Increased serum adiponectin levels in female patients with erosive compared with non-erosive osteoarthritis

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Adipocytokines including adiponectin and resistin are suggested to be associated with obesity related complications (1). In general, higher systemic concentrations of resistin and adiponectin compared to the paired synovial fluid counterparts were demonstrated in patients with osteoarthritis (OA) of the knee (2-4). Contrary, the resistin and adiponectin levels were found increased at local sites of inflammation in patients with rheumatoid arthritis (3-5). It is suggested that particularly adiponectin can actively participate in the process of immune response, inflammation and matrix degradation in destructive arthritides (6,7).

Erosive OA represents a subtype of generalized OA primarily affecting small joints of the hands with prominent local inflammation and radiographic aspects of bone erosions. Recently, it has been hypothesized that higher CRP levels in patients with erosive compared to non-erosive OA corresponds to the activity of erosive disease (8). Surprisingly, an increase in weight was demonstrated to increase likelihood of developing OA not only of weight bearing joints but also of small joints of the hands (9). Although obesity is generally known risk factor for OA, little is known about a potential association between adipocytokines and OA of the hands. The aim of this study was to evaluate the serum levels of adiponectin and resistin in patients with erosive OA, non-erosive disease and individuals without OA of the hands.

Forty-eight females with erosive OA, 27 with non-erosive disease and 20 females without OA of the hands were enrolled to this study. Out of all, 61 patients underwent knee and hip joint radiographs, knee arthrosonography and three-phase bone scintigraphy. Serum levels of full length adiponectin and resistin were measured by ELISA. (BioVendor, Brno, Czech Republic). Data were analyzed using NCSS 2000 and PASS 2000 (Number Cruncher
Statistical Systems, Utah, USA). The Kruskal–Wallis test was used for comparisons among the three groups.

Both erosive and non-erosive groups of OA patients and healthy controls were age-matched females that had comparable body mass index. The presence or absence of knee or hip OA as well as synovial edema and intra-articular effusion did not differ between patients with erosive and non-erosive OA. While a bone scintigraphy demonstrated joint inflammation almost twice as much in erosive as in non-erosive disease, CRP levels were comparable in both OA groups. In addition, mean serum levels of adiponectin (28.70±13.14 vs. 21.25±11.40 vs.21.20 ± 10.90 μg/ml, p<0.05) but not resistin (4.60 ± 1.86 vs. 5.41 ± 2.69 vs.5.10 ± 2.50 ng/ml, p=0.50) were significantly higher in erosive than in non-erosive disease or healthy controls (Fig. 1). Both adiponectin and resistin correlated neither with the levels of CRP nor were related to the BMI. Moreover, the presence or absence of the small joints inflammation assessed by bone scintigraphy, and the presence or absence of intra-articular effusions or synovial edema of the knee performed by arthrosonography did not alter the levels of both adipocytokines.

In conclusion, we demonstrated increased serum levels of adiponectin in female patients with erosive compared to non-erosive OA of the hands suggesting that adiponectin may play a role in the pathophysiology of the erosive subtype of OA.

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References:


Legend to figure

Figure 1. Serum levels of resistin (A) and adiponectin (B) in healthy females and female patients with non-erosive and erosive osteoarthritis of the hand. Horizontal solid and dashed bars within the box represent the median and mean, respectively; the boxes represent a range of ± 25% around the median. Vertical bars indicate 95% confidence interval, outliers are indicated.
Serum resistin (ng/ml)

Serum adiponectin (μg/ml)

Ctrl non-EOA EOA

p < 0.05