

COLL 2-1, COLL 2-1 NO₂ AND MYELOPEROXYDASE IN OA PATIENTS BEFORE AND AFTER HIP OR KNEE REPLACEMENT

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OBJECTIVES

To determine Coll 2-1 level, a peptide of type II collagen triple helix, its nitrated form (Coll 2-1 NO₂) and myeloperoxidase (MPO) in sera of patients with knee (GON) or hip (COX) osteoarthritis (OA) before and three months after joint replacement.

MATERIALS AND METHODS

Coll 2-1, Coll 2-1 NO₂ and MPO were measured by specific immunoassays in 56 asymptomatic aged donors and in 103 patients with knee or hip OA candidates for joint replacement. Sera were taken the day before the surgery and three months after joint replacement. Coll 2-1 and Coll 2-1 NO₂ immunoassays are specific for an amino acids sequence of the helical part of type II collagen, ¹⁰⁸HRGYPLDG¹¹⁶ (Coll 2-1), and its nitrated form (Coll 2-1 NO₂), respectively. The Coll 2-1, Coll 2-1 NO₂ and MPO values were expressed as median. The non-parametric Mann-Whitney U-test was used to estimate the differences between each group of patients.

RESULTS

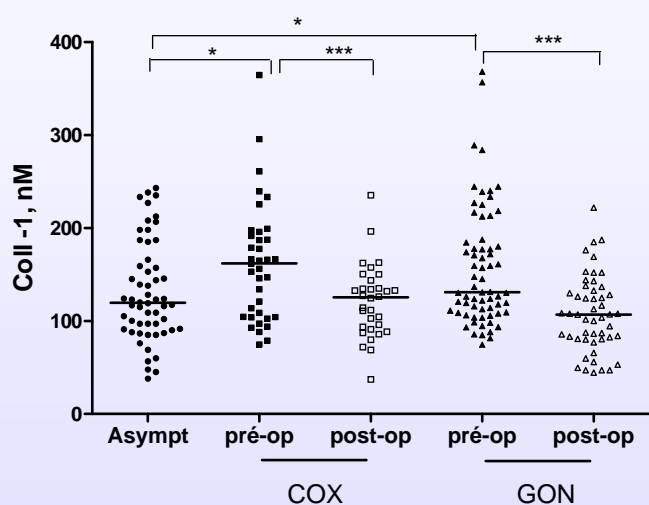


Figure 1 : Coll 2-1 concentration in asymptomatic subjects and in COX and GON patients the day before the surgery and three months after the hip or the knee replacement.

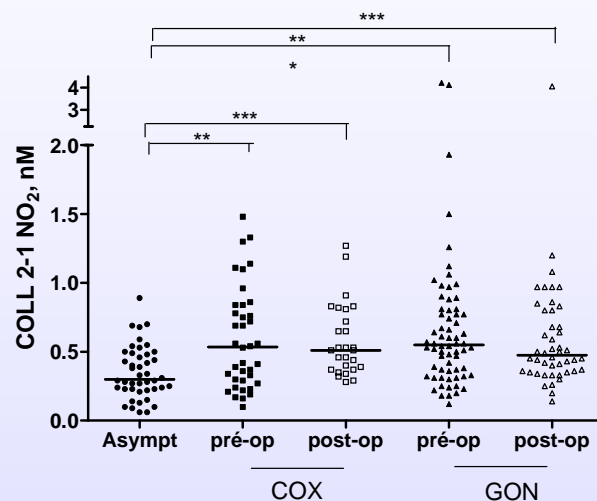


Figure 2 : Coll 2-1 NO₂ concentration in asymptomatic subjects and in COX and GON patients the day before the surgery and three months after the hip or the knee replacement.

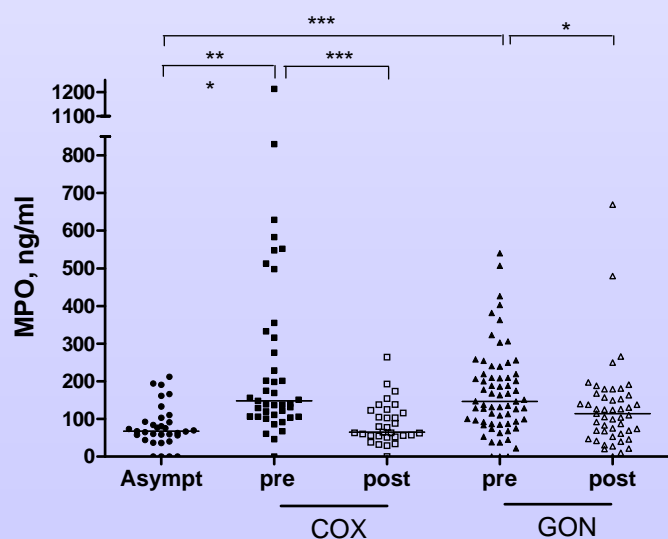


Figure 3 : MPO concentration in asymptomatic subjects and in COX and GON patients the day before the surgery and three months after the hip or the knee replacement.

Before surgery, Coll 2-1, Coll 2-1 NO₂ and MPO levels were higher in serum of OA patients than in asymptomatic aged donors [Coll 2-1: median: 146.90 (min: 74.53- max : 368.01) nM vs 119.50 (min : 38.03- max: 242.90) nM ($p < 0.05$), Coll 2-1 NO₂: median : 0.54 (min: 0.10- max: 4.21) nM vs 0.30 (min: 0.06- max: 0.89) nM ($p < 0.001$) and MPO: median : 147 (min: 0.00- max: 1213.00) ng/ml vs 67.00 (min: 0.00-max: 212.00) ng/ml ($p < 0.001$)]. Three months after joint replacement, Coll 2-1 and MPO concentrations in serum of OA patients decreased to the level of the asymptomatic aged donors, whilst Coll 2-1 NO₂ levels trended towards a decrease after surgery [median: 0.50 (min: 0.14- max: 1.05) nM]. Moreover, a significant correlation between serum levels of Coll 2-1 and MPO before and after joint replacement was observed (Coll 2-1: $r = 0.23$, $p = 0.02$; MPO: $r = 0.33$, $p = 0.003$).

CONCLUSIONS

Coll 2-1 is elevated in serum of OA patients and decreases after surgery suggesting that Coll 2-1 is indicative of structural changes in one single joint. Further, MPO levels are increased in OA patients indicating that an excessive activation of neutrophils in late OA is present.