

Using the pain drawing in evaluating low back disorder

Goldman S, Merritt J. *J Musculoskel Med* 1991; 8(8):14-24.

The pain drawing is an invaluable aid for the primary physician assessing low back complaints. It helps not only in localizing the pain but also in determining whether pain is functional or has a psychological, economic, or other nonorganic component. Before the office visit begins, the patient marks the pain drawing with symbols for type, location, and degree of pain; the physician scores the responses using one of three systems – assigning points to responses and adding them to obtain a numerical score, noting the percentage of the figure's area that was marked, or making an at-a-glance overall judgment of the responses. The reliability of the pain drawing may be increased when combined with psychometric testing.

Is there a relationship between femoral anteversion and leg torsion?

Reikeras O. *Skeletal Radiol* 1991; 20:409-411.

In this study, the association between increased femoral anteversion and external torsion of the leg was investigated by computed tomography in adults. In a control group of 15 women, the anteversion angle of the femoral neck measured $11^\circ \pm 9^\circ$ and $12^\circ \pm 9^\circ$ for the right and left sides, respectively. The external torsion of the leg was $40^\circ \pm 8^\circ$ and $39^\circ \pm 10^\circ$, respectively. The patient group consisted of 16 women who were evaluated for clinical symptoms related to increased femoral anteversion. In this group, the femoral anteversion was $31^\circ \pm 7^\circ$ and $33^\circ \pm 7^\circ$ for the right and left sides, respectively, and the external torsion of the leg was $35^\circ \pm 10^\circ$ and $33^\circ \pm 12^\circ$, respectively. There were no correlations between the degree of femoral anteversion and the degree of external torsion of the leg. This study indicates that in cases of increased femoral anteversion, compensatory external torsion of the leg does not develop regularly during growth.

Radiographic findings of degeneration in cervical spines of middle-aged soccer players

Kurosawa H, Yamanoi T, Yamakoshi K. *Skeletal Radiol* 1991; 20:437-440.

Twelve amateur veteran soccer players (average age 40.1 ± 5.4 years), who began playing in their teens and who were admitted with symptoms most likely to be related to cervical spondylosis, were examined by cervical radiography. Abnormal radiographic findings included: calcification of anterior longitudinal ligament (25%), anterior (75%) and posterior vertebral spurs (75%), ossicle between spinous processes (75%), calcification of nuchal ligament (Barsony) (58%), ossicle on spinous process (25%), and bony spur of Luschka's joints (83%). It was shown in the stress distribution by finite element method analysis that the stress in heading the ball was applied mainly to the lower parts of the cervical spine. The results of this analysis also corresponded well with some of the radiographic findings.

Transverse ligament rupture and atlanto-axial subluxation in children

Floman Y, Kaplan L, Elidan J, Umansky F. *J Bone Jt Surg (Br)* 1991; 73-B:640-643.

We report four children aged two to nine years with traumatic tears of the transverse ligament of the atlas and atlanto-axial subluxation. This is extremely rare in this age since trauma usually causes a skeletal rather than a ligamentous injury. The injuries resulted from falls or motor vehicle accidents, with considerable delay in diagnosis.

Flexion radiographs showed atlas-dens intervals (ADI) of 6, 7, 8 and 13 mm: all four patients were treated by posterior fusion at C1-C2 after the failure of conservative treatment. In one child with quadriplegia and a fixed ADI of 13 mm transoral anterior resection of the odontoid was performed before the fusion.

Diagnosis of this traumatic lesion requires a high level of suspicion. Conservative treatment is likely to fail, surgical stabilisation is indicated.

Bicipital groove dysplasia and medial dislocation of the biceps brachii tendon

Levinsohn E, Santelli E. *Skeletal Radiol* 1991; 20:419-423.

The purpose of this study was to investigate the plain film finding of dysplasia of the lesser tubercle of the humerus and its relationship to medial dislocation of the tendon of the long head of the biceps brachii muscle as diagnosed by shoulder arthrography. Of 55 patients referred for arthrography of the shoulder because of undiagnosed shoulder pain, 12 demonstrated flattening of the medial wall of the bicipital tendon groove. Of these, 58% had medial dislocation of the biceps tendon, and 43% of patients with dislocation of the biceps tendon were also shown to have a tear of the rotator cuff. Since biceps tendon pathology has long been implicated in shoulder pain and weakness, assessment of the bicipital groove may provide important information in evaluating patients with potential abnormality of the biceps tendon.

