To determine the profile of Coll2-1, Coll2-1NO2 and myeloperoxidase (MPO) serum concentrations in experimental knee OA induced in the dog by transection of the anterior cruciate ligament.

**PURPOSE**

Surgical transection of the ACL of the right knee was performed on 16 adult crossbred dogs. The dogs were sacrificed 8 weeks after the surgical procedure. Coll2-1, Coll2-1NO2, and MPO were measured by specific immunoassays in 16 dogs at baseline and every 2 weeks during the 8 weeks. The results were expressed as median (range). The Friedman test estimated the variation for each biomarker every 2 weeks during the 8 weeks.

After 8 weeks, we have calculated the microscopic and the macroscopic scores and have realized immunohistochemistry with antibodies directed against markers of cartilage degradation, Coll2-1 and Coll2-1NO2.

**METHODS**

After the transection of the ACL, the concentration of the 3 biomarkers increased significantly (Friedman test: Coll2-1, Coll2-1NO2 and MPO: p<0.001). The concentrations of Coll2-1 and MPO were significantly increased at week 2 compared to baseline [Coll2-1 baseline: 281.57 (131.02-384.67) nM vs Coll2-1 week 2: 345.52 (181.15-589.25) nM and MPO baseline: 5.16 (<0.4-14.7) ng/ml vs MPO week 2: 14.54 (3.28-31.50) ng/ml] and remained stable until week 8 [Coll2-1 week 8:318.89 (117.95-492.28) nM and MPO week 8: 11.55 (2.87-42.94) ng/ml]. The Coll2-1NO2 concentration increased significantly at weeks 6 and 8 compared to baseline [Coll2-1NO2 baseline: 0.54 (0.29-1.48) nM vs Coll2-1NO2 week 6: 0.61 (0.37-1.79) nM].

**RESULTS**

These findings suggest that Coll2-1 is a relevant marker for the detection of early structural changes in OA dogs. Interestingly, MPO and Coll2-1NO2 are increased in OA dogs indicating that an oxidative stress occurs in this OA model.

**CONCLUSIONS**

1. **IMMUNOSTAININGS WITH D3 AND D37, THE ANTISERUM RECOGNIZING Coll2-1 AND Coll2-1NO2**

D3 antibodies (Coll2-1) labeled chondrocytes and the extracellular matrix (A). An intense dark brown labeling was observed in the superficial layer of the fibrocartilage-like. With D37 antibodies (Coll2-1NO2) (B), we obtained in addition an intense staining of the chondrocytes and of the extracellular matrix of intermediate layer.

2. **BIOMARKERS MEASUREMENTS**

After the transection of the ACL, the concentration of the 3 biomarkers increased significantly (Friedman test: Coll2-1, Coll2-1NO2 and MPO: p<0.001). The concentrations of Coll2-1 and MPO were significantly increased at week 2 compared to baseline [Coll2-1 baseline: 281.57 (131.02-384.67) nM vs Coll2-1 week 2: 345.52 (181.15-589.25) nM and MPO baseline: 5.16 (<0.4-14.7) ng/ml vs MPO week 2: 14.54 (3.28-31.50) ng/ml] and remained stable until week 8 [Coll2-1 week 8:318.89 (117.95-492.28) nM and MPO week 8: 11.55 (2.87-42.94) ng/ml]. The Coll2-1NO2 concentration increased significantly at weeks 6 and 8 compared to baseline [Coll2-1NO2 baseline: 0.54 (0.29-1.48) nM vs Coll2-1NO2 week 6: 0.61 (0.37-1.79) nM].