found in the area of macrophage interaction with T cells. CD68+ cells co-expressing TNF- α or IL-15 M1 markers were in minority in these synovial tissues. Lymphocyte infiltration was less abundant in remaining (2/6) synovial tissue samples.

Conclusion: Mature synovial tissue macrophages, equipped dominantly with arginase-1 are M2 oriented and might support Th2 immune response in surrounding T cells.

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AB0076

SPATIAL VARIATIONS OF BONE MICROARCHITECTURE AND MINERALIZATION IN HIP OSTEOARTHRITIS AND OSTEOPOROSIS

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Background: The pattern of changes in bone microarchitecture and mineralisation are distinctly different in osteoarthritis (OA) and osteoporosis (OP). However, the pathogenesis of OA is closely related with OP, making subchondral bone a promising target for OA treatment [1]. A detailed comparison of subchondral bone in OA and OP may help understand the relationship of the two diseases.

Objectives: To carry out a comprehensive analysis of regional and compartmental variations in subchondral bone architecture and mineralisation in OA and OP.

Methods: Femoral heads were collected from patients undergoing hip arthroplasty surgeries for hip OA (N=16) or osteoporotic fracture (N=7). For OP group, osteochondral plugs were collected from fixed sites: anterior, posterior and superior. For OA group, an optimised sampling procedure, based on a new macroscopic grading method and modified OARSI microscopic grading system, was used to collect plugs from regions with varying severity of cartilage degradation. Plugs were scanned by micro CT (voxel size 4.88 μ m). Regions of interest for cortical plate (Ct) and trabecular bone (Tb) were segmented from reconstructed images using semi-automatic approach. Densitometric (tissue and bone mineral density: TMD and BMD) and architectural parameters (cortical plate thickness (Ct.Th), trabecular bone volume fraction (BV/TV), trabecular thickness (Tb.Th), etc.) were measured using commercially available software. Unmatched inter-group regional comparisons were made between OA microscopic grades (1 to 4) and OP. Matched intra-sample regional analysis was made between 'mild' (Grade 1 and/or 2) and 'severe' (Grade 3 and/or 4) OA. TMD was also subjected to paired comparison between cortical (Ct.TMD) and trabecular (Tb.TMD) compartments. Correlations between densitometric and architectural parameters were also explored.

Results: Regional analysis showed that Tb.TMD in OA Grade 3 and 4 was significantly lower than in OP and Grade 1 and 2, while Tb.TMD in OP was not significantly different from OA Grade 1 and 2 (Fig 1A, F). Ct.TMD in OA Grade 4 was significantly lower than in OP, but no difference was found in other comparisons (Fig 1B, G). For BMD of trabecular bone (Tb.BMD) and architectural parameters including BV/TV and Ct.Th, values for OA Grade 3 and/or 4 were significantly higher than OP and Grade 1 and/or 2, but the difference between OP and Grade 1 and 2 was not significant (Fig 1C-E, H-J). Compartmental analysis showed that Ct.TMD was significantly lower than Tb.TMD in all groups (Table I). Tb.TMD was inversely correlated with Tb.BMD and BV/TV in both OA and OP; Ct.TMD and Tb.TMD were inversely associated with Ct.Th and Tb.Th respectively in OA (Table II).

Conclusion: In both OA and OP, material density (TMD) of cortical plate was lower than trabecular bone. In hip OA, densitometric and architectural changes of subchondral cortical and trabecular bone were related to severity of cartilage degradation. In OA trabecular bone, the decrease in material density was compensated by increased bone volume, leading to higher apparent density (BMD);

while in OP, loss of bone volume was correlated with, but not compensated by increased mineralisation, leading to lower apparent density.

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Figure 1. Regional comparisons of densitometric and architectural parameters. Left panel: unmatched inter-group (one-way ANOVA) analysis. Right panel: matched intra-sample (Paired T test) analysis. Significance level is indicated by * as follows: * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$; **** $P < 0.0001$.

Table 1. Compartmental comparison of TMD

	OP	OA Grade			
		1	2	3	4
Ct.TMD	1.19 $\pm$ 0.07	1.18 $\pm$ 0.09	1.15 $\pm$ 0.06	1.16 $\pm$ 0.06	1.12 $\pm$ 0.07
Tb.TMD	1.34 $\pm$ 0.06****	1.37 $\pm$ 0.10****	1.33 $\pm$ 0.07****	1.22 $\pm$ 0.06*	1.19 $\pm$ 0.09*

Table 2. Correlation analysis

	OP			OA		
	P	R ²	Slope	P	R ²	Slope
Tb.TMD - BV/TV	< 0.0001	0.69	-0.01	< 0.0001	0.84	-0.01
Tb.BMD - BV/TV	< 0.0001	0.95	0.02	< 0.0001	0.96	0.01
Tb.BMD - Tb.TMD	< 0.0001	0.60	-1.25	< 0.0001	0.81	-1.37
Ct.TMD - Ct.Th	ns			0.0009	0.19	-0.33
Tb.TMD - Tb.Th	ns			< 0.0001	0.55	-1.97

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AB0077

CONTRIBUTION OF NOTUM TO THE DEVELOPMENT OF OSTEOARTHRITIS

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