Dynamic Chiropractic

Nutritional Perspectives For Low Back Pain

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The low back anatomy, specifically the L5-S1 area, is the location of up to 90% of back and disc problems, partially because of the incompleteness of the posterior longitudinal ligament in that area. Therefore, the discal and soft tissue components are allowed to move posteriorly without benefit of that strong ligament. This is compounded by the normal dorsolumbar flexion which creates the greatest stress at the posterior L5-S1 joint space, especially if the knees are kept straight while flexing. The most common disc protrusion is posterior and lateral.

The central artery of the disc normally is obliterated between the fourth and fifth decades of life. The consequences are numerous because direct nourishment is then not available to the disc. Therefore, the disc begins to indurate and doesn't heal by primary intention when damaged, but by secondary intention, known as scarring. The problem is similar in the annulus because of its fibrous components. This is true of all fibrous tissues; e.g., tendonous attachments to muscles in tendonitis can become permanently damaged as in chronic ankle injury.

In the spine, repeated microtraumas and tears, known as rents, mechanically can cause more pressure on the posterior nerve root which can reflect in pain. The repeated injuries and decreased resiliancy because of scarring and lack of blood supply of the injured tissues make the disc and the associated soft tissue structures more liable to reinjury. Consequently, the greatest numbers of disc problems arise between 40-50 years of age.

The physical exercise aspects of the low back are important and, in my opinion, it is vital not to let young children lift mainly with their backs because of the anatomical problems discussed. The microtraumas can begin in childhood and children should not be forced to show how strong they are because that could be setting them up for a lifetime of back problems.

I introduced this brief background information not only to consider that we may prevent low back problems by beginning in childhood, but because the very nature of the low back mechanism seems predisposed to injury genetically and that we should try all avenues of approach to this painful and expensive problem which besets mankind.

Nutritionally, please bear in mind that whatever we ingest orally must be assimilated, properly digested and utilized. It is basically vital that the digestive mechanisms function correctly and that proper foodstuffs be eaten to maintain, heal and strengthen the entire body which includes the genetically weakened and overstressed low back mechanisms.

When a low back injury occurs, the injured cells rupture, causing edema which consequently will pull vitamins, minerals, protein, carbohydrates, fluids and lymph which that area will require for healing. If the body is adequately nourished, the healing factors will be readily available and the damage will be kept to a minimum.

Post-traumatic ingestion of pills and food in an undernourished body will cause a delay in healing response and healing will not be optimal. Eventually, with repeated injuries and subadequate nutrition, the patient may end up with a chronic low back problem which can become only a

salvage procedure, at best. So it is vital to understand the mechanisms and the needs of the body for healing with specific awareness of the increased needs of the low tack injured tissues. Please make sure your patient's dentition is adequate for chewing so that the digestive processes which begin in the mouth may actually take place there.

Does the patient suffer with dyspepsia, excessive flatulence, diarrhea, constipation or ulcers? Has the patient had a cholecystectomy? The lack of bile interferes with calcium, fat and protein degradation, assimilation and utilization. Is the patient a diabetic? High sugar levels allow bacteria to grow in tissues which can lead to pathologies (diabetic neuropathies), thus interfering with repair and healing. The above problems directly, indirectly, or tangetially interfere with the proper assimilation, digestion and utilization of necessary foodstuffs which the liver must ultimately convert to that type of tissue necessary for repair -- therefore, anything which interferes with liver metabolism, such as drinking alcohol, should be discouraged.

Collagen, the basic protein of the body, requires vitamin C for maturation. Smoking one cigarette destroys a minimum of 25 mg of vitamin C. Encourage your patient to stop smoking which will allow the body to produce more collagen for faster healing. Smoking also inhibits the oxygenation and the nutrient carrying capacity of the cell. Bioflavinoids, pyridoxine, calcium, magnesium, zinc, vitamin C and the total B complex are necessary for the hydroxylation of proline which is an essential step in the formation of collagen.

Deep breathing is recommended to help carry injured and dead cells away and new cells to the area of injury. Deep breathing reduces edema, thereby decreasing healing time. The new science of "lymphology" teaches correct breathing techniques and lymphatic stimulation, which helps the body heal faster.

Proper nutrition should begin when the child is in utero, continued into infancy, childhood, adolescence, and adulthood, because "as the twig is bent, so grows the tree." Correct posture, correct chairs, and a supportive mattress all help in the biomechanical picture.

We know chocolate leeches calcium which is vital to healing. Calcium is also necessary in the clotting mechanism in injuries (I've personally found that stopping ingestion of chocolate, in many cases, will stop chronic nosebleeds). Refined sugars interfere with calcium and vitamin B complex metabolism, complicating soft tissue healing. Saturated fats interfere with the Krebs energy cycle and slows down healing time. Refined white flower, caffeine, and tannic acid in tea interfere with carbohydrate metabolism, steroid and antistress factors of the adrenal glands (specifically norephinephrine and corticosteroids). Steroids which help supply cholesterol, vitamin D, bile acids, adrenocorticoids, and sex hormones are all important in the metabolism of soft tissue healing.

