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Letter to Editor "Histopathological study of the infrapatellar fat pad in the rat model of patellar tendinopathy: A basic study"

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Osteoarthritis
Hoffa's fat pad

Dear Editor,

Kitagawa et al. [1] are to be congratulated for their recent article regarding the characterization of the pathological changes of the infrapatellar fat pad (IFP) in patellar tendinopathy in a rat model. In particular, they documented that IFP showed greater cellularity, fibrosis, and vascularity than the control group. We would like to share our anatomical experience on morphological [2] and pathological changes of IPF in osteoarthritic (OA) patients [3]. IPF consists of white adipose tissue, organized in lobuli with a mean diameter of 1.15 ± 0.11 mm, with lobules delimited by thin connective septa (0.22 ± 0.034 mm). In OA IFP removed during total knee arthroprostesis, our group has documented the presence of lymphocytes infiltration, increase of vascularisation and of thickness of interlobular septa with respect to healthy controls [2]. Thus the histological changes documented in a rat model of patellar tendinopathy are similar to that of OA IFP in human subject.

Kitagawa et al. [1] comment that an increase of cellularity observed in the IFP of the patellar tendinopathy group may please substitute with "be" due to an excessive increase of some types of collagen fibers in patellar tendinopathy and that fibrosis results from an imbalance between excessive synthesis of fibrillar components and impairment in degradation of these proteins. In fact, in our studies we have documented that in the IFP there is a higher prevalence of collagen I fibers (77%) with respect to collagen III fibers (18%), while elastic fibers were almost absent [2]. On the contrary, the OA IFP presented a relatively minor amount of collagen fibers (35%), with an increase of elastic fibers and 61% of other fibrous components that were not characterized [3,4]. In numerical analyses these changes are at the base of loss of proper stress–strain behavior of the OA IFP under mechanical loads with respect to normal IFP [4].

Finally, for quantification of the histological changes of the IFP the authors followed a scoring protocol, that is an adapted grading protocol used for synovial tissue analysis [5]. It could be very interesting to know if the patellar tendinopathy involves also the synovial membrane, since recently it has been suggested that the IFP and the synovia constitutes an anatomo-functional unit [6,7]. The close relationship between the IFP and the synovia, that lines its posterior aspect, constitutes one of the morphological, over imaging, histopathological and molecular bases, of this hypothesis [6]. In fact, in OA IFP some pathological changes are present not only in the IFP but also in the synovial membrane [8], suggesting a possible cross-talk between these two tissues. Moreover, the same pathological changes are described also in the suprapatellar and posterior fat pads [9]. However, in a recent study of quantitative MRI analysis of IFP and suprapatellar fat pads in normal controls, moderate and end-stage OA, no differences were highlighted in suprapatellar fat pads analysis, suggesting that this fat pad is not clearly involved in OA, probably due to its peculiar localization and different function [10].

Conflict of interest

None.

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