Post-traumatic migraine: chronic migraine precipitated by minor head or neck trauma

Weiss H, Stern B, Goldberg J. *Headache* 1991; 31:451-456.

Minor trauma to the head or neck is occasionally followed by severe chronic headaches. We have examined 35 adults (27 women, 8 men) with no prior history of headaches, who developed recurrent episodic attacks typical of common or classic migraine following minor head or neck injuries ("post-traumatic migraine" – PTM). The median age of these patients was 38 years (range 17 to 63 years), which is older than the usual age at onset of idiopathic migraine. The trauma was relatively minor: 14 patients experienced head trauma with brief loss of consciousness, 14 patients sustained head trauma without loss of consciousness, and 7 patients had a "whiplash" neck injury with no documented head trauma. Headaches began immediately or within the first few days after the injury. PTM typically recurred several times per

week and was often incapacitating. The patients had been unsuccessfully treated by other physicians, and there was a median delay of 4 months (range 1 to 30 months) before the diagnosis of PTM was suspected. The response to prophylactic anti-migraine medication (propranolol or amitriptyline used alone or in combination) was gratifying, with 21 of 30 adequately treated patients (70%) reporting dramatic reduction in the frequency and severity of their headaches. Improvement was noted in 18 of the 23 patients (78%) who were still involved in litigation at the time of treatment. The neurologic literature has placed excessive emphasis on compensation neurosis and psychological factors in the etiology of chronic headaches after minor trauma. Physicians must be aware of PTM, as it is both common and treatable.

Changes in vertebral bone density in black girls and white girls during childhood and puberty

Gilsanz V, Roe TF, Mora S, Costin G, Goodman WG.
N Engl J Med 1991; 325:1597-1600.

Background. The prevalence of osteoporosis and the incidence of vertebral fractures are lower in black women than in white women, findings generally attributed to racial differences in adult bone mass. Little is known, however, about the factors that contribute to racial variations in bone mass or the time of life when such differences become manifest. This study was done to characterize the changes in vertebral bone density at various stages of sexual development in black and white females.

Methods. We measured cancellous vertebral bone density by quantitative computed tomography in 75 black female subjects between 2 and 20 years old and 75 white matches for age and stage of sexual development.

Results. The vertebral bone density did not differ between black girls and white girls before puberty. Bone density increased during puberty in each racial group, but the magnitude of the increase from prepubertal values was substantially greater in black than in white subjects (34 percent vs. 11 percent).

Conclusions. The marked difference between black and white females in cancellous vertebral bone density occurs during a relatively brief period late in puberty. Metabolic and hormonal events related to the achievement of sexual maturity during adolescence may be important determinants of racial differences in bone mass in women.

Iliolumbar ligament ossification as a radiologic feature of reactive arthritis

Lapadula G, Covelli M, Numo R, Pipitone V.
J Rheumatol 1991; 18:1760-1762.

We describe the case of a 21-year-old woman with the clinical picture of HLA-B27+ reactive arthritis (ReA) in whom the ossification of the left iliolumbar ligament was detected. Our case proves that ligament calcifications, which have so far ascribed to diffuse idiopathic skeletal hyperostosis may also occur in young patients with ReA not primarily affected by metabolic osteoarticular diseases with negative family history.

A reexamination of the relationship between myositis and malignancy

Schulman P, Kerr LD, Spiera H. J Rheumatol 1991; 18:1689-1692.

The association between myositis and malignancy has long been appreciated. However, several recent reviews question the validity of this connection and the utility of pursuing an extensive search for occult malignancy in myositis. We report 9 patients fulfilling diagnostic criteria for myositis seen in the past 12 years. In each, a neoplasm was uncovered only in the course of a systematic search or, when such initial investigation was deferred, at a later time. Of the 9 patients, 6 had dermatomyositis, 3 polymyositis. In 3 cases, solid tumors were diagnosed concomitantly with the myositis. In the remaining 6 patients, an advanced neoplasm was detected in the course of followup. In retrospect, some of these tumors might have been detected at an earlier and perhaps more treatable stage had a more rigorous initial malignancy search been pursued. Based on this experience, it is imperative that the clinician undertake a more exhaustive search for occult malignancy in patients with myositis than is currently recommended.

