INFLAMMATION AND MACROPHAGE INFILTRATION IN CHRONIC KIDNEY DISEASE

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OBJECTIVES

The aim of our study was the description of the immunohistochemical expression of macrophage infiltration both in fibrosis and inflammatory onset, in cases with various stages of chronic kidney disease.

METHODS

The study was conducted on 36 renal biopsies, obtained from patients who underwent renal biopsy procedures for clinical purpose, between 2008 - 2011 and followed for a period of 17±11 months.

Glomerular sclerosis (GS), inflammatory infiltrates and interstitial fibrosis were assessed in classical histological stainnings as Hematoxylin-Eosin and Thricromic (Goldner- Szekely) according to the following criteria: GS was evaluated as the percentage of sclerotic glomeruli in each sample, inflammatory infiltrates were qualitatively graded using a scale of 0–3 (0= no pathology; 1 = <25% involvement, mild; 2= 25–50% involvement, moderate; and 3= >50% involvement, severe), interstitial fibrosis was assessed by morphometric analysis of Thricromic stainning and expressed as percentage of the area, the images being prior processed in Adobe Photoshop in order to extract the tubular basement membrane from the analysis. The immunohistochemical processing for CD-68 as macrophage marker was made on sections using the LSAB+ System-HRP (DAKO). Quantitative analysis was performed using an imaging morphometric analysis software and estimated as number of positive cells/field for macrophage infiltration in the interstitial area, there were excluded the glomerular areas or structures surrounding large vessels.

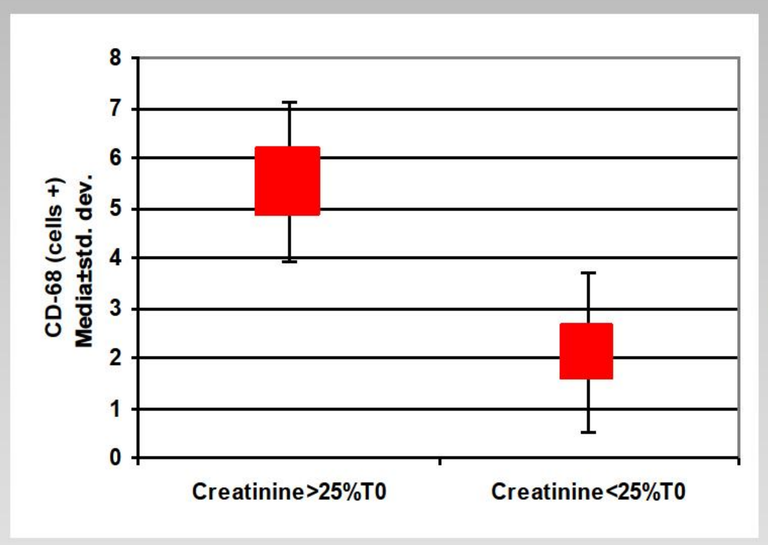

Figure 1.

Macrophages immuohistochemical expression in the group with a stable renal function during follow up (creatinine level <25% T0) comparing to the group with impaired renal function during follow-up.

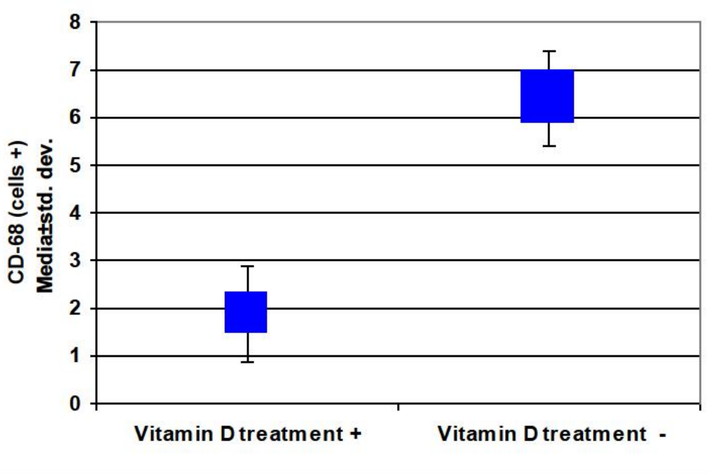

Figure 2.

Macrophages immuohistochemical expression in the group with vitamin D analogues treatment compared with the group without treatment.

RESULTS

CKD stage 1 was the most common stadialization diagnosis (47%), followed by CKD stage 2(41%) and stage 3(11%). There was a percentage of GS expression by 14 ± 4.2%, in this study group no relationship was observed between the expression score of GS and renal function parameters evolution. Another aspect observed was the expression of interstitial fibrosis of 11.1 ± 3.5% in the expression of inflammatory infiltrate with a score> 1, compared with the expression of interstitial fibrosis of 23.1 ± 8.2% in the absence of inflammatory infiltrate (p = 0.03). In cases in which there has been observed the increase in serum creatinine during follow-up, showed a higher expression of interstitial fibrosis with a mean of 54±11.7% compared with the group that didn't (p = 0.01). In the patients group with increased serum creatinine during follow-up, there was observed the expression of a larger number of CD-68 positive cells with a mean of 5.5 ± 3.2 cells compared with the group that didn't (p = 0.04). An important observation in this study was the association of a higher immunoexpression of CD-68 in patients who were not treated with vitamin D analogues or substitutes, with an average of 6.4 ± 2.1 cells/field, compared to the group receiving vitamin D therapy (p = 0.02).

CONCLUSIONS

This study observed macrophage infiltration as an important marker in histopathological diagnosis in association with the assessment of inflammatory and fibrosis lesions, as well as with the vitamin D treatment.

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