

# Renal function, inflammation and psoriasis vulgaris

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## Introduction

Psoriasis is an immunoinflammatory disease known to associate with several comorbidities. Markers of inflammation are known to be raised in psoriasis and to correlate with disease severity<sup>1,2</sup>. Inflammation and changes in several metabolic processes in psoriasis seem to favor the development of hypertension, cardiovascular disease, dyslipidemia, obesity, insulin resistance and type 2 diabetes mellitus<sup>3</sup>. Inflammation is also known to contribute to renal function decline<sup>4</sup>.

Considering the overlap between inflammation, psoriasis and renal function decline, we wondered about the impact of inflammation on renal function in psoriasis patients. We aimed to evaluate the impact of inflammation on renal function, in psoriasis.

## Materials and Methods

### Subjects

Fifty-two adult patients with psoriasis vulgaris (44±15 years old; 44% female and 56% male) in the active phase of the disease (psoriasis area and severity index 19.3 [10.5 - 29.5]) and 34 age and gender matched controls (48±15 years old; 44% female and 56% male) were evaluated.

### Analytical evaluation

Creatinine – standard automatized method (Roche Diagnostics);  
Interleukin (IL)-6 – enzyme-immunoassay (eBioscience);  
Tumor necrosis factor (TNF)- $\alpha$  - enzyme-immunoassay (eBioscience);  
C-reactive protein (CRP) – immunoturbidimetry (Roche Diagnostics);  
Elastase - enzyme-immunoassay (eBioscience);  
Lactoferrin - enzyme-immunoassay (OxisResearch);  
 $\alpha$ 1-Antitrypsin – immunoturbidimetry (Tina-quant Alpha-1antitrypsin);  
Blood count - automatic blood cell counter (XT-1800i Sysmex).

### Statistical analysis

To compare control with patients, we used the Mann-Whitney U test. The correlation analysis was performed by calculating Spearman coefficient correlation. Measurements are expressed as mean±standard deviation, or as median values [interquartile ranges]. A P value lower than 0.05 was considered as statistically significant.

## Results

Table 1 – Analytical data for controls and psoriasis vulgaris patients

	Controls (n=34)	Psoriasis patients (n=52)
Creatinine (mg/dl)	0.80 [0.78 – 0.90]	0.90 [0.80 - 1.00] *
CRP (mg/l)	1.66 [0.70 – 2.75]	5.33 [1.92 - 13.72] ***
IL-6 (pg/ml)	0.70 [0.37 – 1.02]	1.05 [0.63 - 2.03] ***
TNF- $\alpha$ (pg/ml)	0.90 [0.40 – 1.70]	2.05 [1.10 - 5.25] ***
Leukocyte (x10 <sup>9</sup> /l)	6.20 [5.20 – 7.50]	7.00 [5.63 - 9.73] *
Neutrophil (x10 <sup>9</sup> /l)	3.75 [2.90 – 4.20]	4.45 [3.40 - 6.33] **
Monocyte (x10 <sup>9</sup> /l)	0.20 [0.20 – 0.20]	0.50 [0.40 – 0.70] ***
Elastase (ng/ml)	40 [32 – 45]	53 [39 - 70] ***
Lactoferrin (ng/ml)	183 [127 – 200]	239 [200 - 358] ***
$\alpha$ 1-antitrypsin (mg/dl)	84 [65 – 134]	150 [132 - 179] ***

CRP, C-reactive protein; IL, interleukin; TNF, tumor necrosis factor

\* P pvsc<0.05; \*\* P pvsc<0.01; \*\*\*P pvsc<0.001

### Psoriasis patients showed:

- Higher levels of creatinine
- Higher levels of CRP, IL-6, TNF- $\alpha$ , elastase, lactoferrin and  $\alpha$ <sub>1</sub>-antitrypsin
- Higher total leukocyte, neutrophil and monocyte counts
- Creatinine correlated significantly and positively with CRP and IL-6
- A trend towards a positive correlation of creatinine with TNF- $\alpha$  (r=0.248; P=0.077) and lactoferrin (r=0.251; P=0.072)

## Concluding Remarks

Psoriasis seems to associate with an impairment in renal function and this decline seems to be a consequence of the inflammatory process that characterizes the disease. Renal function should be periodically monitored in order to diminish the risk of renal complications.