Intraexaminer, interexaminer, and interdevice comparability of leg length measurements obtained with measuring tape and Metrecom

Hoyle DA, Latour M, Bohannon RW. JOSPT 1991; 14(6):263-268.

Leg length inequalities result from a variety of clinical abnormalities. The purpose of this study was to compare repeated leg length measurements taken by two examiners with two devices during a single session. The two devices that were used were a standard tape measure and a Metrecom. Since reliability coefficients do not fully describe the comparability of measurements, ANOVAs were used to describe differences, and Pearson correlations were used to describe relationships between measurements of leg length obtained by the two examiners using the two instruments. Results of the study showed that although reliability and correlation coefficients are high between testers and devices, significant differences in measurements exist between both testers and devices. The measures found to be most comparable were those taken by one examiner using one device. The authors conclude that for clinical purposes, the tape measure may be the more practical device based on its price. It was theorized, however, that in cases of asymmetry or orthopaedic deformity, the accuracy of the Metrecom may be superior.

Diclofenac-induced thrombocytopenic purpura with renal and hepatic involvement

Bondeson J, Berglund S. J Int Med 1991; 230:543-547.

A case of diclofenac-induced thrombocytopenic purpura in a 59-year-old woman is described. Unlike the majority of earlier cases, ours was associated with renal insufficiency and jaundice. Despite the dramatic clinical picture, with severe thrombocytopenia and marked renal insufficiency, the prognosis appears to be excellent, as shown in our case and

in similar ones reported in the literature. A high dose of steroids is the treatment of choice.

Clinical and anthropometric correlates of bone mineral acquisition in healthy adolescent girls

Katzman DK, Bachrach LK, Carter DR, Marcus R.
J Clin Endocrinol Metab 1991; 73:1332-1339.

We studied the acquisition of bone mineral in 45 healthy prepubertal and pubertal girls and related changes in bone mass to age, body mass, pubertal status, calcium intake, and exercise. A subgroup of 12 girls was followed longitudinally. Bone mineral content (BMC) of the lumbar spine, whole body, and femoral neck was measured by dual energy x-ray absorptiometry and that at the midradius by single photon absorptiometry. For comparison, spine and whole body mineral contents were also measured by dual photon absorptiometry. Bone mass was expressed in conventional terms of BMC and area density (BMD). However, we show that BMD fails to account for differences in bone thickness. Since bone size increases during adolescence, we present a new expression, bone mineral apparent density (BMAD), which is BMC normalized to a derived bone reference volume. This term minimizes the effect of bone geometry and allows comparisons of mineral status among bones of similar shape but different size. BMC increased with age at all sites. These increases were most rapid in the early teens and plateaued after 16 years of age. When bone mineral values at all sites were regressed against age, height, weight, or pubertal stage, consistent relationships emerged, in which BMC was most strongly correlated, BMD was correlated to an intermediate degree, and BMAD correlated only modestly or without significance. Dietary calcium and exercise level did not correlate significantly with bone mass. From these relationships, we attribute 50% of the pubertal increase in spine mineral and 99% of the change in whole body mineral to bone expansion rather than to an increase in bone mineral per unit volume. In multiple regressions, pubertal stage most consistently predicted mineral status. This study emphasizes the importance of pubertal development and body size as determinants of bone acquisition in girls. BMAD may prove to be particularly useful in studies of bone acquisition during periods of rapid skeletal growth.

Seronegative arthritides of the anterior chest wall: a follow-up study

Jurik AG. Skeletal Radiol 1991; 20:517-525.

Fourteen patients with arthritis of the anterior chest wall (ACW) as part of ankylosing spondylitis, reactive arthritis, and arthritis associated with psoriasis and/or pustulosis palmoplantaris (PPP) were re-examined after periods of 5-15 years (mean 9 years) using tomography. The findings were compared with those of 24 similarly examined patients with predominant osseous sclerotic ACW lesions or monoarthritis of the manubriosternal joint. Pronounced osseous hyperostosis in the region of the sternoclavicular joint accompanied by ossification of the costoclavicular ligament was found to occur only in patients with PPP lesions.

