

Post-traumatic osteoarthritis – a medico-legal minefield

Wright V. *Br J Rheum* 1990; 29:474–478.

A consensus view has been obtained from 108 colleagues about four major questions relating to post-traumatic osteoarthritis (OA) posed by a retired judge. In determining the likelihood of OA developing after a fracture, several factors must be taken into account. These include whether the fracture goes through the joint, the resulting angular deformity, the degree of soft tissue damage, the ensuing laxity of the joint, the presence of generalized OA, the involvement of nearby blood vessels supplying the bones of the joint and possibly the degree of immobilization. Lower limb joints are more likely to develop arthritis after injury than arm joints as they carry more load (although it would be wrong to think that arm joints were not load bearing). Occupation is a further factor.

Age is thought to be important, with the elderly more at risk immediately, but the younger having longer in which to develop the disease. Younger people are less likely to develop post-traumatic OA, unless there is involvement of the epiphysis or residual angular deformity. Whilst in animals and in some fractures, degenerative changes begin immediately after damage to the joint, in most adults they take at least 2 years. The span is 2–5 years in more severe cases, including fractures of the joint line with a step in the surface, and associated dislocation. Otherwise it may take 10 years. Most of these data are anecdotal or obtained from retrospective surveys. There is great need for prospective work in this field.

Cerebrovascular occlusive complications in osteopetrosis major

Wilms G, Casaer P, Alliet P, Demaerel P, Smet M. *Neuroradiology* 1990; 32:511–513.

We report the case of a 16-year-old patient with osteopetrosis major, complaining of transient sensory and motor disturbances in the left upper limb and dizziness on changing the position of his head. Selective angiography of the cerebral vessels showed severe narrowing of the internal carotid artery within the petrous carotid canal and in its supraclinoid portion. The cervical vertebral arteries showed multiple stenosis within the vertebral canal. These findings are explained by narrowing of the basal foramina by the osteopetrotic bone.

Organization of intrathecal nerve roots at the level of the conus medullaris

Wall E, Cohen M, Abitol J, Garfin S. *J Bone Joint Surg* 1990; 72-A(10):1495–1499.

The three-dimensional organization of the spinal nerve roots at the level of the conus medullaris has not been described previously, to our knowledge. In this study, we used a newly developed technique of *in situ* fixation and embedding to define the cross-sectional anatomy at the level of the conus medullaris in ten fresh human cadavera. A highly organized overlapping pattern of nerve roots was demonstrated in all specimens. The nerve roots form a peripheral rim around the spinal cord at the levels of the tenth and eleventh and the eleventh and twelfth thoracic intervertebral discs. More caudally, the cord diminishes in size

and the nerve roots predominate. The most cephalad roots lie laterally, with the motor roots ventral to their sensory counterparts. The more caudad roots overlap toward the midline, and the motor and sensory portions of each root are separated by spinal cord tissue. An intricate web of arachnoid membrane holds the nerve roots in a fixed relationship to each other.

Clinical relevance: This previously undescribed three-dimensional anatomy at the level of the conus medullaris may aid in the understanding of neurological deficits secondary to trauma to the thoracolumbar junction, high lumbar-disc herniations (such as those at the first and second lumbar intervertebral disc), and tumors in this region.

Micturitional disturbance in ossification of the posterior longitudinal ligament in the cervical spine

Yasuda K, Sakakibara, Yamanishi T, Kitahara H. *J Spinal Dis* 1990; 3(4):285–287.

Neurourological studies were performed on 39 patients with cervical myelopathy due to ossification of the posterior longitudinal ligament. Micturitional history revealed that 30 patients (77%) had voiding symptoms: obstructive in 8, irritative in 11, and both obstructive and irritative symptoms in 11. Ten patients had urge incontinence and 4 had urinary retention. Urodynamic studies revealed that 7 of 19 had abnormal uroflowmetrogram, 16 of 35 had residual urine, 18 of 39 had detrusor hyperreflexia, and 10 of 39 had detrusor-sphincter dyssynergia. There were no statistical differences in lower extremity neurological signs in patients with incontinence, and patients with residual urine or urinary retention.

Wallenberg's syndrome following neck manipulation

Frumkin L, Baloh R. *Neurology* 1990; 40:611–615.

We describe 4 patients ages 28 to 41 with lateral medullary infarction (Wallenberg's syndrome) following chiropractic neck manipulation. In 3 patients, angiography documented dissection of the extracranial 3rd segment of the vertebral artery near the atlantoaxial joint. The onset of neurologic symptoms following manipulation varied from immediate to 4 days. All had good recovery with minor residual deficits. Although the association between chiropractic neck manipulation and vertebral-basilar artery distribution infarction is well-known, we emphasize its occurrence in young healthy individuals without commonly regarded predisposing factors.

Rotational vertebralbasilar insufficiency secondary to vertebral artery occlusion from fibrous band of the longus coli muscle

Dadsetan M, Skerhut H. *Neuroradiology* 1990; 32:514–515.

Rotation-induced vertebralbasilar artery hypoperfusion causes transient ischemic attacks (TIAs), affecting the cerebellum, brainstem and spinal cord. When these symptoms occur transiently due to head movement, compression of the vertebral artery by an extraluminal lesion should be suspected. Cervical spondylotic spurs and anterior scalene muscle or deep cervical fascia are among the factors which can compress the

vertebral artery. When symptoms of vertebrobasilar insufficiency occur with rotation head movement, subclavian angiography for visualization of the entire vertebral artery in both neutral and rotated head positions should be undertaken.

