

Cartilage disorders in symptomatic knee osteoarthritis and chondrocalcinosis: an ultrastructural study

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Osteoarthritis (OA) is one of the most common degenerative joint diseases which causes chronic disability in older populations (1). OA and crystal arthropathy frequently coexist, particularly in the knee. This combination, characterized by crystal accumulations of calcium pyrophosphate dihydrate (CCPD), is called chondrocalcinosis (2). The aim of this work was to investigate and compare the articular surface, the layered structure of cartilage and the chondrocyte behaviour in three different conditions: control, OA and chondrocalcinosis. Cartilages of femoral condyle have been evaluated by means of optical, transmission and environmental scanning electron microscopy with EDAX EDS system. In OA and CCPD deposition disease a collagen network disorganization appears, and crystals, in the latter condition, appear particularly stored in the degenerated area. Cartilage stratifications display a clear thickness reduction of superficial and middle layers, with a calcified tissue increase in the specimens of pathologic groups. Numerous chondrocytes in the articular surface of OA and chondrocalcinosis samples reveal necrotic features, while in the middle zone cells show morphological pattern suggestive of chondroptosis (3). In conclusion, cell behaviour knowledge appears to have a key role to understand cartilage disorders and to investigate their morpho-functional mechanisms.

References

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Keywords

Cartilage; chondrocalcinosis; osteoarthritis; chondroptosis.