Patients with ankylosing spondylitis and reactive arthritis developed slight or moderate hyperostosis only and no ligament ossification. Predominant osseous sclerotic sternal and clavicular lesions occurred in patients with PPP and in patients without skin disease or traits suggesting well-known arthritides, but not as part of ankylosing spondylitis and reactive arthritis. Arthritis of the manubriosternal joint and upper sternocostal joints developed in all forms of arthritis.

The use of exercise as a method of aborting migraine

Darling M. Headache 1991; 31:616-618.

Exercise, as a method of migraine management has been discussed theoretically and tested empirically. The consensus is that exercise can help to reduce the frequency, intensity and/or duration of migraine attacks. Conversely, there are case studies which, with few exceptions, suggest that periods of exercise can precipitate a migraine headache. The literature concurs, however, that one should not attempt exercise when in the midst of an attack. The present article presents a case study of a woman who found prompt relief from her migraines with strenuous exercise.

The interrelationship of internal derangements of the temporomandibular joint, headache, vertigo, and tinnitus: a survey of 25 patients

Williamson EH. J Craniomandib Pract 1990; 8(4):301-306.

Twenty-five patients presenting with a chief complaint of pain around the temporomandibular joints, along with symptoms of internal derangements, i.e., clicking or crepitus, and concomitant vertigo were treated successfully with jaw repositioning orthotics. All had been examined by physicians for otalgic disorders and were considered negative. Vertigo was remitted with orthotic therapy in all cases and returned with the removal of the appliance. Anatomic and physiologic hypotheses are presented as potential etiologies.

Nutrition of the elderly

Chandra RK, Imbach A, Moore C, Skelton D, Woolcott D.
Can Med Assoc J 1991; 145(11):1475-1487.

The progressively increasing number of elderly people in the Canadian population and the disproportionate expenditure on their health care has stimulated interest in prevention of common illnesses observed in this age group. It is now recognized that nutrition plays an important role in health status, and both undernutrition and overnutrition are associated with greater risk of morbidity and mortality. Nutritional problems in the elderly can be suspected if there are several high-risk factors present—for example, living alone, physical or mental disability, recent loss of spouse or friend, weight loss, use of multiple medications, poverty, and high consumption of alcohol. Physical examination, anthropometry, and measurements of serum albumin levels and hemoglobin and lymphocyte counts are simple but helpful tools in confirming the presence

of nutritional disorders. The prevention and correction of nutritional problems is likely to prove beneficial in the management of common geriatric illness. In these efforts, it is desirable to have a team approach in which the physician, the dietitian and the nurse each have a defined interactive role. Home care support services are important adjuncts in continuing care. Nutrition should receive a greater emphasis in the training of physicians and other health professionals.

Diagnosis and treatment of TMJ, head, neck and asthmatic symptoms in children

Gillespie BR, Barnes JF. *J Craniomandib Pract* 1990; 8(4):342-349.

The normal physiologic tension of the TMJ muscles, fascia, ligaments, and associated structures is critical for the health of children. Pathologic strain patterns in the soft tissue can be a primary cause of headaches, neckaches, throat infections, ear infections, sinus congestion, and asthma. This article presents effective diagnostic and treatment modalities from both dental and physical therapy viewpoints to relieve and restore normal physiology to the TMJ muscles, fascia, ligaments, and associated structures. As structural balance is restored, a nutritional component of therapy is strongly recommended for the child's optimum health.

Cost effectiveness of magnetic resonance imaging in the neurosciences

Szczepura AK, Fletcher J, Fitz-Patrick JD. *Br Med J* 1991; 303:1435-1439.

Objectives – To measure, in a service setting, the effect of magnetic resonance imaging on diagnosis, diagnostic certainty, and patient management in the neurosciences; to measure the cost per patient scanned; to estimate the marginal cost of imaging and compare this with its diagnostic impact; to measure changes in patients' quality of life; and to record the diagnostic pathway leading to magnetic resonance imaging.

Design – Controlled observational study using questionnaires on diagnosis and patient management before and after imaging. Detailed costing study. Quality of life questionnaires at the time of imaging and six months later. Diagnostic pathways extracted from medical records for a representative sample.

Setting – Regional superconducting 1-5 T magnetic resonance service.

Subjects – 782 consecutive neuroscience patients referred by consultants for magnetic resonance imaging during June 1988-89; diagnostic pathways recorded for 158 cases.

