression is so high that nerves and vessels could not survive.

Endplate Damage:

- Bogduk a researcher states that studies suggest that increased activity of disc proteinases occurs progressively from the endplate into the nucleus and that these metalloproteinases may:
 1. Be activated by blood in the vertebral body.
 2. May stem from cells in the bone marrow.
- Endplate fracture may be asymptomatic and passed unnoticed, they may heal and cause no further problem.
- It interferes with the delicate homeostasis of the nuclear matrix.
- But they may set in motion a series of biochemical events that degrade the nucleus which may lead to
 1. Isolated disc disruption.
 2. Internal disc disruption radial fissuring of the annulus.
- *** The pressure created by a healthy disc during compression is so high that nerves and vessels could not survive.
- After endplate damage, the disc can no longer build substantial pressure such that nerves (presumably nociceptors and sympathetic efferents) and blood vessels are able to invade the disc.
- ** Disc damage is most often accomplished by subdiscal bone damage. There is an interdependence of bone and disc health.
- *** The proteinase- driven degradation of the nucleus converts the nucleus from one that is intrinsically cohesive and resists herniation to one that is denatured and now expressible through radial fissures in the annulus.
- *** Internal derangements of the Intervertebral discs are more common than disc prolapse and the reverse bulging is found in approximately 355 of severely degenerated discs.
- Greater flexibility can result in damage to the endplates, this may be a reason why dancers and gymnasts have so many lower back conditions.

Chemical Low Back Pain:

- Lower pH has been correlated with inflammatory changes around nerve roots according to research.
- It also causes bone loss and fibrosis of tissue increasing the degree of pain.
- Authors tell us to avoid prolonged rest because it increases the risk of developing radicular adhesions.
- The Saal study showed the inflammatory power of the enzyme phospholipase A2 in herniated disc tissue was 20 to 10,000 times stronger than normal.
- Phospholipase A2 is responsible for generating pro-inflammatory eicosanoids, such as prostaglandin E2 and leukotriene B4.
- The pathophysiologic mechanism that includes a combination of mechanical and biochemical factors is an alternative explanation that is accompanied by less paradox than purely structural paradigm
- *** Cytokines were found in joint cartilage and synovium of facet joint tissue. A higher concentration of cytokines was found in patients suffering with canal stenosis, compared to disc herniation.

Omega-3 Acids for Discogenic Pain:

- 250 patients dx by neurosurgeons for back and neck pain.
- All patients were taking NSAIDS and 75% were on Cox2 inhibitors.
- They were asked to take EPA/DHA at a dose of 2.4 grams for 2 weeks and 1.2 grams after that.
- Questioners were sent out to all 250 125 returned at an average of 75 days on the omega-3.
- 78% of the patients taking 1.2 grams while 225 decided to continue with the 2.4 grams.
- 59% of patients were able to discontinue the use of NSAIDS.
- 60% reported their overall pain was less.
- 60% reported their joint pain had improved.
- 80% stated they were satisfied with their improvement.
- 88% said they would continue to take the omega-3.