Proper nutrition is important because research has verified that bone, cartilage, and the connective tissue in tendons and ligaments are metabolically active. Without proper nutrients, bone can lose mass or become brittle, tendons and ligaments can lose flexibility, and cartilage, which composes the intervertebral disc, can degenerate or lose its structural integrity if proper vitamins and minerals aren't available in sufficient concentrations at proper times. Vitamin B6 aids in the production of gamma aminobutyric acid (GABA) which inhibits neuronal excitation. This acts as a natural pain killer and tranquilizer. Vitamin D is essential for bone formation and its maintenance. Fifteen minutes a day of sun wil stimulate provitamin D, especially vital in children. Calcium plus protein helps control osteoporosis and maintain bone strength. Calcium ions are present in virtually every neurological and orthopedic reaction of the body. Some researchers feel calcium is the single most important ion in the body. Magnesium reduces muscle cramping and reduces calcium deposits in muscle tissue. This is why epsom salts baths ($MgSO_4$) are so relaxing for injured backs. Manganese is necessary for the repair of cartilage and ligaments. Potassium

prevents muscle weakness and deterioration. Zinc facilitates healing of cartilage and ligaments and helps bone density and strength. Pumpkin seeds are an excellent source of zinc. Zinc is attracted to inflamed areas, building up peak accumulations within a week following injury.

Essential fatty acids (EFAs) are necessary in aerobic muscle activity. The body cannot manufacture essential fatty acids but by supplying linoleic acid, the body can change it into linolenic and arachidonic acids when needed. Two good sources of linoleic acid are safflower oil and fish, especially northern cold, saltwater fish, which also has E.P.A. in it. The E.P.A. will aid in lipid and cardiovascular metabolism. Prostaglandins which aid in smooth muscle contraction, renal and respiratory function are derived from arachidonic acid. Lecithin and bile salts help emulsify cholesterol stones, which interfere with gall bladder function, preventing proper protein, fat, and carbohydrate utilization. Unsaturated oils help metabolize cholesterol to bile salts which aid in digestion and absorption of fats and proteins. Choline is converted to lecithin which is significantly less expensive than buying lecithin, and choline helps prevent accumulation of fat in the liver. It is the precursor of acetylcholine necessary for neurological function. Sources of choline are: meats, grains, egg yolks and legumes.

Nutritionally, a complete vegetarian protein can be constructed by combining beans or peas which are deficient in methionine with corn or rice which are deficient in lysine: (beans + cornbread) or (rice + beans) becomes a complete plant protein which is easier to digest than animal protein which may actually increase healing time because of the high amount of toxic side effects and energy expended for digestion of animal proteins. Thyroxine (T4) can have either an abnormal anabolic or catabolic effect, if not in homeostasis, which can affect protein metabolism and therefore healing time. The Protein requirement for a 70 kg man is approximately 56 grams a day (2 oz). Most of us consume a much higher amount, which makes the entire digestive and genitourinary systems overwork.

Vitamin E acts as an anti-oxidant and helps prevent coenzymes from oxidizing too rapidly. Vitamin E aids in lipid metabolism. Some researchers feel vitamin E helps the muscular and internal arterial coat heal when injured. Vitamin K (green vegetables) helps prevent excessive bleeding, which can occur in tissue tearing. The entire B complex group is necessary for enzymatic activity, neural transmission, and metabolic pathways. Niacin has a vasodilating effect and is necessary for cellular respiration. It is easily converted to the physiologically active niacinamide. Tryptophan will correct niacin deficiencies. Cow's milk, eggs and beef are sources of niacin and tryptophan. Biotin can be rendered inactive by the avidin in raw eggs. Biotin is needed in carbohydrate metabolism and muscle pain is a symptom of biotin deficiency. Pantothenic acid (B6): a deficiency can produce degeneration and neuropathies of the neuromuscular system. Folic acid deficiency can result in anemia, which decreases a person's ability to work because of weakness and tiredness. Therefore, musculoskeletal injuries can easily occur in this weakened state.

Choline and B15 reduces lactic acid concentration following injury and combats stress by stimulating oxygen consumption in tissues. PABA, lipoic acid, inositol, and bioflavinoids, as a group, maintain normal vascular permeability which is vital in healing -- found in citrus fruits, especially the inside white skin.

Sodium is necessary in cellular metabolism and muscular contraction. Excesses are more common than deficiencies. Sodium and potassium act extra and intracellularly, respectively aiding neural transmission. Chlorine deficiency can cause digestive problems, leading to inefficient utilization of food, resulting in decreased healing ability.

Iron is necessary for hemoglobin formation and cellular respiration. antacids inhibit and lower iron absorption. Iron deficiency anemia prevents calcium and DNA from metabolizing, but fungus

(candida) can grow more readily without iron. Copper is a constituent of many enzymes, especially in the iron and oxygen metabolic pathways. Chromium aids in transportation of amino acids into cells and is necessary for blood sugar balance. L-carnitine, iron, molybdenum and essential fatty acids have been shown to strengthen weakened muscles.

