The nature of the characteristic cementum-like matrix deposits in the walls of simple bone cysts.

Abstract:
Simple bone cysts (SBC) are benign tumour-like lesions, generally occurring in the metaphyses of long bones before skeletal maturity. Remarkably, in 10-70% of cases, a peculiar, amorphous and hypocellular matrix is found in the walls of SBCs which is usually regarded to consist of (calcified) fibrin clots in the literature. Because these deposits are strongly fuchsinophilic in routine van Gieson stains, the aim of this study was to investigate a series of SBCs using immunohistochemistry and electron microscopy. A comprehensive panel of antibodies against fibrin as well as collageneous and non-collageneous proteins of bone was used, and detected substantial amounts of collagen and decorin as the main components of the investigated matrix. Electron microscopy clearly underlined the immunohistochemical results and also showed abundant fibrils with a periodic banding characteristic of collagen. Adjacent to and in between these collagen deposits runx-2- and osterix-expressing cells were detectable, most probably representing immature osteoprogenitor cells. Although still stated in the literature and most current textbooks, we were not able to detect any evidence of fibrin as a component of the respective matrix deposits that seem to consist predominantly of collagen and decorin.

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