CIRCULATING CLA+ T CELL SUBSETS INVERSELY CORRELATE WITH DISEASE SEVERITY AND EXTENSION IN ACUTE PSORIASIS BUT NOT IN CHRONIC PLAQUE PSORIASIS

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INTRODUCTION

Circulating CLA^+ cells represent T lymphocytes with skin tropism and are involved in different T cell mediated diseases such as psoriasis[1]. They might be differentially involved in acute and chronic stages and it seems that their presence and activation state would correlate with clinical symptoms.
We have recently shown that in acute state of psoriasis, but not in chronic state or controls, increased percentages of a subset of circulating CLA^+ T cells (CD3+ and CD4+) expressing HLA-DR markers are found, and that the frequency of circulating $HLA\text{-}DR^+CLA^+$ T cells directly correlated with PASI and BSA[2]. In addition, in chronic plaque psoriasis a correlation between the percentage of circulating CLA^+CD8^+ T cells and the severity of the disease has also been described[3].
We were interested in further characterization of the role of circulating CLA^+ T cells in acute and chronic psoriatic lesions, and we have evaluated a possible correlation between counts of different circulating CLA^+ T cell subsets with PASI and BSA in different groups of psoriatic patients.

MATERIAL AND METHODS

Thirty-one adult patients with psoriasis (15 acute psoriasis vulgaris and 16 chronic psoriasis) and eleven healthy subjects were studied. Patients presenting "acute lesions" included 7 guttate psoriasis and 8 plaque psoriasis patients who had suffered an acute relapse of psoriasis of less than six weeks duration. "Chronic lesions" were defined as stable psoriatic plaques persisting for more than six weeks. Psoriasis Area Score Index (PASI) and Body Surface Area (BSA) score were calculated. Blood samples were obtained and, by flow cytometry, the counts of several circulating CLA^+ T cell subpopulations were analyzed. These results were correlated with PASI and BSA (Pearson's correlation coefficient).

RESULTS

An inverse correlation was found between circulating $CD3^+CLA^+$ and $CD4^+CLA^+$ subsets of cells and the severity of the disease, in both guttate (r=-0.66 [p=0.004] and (r=-0.70 [p=0.003], respectively) and acute plaque psoriasis (r=-0.64 [p=6x10-4] and r=-0.60 [p=0.001] respectively), as shown in **Table 1**. In contrast, no significant correlation was observed between the counts of the circulating $CD3^+$ /$CD4^+$ cell subsets and PASI in any of the groups.
Regarding to BSA, an inverse correlation was observed between $CD3^+CLA^+$ and $CD4^+CLA^+$ subsets of cells and the extent of the disease only in the group of guttate psoriasis (r=-0.66 [p=0.005] and (r=-0.66 [p=0.005], respectively), which is reflected in **Table 2**. No significant correlation was observed between the counts of the circulating $CD3^+$ / $CD4^+$ subsets of any of the groups of psoriasis and BSA.
Guttate psoriasis showed an inverse correlation between the counts of the $CD4^+CLA^+CD25^+$ cell subset and PASI and BSA (r=-0.81 [p=0.01] and r=-0.79 [p=0.002], respectively) (**Table 3A**). Interestingly, the counts of $CD4^+CLA^-CD25^+$ cells also correlated inversely with the PASI and BSA (r=-0.6 [p=0.01] and r=-0.57 [p=0.02], respectively) (**Table 3B**). No significant correlations were found in the CD3 subset between CLA^+ or CLA^- $CD3^+CD25^+$ cells and PASI or BSA, in any of the three groups of psoriatic patients (**Table 4A and B**).

Table 1. Correlation between different circulating lymphocyte subsets in various forms of psoriasis and PASI.
An inverse correlation was found between counts of either $CD3^+$ or $CD4^+$ CLA^+ subsets and the severity of the disease, in both guttate and acute plaque psoriasis.

