MORPHOLOGICAL CHARACTERIZATION OF FIBROBLAST-LIKE SYNOVIOCYTES FROM HUMAN RHEUMATOID ARTHRITIS AND FROM COLLAGEN-INDUCED ARTHRITIS EXPERIMENTAL MODEL

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INTRODUCTION: It is well known that physiopathology of rheumatoid arthritis (RA) involves an intricate network of cellular connections. Disease progression is characterized primarily by unregulated proliferation of cells in the synovial lining, such as fibroblast-like synoviocytes (FLS). They are mesenchymal cells with a prominent role in rheumatoid synovial membrane. As animal models are crucial for mechanisms elucidation and therapeutic development, similarities between human and mice cells not yet fully verified are highly desirable.

OBJECTIVE: To compare the ultra structural characteristics of human rheumatoid arthritis (RA) fibroblast-like synoviocytes (FLSs) with those from CIA experimental model by optical and electron microscopy.

METHODOLOGY: The synovial membrane tissues were obtained from four RA patients and from murine model of collagen-induced arthritis (CIA). FLS were isolated by means of tissue culture. The cell morphology was observed by phase-contrast microscope.

RESULTS AND DISCUSSION: The FLSs were successfully cultured from the synovial membrane tissues with good cell homogeneity after the third passage. The cells exhibited a fusiform shape with a central nucleus and typical cytoplasmic processes, which are typical features of this cell type. Human and murine synovial fibroblasts exhibited similar ultrastructural morphology with abundant cytoplasm and presence of lamellated corpuscles, cytoplasmic structures related to the production of surfactant, a constituent of synovial fluid.

CONCLUSION: The analysis of potential targets in FLS can evolve in the near future since this cell type is a key part of the joint inflammatory and integrates the complex process in RA pathological tissue. Human and mice FLSs show ultrastructural similarities and lamellated corpuscles can serve as specific cellular marker of these cells. Future studies should focus on the functional similarity of the two cells.