Main outcome measures – Costs of magnetic resonance imaging and preliminary investigations; changes in planned management and resulting savings; changes in principal diagnosis and diagnostic certainty; changes in patients' quality of life.

Results – Average cost of magnetic resonance imaging was estimated at £206.20/patient (throughput 2250 patients/year, 1989-90 prices including contrast and upgrading). Before magnetic resonance imaging diagnostic procedures cost £164.40/patient (including inpa-

tient stays). Management changed after imaging in 208 (27%) cases; saving an estimated £80.90/patient. Confidence in planned management increased in a further 226 (29%) referrals. Consultants' principal diagnosis changed in 159 of 782 (30%) referrals; marginal cost per diagnostic change was £626. Confidence in diagnosis increased in 236 (30%) referrals. No improvement in patients' quality of life at six months assessment.

Conclusions – Any improvement in diagnosis with magnetic resonance imaging is achieved at a higher cost. Techniques for monitoring the cost effectiveness of this technology need to be developed.

Electric behavior of low back muscles during lumbar pelvic rhythm in low back pain patients and healthy controls

Sihvonen T, Partanen J, Hänninen O, Soimakallio S. *Arch Phys Med Rehabil* 1991; 72:1080-1087.

The functioning of low back muscles of back pain patients during flexion and reextension has not been properly investigated. In this study, we analyzed rectified, averaged electric activity (RMS EMG) and corresponding raw intramuscular (IM) EMG from lumbar paraspinal muscles to quantify the activity level during simple bending cycles in 87 back pain patients compared to 25 able-bodied controls. The results: All functional phases in raw IM EMG were also shown in surface RMS EMG. Surface RMS EMG pattern seems to yield more information from activity level than IM EMG pattern. The RMS EMG patterns of back pain patients differed from those of controls as follows: (1) There was clearly noticeable activity during standing in back pain patients. (2) There was only a partial decrease of EMG activity after flexion in back pain patients with current pain. (3) The ratio of mean reached at maximal activity level during extension and flexion was less in patients (1.8, SD = 0.5, $p < .001$) than able-bodied controls (3.2, SD = 0.8). (4) Segmental differences were observed in IM EMG activities in patients having hypermobility in bending x-ray. (5) Large peak potentials occurred during movement in patients having segmental hypermobility. The results indicate that averaged surface recording is a valuable tool in the investigation of dynamic spine functions in back pain patients.

Biomechanical gait analysis in obese men

Spyropoulos P, Pisciotto JC, Pavlou KN, Cairns MA, Simon SR. *Arch Phys Med Rehabil* 1991; 72:1065-1070.

The purpose of this study was to identify and compare the kinematic components of the walking gait of obese men to those of nonobese men. Self-paced walking trials of 12 obese volunteers, ranging in age from 30 to 47 years and in obesity from 70% to 99% above ideal body weight, were recorded via cinematography. The following findings were recorded: (1) obese persons (1.09m/sec) walk significantly ($p < .001$) slower than nonobese subjects (1.64m/sec); (2) obese persons take significantly ($p < .001$) shorter strides (1.25m vs 1.67m) and exhibit step widths (.16m) twice those of nonobese persons (.08m); (3) mean

hip abduction angles of the obese are significantly ($p < .001$) different at some events of the walking cycle from the angles of nonobese persons; (4) mean hip and knee flexion angles are not significantly different for obese and nonobese subjects; and (5) obese individuals demonstrate a walking gait pattern with significantly greater ($p < .001$) mean magnitude of ankle dorsiflexion and lesser ($p < .001$) mean magnitude of ankle plantar flexion than nonobese subjects throughout the walking cycle. It is concluded that obese individuals display a walking gait that follows a normal pattern but some of the temporal and angular components of their gait are different from those of nonobese persons mainly because of the excessive adipose tissue inside their thighs.

Exercise-induced myokymia with congenital spinal stenosis

Colachis SC III, Bobulski RJ.
Am J Phys Med Rehabil 1991; 70:255-257.

Myokymia and myokymic discharges are observed in a variety of neurologic conditions. An unusual case of myokymia induced by exercise and febrile illness presented in an 11-year-old male with congenital spinal stenosis. Myokymia was not generalized, but occurred below the level of his umbilicus. We hypothesize that the local cord ischemia was the underlying mechanism for this rare phenomenon. The pathophysiology, clinical features and electrodiagnostic findings of myokymia are reviewed.

