HIGH LEVELS OF THE TYPE II COLLAGEN PEPTIDE (COLL 2-1) IS PREDICTIVE OF THE RADIOLOGICAL PROGRESSION OF KNEE OSTEOARTHRITIS.

Deberg M[1], Christgau S[2], Henriksen DB[2], Seidel L[3], Reginster JY[1], Henrotin Y[1].

[1] Bone and Cartilage Metabolism Research Unit, CHU Sart-Tilman, Liège, Belgium, [2] Nordic Bioscience, Copenhagen, Denmark
[3]Biostatistics Department, CHU Sart-Tilman, Liège, Belgium.

AIM

Two immunoassays specific for a fragment of collagen type II α-helix in a nitrated form (Coll 2-1 NO_2) and un-nitrated form (Coll 2-1) were developed. Our aim was to study the relationship between Coll 2-1 and Coll 2-1 NO_2 levels and radiological measures of joint damage at the medial femoro-tibial joint in patients with knee OA.

MATERIALS AND METHODS

16 male and 46 female knee OA patients, aged over 50 years, were included in the study. Mean joint space width and area of the medial compartment of the tibiofemoral were assessed by digital image analysis whereas minimum joint space width, - ie at the narrowest point - was measured by visual inspection with graduated magnifying lens. Coll 2-1 and Coll 2-1 NO_2 were quantified in urine and serum using two competitive immunoassays. Coll 2-1 is a 9 amino acids peptide identified in the triple helical part of type II collagen (HRGYPGLDG) and Coll 2-1 NO_2 is the nitrated form [HRGY(NO_2)PGLDG] of this peptide. The limit of detection of these immunoassays were 17 nM and 0.025 nM, respectively and the CVs inter and intra-assay were below 15%. Correlations between radiological features and Coll 2-1 and Coll 2-1 NO_2 levels were tested by Spearman test. Relative risks of progression of joint destruction according to the biochemical markers [(CartiLaps (CTX-II),pyridinoline (Pyr),desoxypyridinoline (Dpyr),Coll 2-1 and Coll 2-1 NO_2] were calculated.

RESULTS

BIOCHEMICAL MARKERS AND RADIOLOGICAL PARAMETERS OF OA PROGRESSION

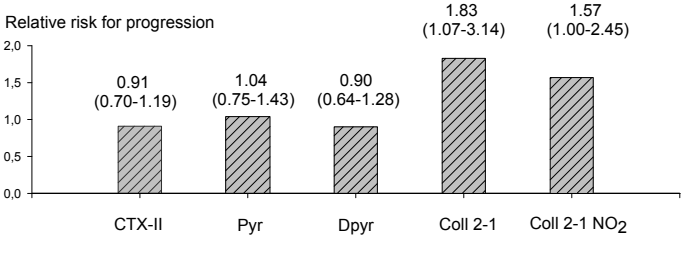
Spearman correlation

In urine, a significant correlation was found between the first year change of Coll 2-1 and the 3-year change of medial joint space width (table 1). We also observed significant relationships between the 3-year change of Coll 2-1 and Coll 2-1 NO_2 levels and the 3-year change of the medial joint space narrowing (r= -0.453, p= 0.01) and area (r= -0.435, p= 0.01).

Table 1

	1-YEAR VARIATION OF BIOLOGICAL MARKERS (%)			
3-YEARS VARIATION OF RADIOLOGICAL PARAMETERS (%)	Coll 2-1		Coll 2-1NO_2	
	Spearman correlation (r)	P value	Spearman correlation (r)	P value
Mean Joint Space Width	-0.31	**0.03**	-0.25	0.09
Mean Joint Space Narrowing	-0.06	0.67	-0.16	0.27
Mean Area	-0.09	0.58	-0.01	0.92

Relationship between 1-year change urinary biochemical markers and radiological OA progression
(MJSW variation > 0.3mm)



Combination of independent predictors to identify OA patients with the highest risk of progression of joint space width. Values above the bars are the relative risks (95% confidence intervals).

CONCLUSIONS

The Coll 2-1 elevation in urine over one year could be predictive of the radiological progression of knee osteoarthritis