Psoriasis type	PASI			
	$CD3^+$	$CD3^+CLA^+$	$CD4^+$	$CD4^+CLA^+$
Guttate	0.41 (0.04)	**-0.66 (0.004)**	0.42 (0.02)	**-0.70 (0.003)**
Acute	-0.40 (0.002)	**-0.64 (0.0006)**	-0.20 (0.01)	**-0.60 (0.001)**
Chronic	0.44 ($2.6x10^{-3}$)	-0.19 (0.0006)	0.26 (0.0004)	-0.21 (0.005)

Table 2. Correlation between different circulating lymphocyte subsets in various forms of psoriasis and BSA.
An inverse correlation was found between counts of both $CD3^+$ and $CD4^+$ CLA^+ subsets and the extent of the disease in the group of guttate psoriasis.

Psoriasis Type	BSA			
	$CD3^+$	$CD3^+CLA^+$	$CD4^+$	$CD4^+CLA^+$
Guttate	0.38 (0.05)	**-0.66 (0.005)**	0.42 (0.002)	**-0.66 (0.005)**
Acute	-0.14 (0.008)	-0.45 (0.002)	-0.065 (0.03)	-0.39 (0.004)
Chronic	0.44 (0.0001)	-0.22 (0.002)	0.26 (0.001)	0.24 (0.01)

Table 3. Correlation between circulating $CD4^+CD25^+$ subsets in various forms of psoriasis and PASI / BSA: (A) CLA^+ subset (B) CLA^- subset.
An inverse correlation was detected between the counts of both CLA^+ and CLA^- $CD4^+CD25^+$ subsets of cells and PASI and BSA in guttate psoriasis.

3A

Psoriasis type	$CD4^+CLA^+CD25^+$	
	PASI	BSA
Guttate	**-0.81 (0.01)**	**-0.79 (0.002)**
Acute	-0.49 (0.02)	-0.26 (0.07)
Chronic	-0.14 (0.01)	-0.11 (0.02)

3B

Psoriasis type	$CD4^+CLA^-CD25^+$	
	PASI	BSA
Guttate	-0.6 (0.01)	-0.57 (0.02)
Acute	0.04 (0.02)	0.35 (0.60)
Chronic	-0.55 ($8.6x10^{-5}$)	-0.54 (0.0001)

Table 4. Correlation between circulating $CD3^+CD25^+$ subsets in various forms of psoriasis and PASI / BSA: (A) CLA^+ subset (B) CLA^- subset.
No significant correlation was found in the CD3 subset between CLA^+ or CLA^- $CD3^+CD25^+$ cells and PASI or BSA, in any of the psoriasis forms.

4A

Psoriasis type	$CD3^+CLA^+CD25^+$	
	PASI	BSA
Guttate	-0.45 (0.03)	-0.41 (0.04)
Acute	-0.43 (0.03)	-0.29 (0.07)
Chronic	-0.24 (0.001)	-0.23 (0.002)

4B

Psoriasis type	$CD3^+CLA^-CD25^+$	
	PASI	BSA
Guttate	-0.2 (0.15)	-0.17 (0.17)
Acute	0.17 (0.3)	0.39 (0.59)
Chronic	-0.34 (0.0006)	-0.32 (0.001)

CONCLUSIONS

Our results suggest that, there is an inverse correlation between circulating CLA^+CD3^+/CLA^+CD4^+ cells and disease severity and extension in patients with acute psoriasis but not in chronic plaque psoriatic patients, which is in agreement with the preferential involvement of circulating CLA^+ T cells in acute stages[3]. These results support the hypothesis of sequestration of circulating skin-homing T cells into skin during the acute phases.
We detected a significant inverse correlation of circulating $CLA^+CD4^+CD25^+$ cells with PASI and BSA in guttate psoriasis, which had not been shown previously. These results may also be related to a migration of this subset to skin, as it has been recently suggested that circulating regulatory cells may migrate to cutaneous sites[4]. Further studies are necessary to completely characterize such population of potentially regulatory cells in guttate psoriasis.

In summary, our data supports that the subset of CLA^+ T cells play a preferential role in acute stages of psoriasis. These changes can be related to the intensity of cutaneous inflammation present in early psoriatic lesions.

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