Degeneration and ossification of the yellow ligament in unstable spine

Nakamura T, Hasnimoto N, Maeda Y, Ikeda T, Nakagawa H.
J Spinal Dis 1990; 3(4):288-292.

Lumbar yellow ligaments were obtained from 20 cases of lumbar spinal canal stenosis and 20 cases of degenerativeolisthesis with slippage of more than 3 mm. The ligaments were stained with safranin-O, von Kossa, and immunohistochemical staining methods (S-100 protein). In the unstable group the safranin-O staining was more intense, microscopic ossification and chondroblasts were noted more frequently, and S-100 protein was more abundant. These findings show that instability of the lumbar spine accelerates degeneration and chondrometaplasia of the yellow ligament, which may lead to the enchondral ossification of the ligament.

Brucella arthritis: a study of 96 cases in Kuwait

Kateeb M, Araj G, Majeed S, Lulu A.
Ann Rheum Dis 1990; 49:994-998.

Of 400 patients with brucellosis, 104 (26%) had arthritis, of whom 96 could be followed up. The systemic disease in the 96 patients was acute 54 (56%), subacute in 24 (25%), and chronic in 18 (19%). The main presenting symptoms were joint pain, fever, sweating, and easy fatigability. The joints most commonly affected were the sacroiliac joint (26%) and knee (25%) followed by hip (18%) and spine (8%). There was no particular pattern of joint affection in relation to age. Joint effusion occurred in 32/104 (30%) of cases, predominantly (94%) in the acute group. Culture of synovial fluid was negative in all, and analysis of synovial fluid for cellular profile, glucose, and protein content was not particularly helpful in diagnosis. Plain radiographs did not show major pathological changes. Among the laboratory tests, including haematological and liver function tests, the brucella enzyme linked immunosorbent assay (ELISA) was the most reliable in the diagnosis of disease, using serum and synovial fluid specimens. Treatment with a combination of streptomycin plus tetracyclines or rifampicin resulted in an excellent cure rate and resolution of arthritis without sequelae or mortality. Thus brucellosis should be considered in the differential diagnosis of arthritis, especially in areas in which the disease is endemic.

Magnetic resonance imaging and posttraumatic Lhermitte's sign

Traynelis V, Hitchon P, Yuh W, Kaufman H.
J Spinal Dis 1990; 3(4):376-379.

Two patients developed Lhermitte's sign after cervical spine fractures. The patients were otherwise without evidence of spinal cord dysfunction. Both patients were studied with magnetic resonance scans of the

cervical spine. The magnetic resonance scans were normal. The possible etiology of Lhermitte's sign in these patients is discussed. The differential diagnosis including cervical spondylosis, combined systems degeneration, multiple sclerosis, neoplasm, and radiation myelopathy is reviewed. These patients should be carefully evaluated clinically, and flexion/extension lateral cervical spine films as well as a complete blood count and peripheral smear should be obtained. Magnetic resonance scanning may have an important role in evaluating these patients. Magnetic resonance is exquisitely sensitive in detecting demyelination; therefore, we speculate that subarachnoid scarring may be responsible for this symptom. Gadolinium-enhanced magnetic resonance scanning may confirm the presence of such scarring in the future.

Intradural disc herniations in the cervical, thoracic, and lumbar spine: report of three cases and review of the literature

Epstein N, Syrquin M, Epstein A, Decker.
J Spinal Dis 1990; 3(4):396-403.

The clinical, neuroradiological, and surgical management of three cases of intradural disc herniations - one each in the cervical, thoracic, and lumbar regions - are presented. Intradural disc herniations comprise only 0.27% of all herniated discs. Three percent occur in the cervical, 5% in the thoracic, and 92% in the lumbar spinal canal. Those with cervical or thoracic lesions frequently exhibit profound myelopathy, whereas those with lumbar lesions demonstrate radicular or cauda equina syndromes. Although varying combinations of the MRI, noncontrast CT, myelogram and myelo-CT scans may at times fail to accurately establish the diagnosis of an intradural disc herniation prior to surgery, the index of suspicion raised by the lack of clinical correlation with surgical findings justifies an intradural exploration.

Specific pattern of ruptured annulus fibrosus in lumbar degenerative spondylolisthesis

Ito S, Yamada Y, Tuboi S, Yamada Y.
Neuroradiology 1990; 32:460-463.

In order to study the antepriori etiologic factors of degenerative spondylolisthesis, the discograms and CTD were analyzed and the rate of disc slipping and disc indices were evaluated in 30 cases with degenerative spondylolisthesis. (1) The characteristic S-shaped image which extended from anteroinferior to posterosuperior up to the posterior margin of a vertebral body was observed in 89.7% of slipped discs in lateral discograms. CTD revealed that this image represented a circular splitting in the external and intermediate annulus fibrosus. (2) Discographic degeneration of the discs adjacent to a slipped disc was relatively mild, and their disc indices were not significantly different from those of controls. (3) A negative correlation with $r = -0.434$ was found between the slipping rate and the disc index. From these results, it was postulated that the site and direction of the circular splitting in laminae of the annulus fibrosus, and the direction of the load applied to an intervertebral disc are important etiologic factors of degenerative spondylolisthesis.