Bromelain and papain used as anti-inflammatories are quite effective for preventing swelling and inflammation and for reducing it once it occurs because of their fibrolytic activity. There are no known side effects and no overdoses reported. Bromelain is found naturally in pineapple: papain is found in papaya.

Osteoporosis is an epidemic in the United States, responsible for 1.2 million fractures a year. Current therapy is mainly estrogen and calcium supplements, but success is limited. The newest therapies are cognizant that bone health depends on a wide range of other nutrients, including vitamins B6, C, D, K, folic acid, magnesium, manganese, boron, zinc, copper, strontium, and silicon. The typical Western diet, with its high content of sugar and refined foods, appears to be deficient in many of these vitamins and minerals. As a rule, vitamins and minerals enhance and synergize each other. Minerals are not found by themselves in nature, so taking one specific mineral without its other nutrients for metabolism is a waste of time and money.

Joints are points of connection or articulations between moveable parts. Articular cartilage, rich in mucopolysaccharides, cover the ends of the joints. The properties of joints support motion and ability to sustain daily trauma makes them vitally important to our bodies. As further protection, synovial fluid is enclosed in a sac which helps cushion the surface between the joints and the tendons which hold muscle to the bone (bursa sacs). These structures are composed primarily of collagen, mucoprotein bodies and a collagen-like protein, elastin. When these structures are injured, joint problems can result in arthritic diseases.

Osteoarthritis is a degenerative condition primarily affecting the weightbearing joints, including the vertebral column. Damage to the joint begins as an erosion of the articular surface cartilage and depletion of the mucopolysaccharides. As the disease progresses, the entire cartilagenous layer may disappear and bony spurs (osteophytes) occur which can result in increased pain and restriction of movement, especially if they are in the I.V.F. space, where the nerve emits from the spinal cord.

Rheumatoid arthritis is a systemic inflammatory disease and can effect the spinal column. It is thought to be an autoimmune response whereby the body attacks its own joint tissue. The anti-oxidant enzymes superoxide dismutase and catalase, naturally present in the body, act as powerful anti-inflammatory substances. These enzymes are of low levels in many rheumatoid arthritics. These conditions can affect the spinal osseous and soft tissues and therefore, overall sound nutrition is suggested. Chronic conditions such as the above, because of their pathophysiology, are difficult to treat.

We have just skimmed the cream of this subject. I like to say there is "more to nutrition than meets the mouth" -- it is a complex, comprehensive and interesting subject, with more information being accumulated daily. All systems functioning at optimal levels with proper nutrition will afford the practitioner better and faster results with injured low backs as well as decreasing the patient's return to the office for that specific problem.

Overall proper nutrition, in my opinion, should consist of organically grown fruits and vegetables, preferably raw or steamed, nuts (raw, unsalted and uncooked) plus seeds and grains. Grains which do not contain gluten are advised. You can obtain sprouted grains which are acceptable to most digestive systems. Gluten causes intestinal inflammation of the columnar epithelium, preventing

complete absorption of the digested foodstuffs. The most problem offenders are: wheat, rye, oats, barley, beans, peas, corn and peanuts, except if they are in a sprouted, split or ground form, such as sprouted grains in breads, split peas or ground into tortillas or taco shells. Acceptable are blackeye, pinto, northern white and pink beans.

Symptoms of gluten allergy may include: 1) swelling with fluid retention (inability to see the extensor hand tendons); 2) a "dumping" (diarrhea) of the intestinal contents almost immediately following a meal. The condition is essentially correctable by eliminating the offenders and allowing the liver approximately 90 days to establish new intestinal tissue. The results are often dramatic, especially in weight loss and increased energy levels.

Distilled or purified water is preferable over a water softener because of the high salt content of the water softener. Minimal use of animal products, coffee, tea, alcohol, and tobacco will help the patient to build up his musculoskeletal system, along wiht improving the entire health of the body. Biomechanical integrity should be maintained, which prevents undue stress on the musculoskeletal system.

In summary, to assist, prevent, and stabilize low back insults, whether genetic or traumatic, requires a total team effort but from a nutritional aspect, we should realize that overall correct nutritional intake is vital to healing and maintenance of health. We have briefly covered the necessary vitamins and minerals necessary for spinal health. Recommending the proper supplement to fill voids in individual diets may not be a simple task. Long lists of nutrients, some non-essential, with potencies that may vary with cost rather than nutritional requirements, are characteristic of many multiple formulas available.

I suggest that no sulphates or chlorides are used as mineral sources and no artificial flavor, color, or sugar is used. Natural sources of vitamins are suggested. Dosages are obtained from nutritional companies and from your individual research and results. Patients can be allergic to the gelatin capsule which many vitamin and drug companies use. You can obtain non-gelatin capsules. There are vegetarian and kosher vitamin/mineral preparations also available.

As a rule, the more rapid and complete the nutritional rehabilitation, the shorter the period of convalescence. If the orthopedic complaint can be considered by itself to alter the requirements for various nutrients, it may be classified as a stressor, demanding an even more rigorous examination of the patient's nutritional habits---from a viewpoint of treatment, protection, and prophylaxis.

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