# Chondrocalcinosis

In 1963 D. Žitňan and Š. Sitàj[1] and their colleagues in Czechoslovakia published a comprehensive account of a disorder they termed chondrocalcinosis articularis, and gave references to 32 cases previously reported. They described in detail 27 cases "of a condition characterized by multiple calcification of hyaline and fibrous cartilage both of the joints and of the vertebral discs." Of the 27 patients aged 26 to 77 years 11 were men and 16 women. The disorder was manifested by episodes of acute or subacute inflammation of one or more joints, the knees being most often affected. Swelling developed rapidly, reaching its peak in three or four days, but the inflammatory changes lasted from 7 to 50 days (average 15). Systemic upset with fever, anorexia, and loss of weight occurred with the attacks, and prodromal indefinite articular pains often preceded the acute attack. Superficial calcification appeared in radiographs of the affected articular cartilages, and after several years inflammatory features and radiological calcification lessened and gave way to generalized osteoarthrosis. Žitňan and Sitàj considered the condition hereditary rather than familial, "carbonate apatite" being deposited primarily in the cartilage and secondarily in the joint fluid, where it acted as an irritant. The same authors[2] at the recent European Congress of Rheumatology in Lisbon described the spinal changes found in this disorder in 39 patients. Changes are most marked in the cervical spine but are also present in the lumbar spine. The condition leads gradually to loss of spinal mobility.

In 1961 D. J. McCarty and J. L. Hollander[3] used compensated polarized light microscopy to analyse synovial fluid as a diagnostic test for gout and accidentally discovered crystals of calcium pyrophosphate dihydrate (C.P.P.D.) crystals. They reported seven such patients with this "pseudo-gout syndrome": in retrospect they seem to have been describing the same disorder as the Czechoslovakian workers. McCarty[4] found C.P.P.D. crystal deposition disease in association with diabetes mellitus, hypertension, atherosclerosis, azotaemia, hyperuricaemia, gynaecomastia, hyperparathyroidism, renal stones, and a few cases of classical gout, where urate crystals were also found. He compares the features of the two disorders, gout and pseudo- (calcium pyrophosphate) gout, considering the acute manifestations in both disorders to be due to actual crystal deposition. While there are many points of similarity, gout is predominantly a male disease, while pseudo-gout attacks either sex, with a slightly increased incidence in women. Gout affects more commonly peripheral small joints, such as the big toe; pseudo-gout affects larger ones, such as the knees. Colchicine usually improves true gout, rarely pseudo-gout, but this may not always be true, and is probably an unreliable point of distinction. Radiological and pathological findings are distinctive. Superficial calcification in cartilage is not seen in true gout, but it is of interest that McCarty reported an elevated plasma uric acid in 34% of cases of pseudo-gout. McCarty[5] reports that in chondrocalcinosis calcification is especially frequent in fibrocartilaginous structures, including the menisci of the knee, the articular disc of the distal radio-ulnar joint, the annulus fibrosus of the intervertebral discs, and the symphysis pubis. He notes that such deposits are usually symmetrical, whereas calcification in articular cartilage is often asymmetrical, appearing as fine superficial radio-opaque lines. The most useful *x*-ray films in diagnosis of the condition are of the knees, the pelvis, and the wrists.

More recently R. W. Moskowitz and D. Katz[6] have analysed 24 cases of articular chondrocalcinosis. Synovial fluid was aspirated from the knees of 14 patients. Crystals were obtained in all: six birefringent and non-birefringent, four non-birefringent, two birefringent only, while in two patients with gout crystals "with strong negative birefringence consistent with monosodium urate" were seen. Of the 24 cases studied three had probable gout, one rheumatoid arthritis, and one systemic lupus erythematosus. In all the remaining 19 patients no other articular disorder was present. In 12 acute or subacute symptoms had occurred at some stage, while 10 had had more chronic low-grade pain in their joints. Six of the 19 patients in whom the test was performed had hyperuricaemia. Crystals of calcium pyrophosphate and possibly some of dicalcium phosphate dihydrate were found not only in cartilage but also in ligaments, tendons, and joint capsules, a point also emphasized by McCarty. Where crystal synovitis occurs Moskowitz and Katz prefer the somewhat clumsy title chondrocalsynovitis.

So, though the two conditions gout and chondrocalcinosis are separate and distinct, there is an overlap. In some cases this may possibly be due to calcium deposition occurring in areas damaged by true gout, while in others true gout may be localized to areas affected previously by chondrocalcinosis. H. L. F. Currey and his colleagues, at the London Hospital,[7] also noted that 10 of 35 patients with chondrocalcinosis had hyperuricaemia but only three had clinical gout. With repeated haemodialysis or after renal transplantation similar gout-like acute painful inflammatory episodes can occur, calcified opaque lesions appearing in radiographs alongside joints in the areas affected.[8-11]

Treatment of chondrocalcinosis is essentially symptomatic—physical measures and analgesic and anti-inflammatory drugs. Diagnosis has first to be made from true gout, hyperparathyroidism,[12] and haemochromatosis[13-17]—with all of which it may coexist—ochronosis,[18] rheumatoid arthritis, and osteoarthrosis. Prognosis should be guarded, as though the acute inflammatory features lessen in time secondary degenerative changes may set in. As regards nomenclature, the term "pseudo-gout," apart from drawing attention to points of similarity with true gout, has little to recommend it, and chondrocalsynovitis is somewhat clumsy. The title "crystal deposition disease" (calcium pyrophosphate), as recommended by McCarty,[4] depends on identification of crystals from the joint fluid, and this should always be done if possible. On the whole, however, the original title of the Czech workers—chondrocalcinosis articularis—has much to commend it.


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