## References

- 1 Coimbra et al. *J Eur Acad Dermatol Venereol* 2010; 24: 789-96.
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- 3 Friedewald et al. *Am J Cardiol* 2008; 101: 1119-26.
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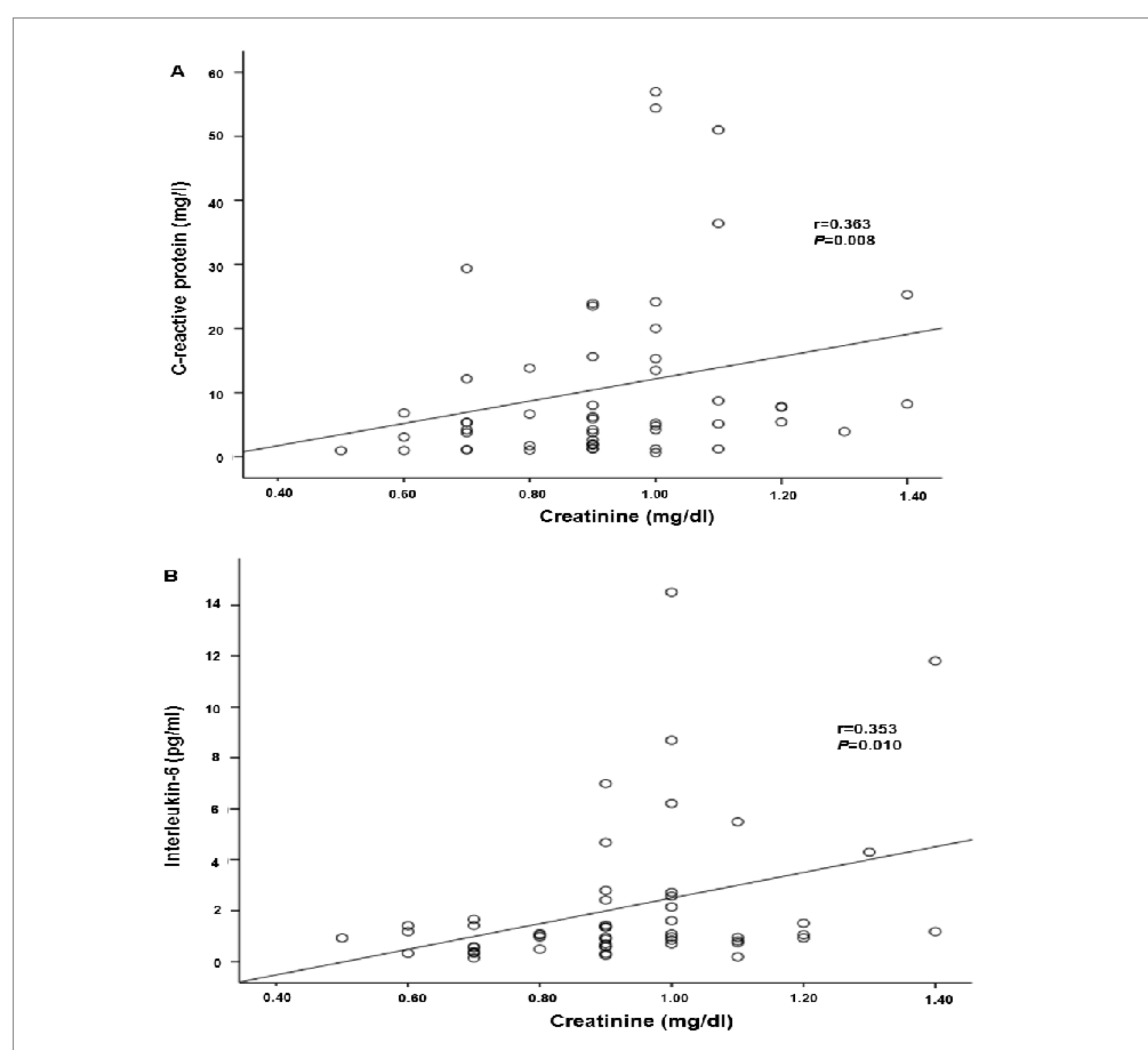


Figure 1 – Correlations observed in psoriasis vulgaris patients between creatinine and: (A) C-reactive protein, (B) interleukin (IL)-6.