Do asymptomatic marathon runners have an increased prevalence of meniscal abnormalities? An MR study of the knee in 23 volunteers

Shellock FG, Deutsch AL, Mink JH, Kerr R.
AJR 1991; 157:1239-1241.

Excessive repetitive musculoskeletal loads and stresses associated with intense physical activity may lead to deterioration of the menisci of the knee. Therefore, MR imaging was performed on the knees of 23 asymptomatic marathon runners (eight men, 15 women; average age, 40 years; average number of years training, 10; average training distance per week, 41 miles) to determine the prevalence of meniscal signal abnormalities. None of the runners had previous knee injuries or surgery and each of them regularly competes in 26-mile, 50-mile, or 100-mile marathon races. T1-weighted coronal MR images and proton density-weighted and T2-weighted sagittal images were obtained with a 1.5-T MR system and a transmit/receive extremity coil. The medial and lateral menisci were divided into four portions, or horns, and a total of 92 horns were evaluated (i.e., four horns per knee: medial posterior, medial anterior, lateral posterior, and lateral anterior). Two meniscal horns (2%) had grade 3 signal (grade 3 indicates a meniscal tear). 12 (13%) had grade 2 signal, 29 (32%) had grade 1 signal (grades 1 and 2 are indicative of meniscal degeneration), and 49 (53%) had grade 0 signal (grade 0 is normal). Overall, the prevalence of meniscal tears was 9% (two meniscal tears found in 23 runners). This is lower than the prevalence of MR signal abnormalities indicative of meniscal tears reported for asymptomatic, nonrunner athletes (20% of 20 athletes) and

for asymptomatic nonathletes (16% of 74 subjects). Fifty-three percent of the meniscal horns of the nonrunner athletes had grade 1 or 2 signal, indicative of meniscal degeneration.

Our results indicate that the prevalence of meniscal tears in marathon runners is no higher than the prevalence reported for sedentary persons, and the runners have the same amount of meniscal degeneration as do nonrunner athletes.

Which fractures are associated with low appendicular bone mass in elderly women?

Seeley DG, Browner WS, Nevitt MC, Genant HK, Scott JC, Cummings SR. Annals Internal Medicine 1991; 115:837-842.

Objective: To determine which types of fractures have an increased incidence in elderly women with low appendicular bone mass.

Design: Prospective cohort study.

Setting: Four clinical centers in the United States (Baltimore, Maryland; Minneapolis, Minnesota; Portland, Oregon; Monongahela Valley, Pennsylvania); and one coordinating center in San Francisco, California.

Subjects: Ambulatory nonblack women (9704) aged 65 years or more who were recruited from population-based listings.

Measurements: We measured bone mass at the distal and proximal radius and calcaneus using single-photon absorptiometry. Fractures were verified radiographically. Associations were calculated as age-adjusted hazard ratios (with 95% CIs) per standard deviation decrease in bone mass.

Main Results: During a mean follow-up of 2.23 years, 841 nonspinal fractures occurred in 753 women. The risks for fractures of the wrist, foot, humerus, hip, rib, toe, leg, pelvis, hand, and clavicle were significantly related to reduced bone mass ($P < 0.05$). These fractures represented 74% of nonspinal fractures. The overall hazard ratio for the occurrence of one or more of these fractures was 1.65 (CI, 1.49 to 1.82) at the distal radius. In a subsample of the cohort, vertebral fractures were also related to low bone mass. Fractures of the ankle, elbow, finger, and face, however, were not associated with bone mass at any measurement site; the overall hazard ratio for these fractures was 1.12 (CI, 0.96 to 1.30) at the distal radius.

Conclusion: Most types of fractures have an increased incidence in elderly women with low bone mass.

NOTICE - ERRATUM

Burge ER. Legislation - quality improvement - the regulatory process. JCCA 1991; 35(4):221-228.

On page 228 of this manuscript, the sentence appearing as:

"We must recognize that standards based on the 'usual and customary practice' and what you and I think is appropriate is adequate."

should have appeared as:

"We must recognize that standards based on the 'usual and customary practice' and what you and I think is appropriate is inadequate."