

LETTER

CD4⁺ T-lymphocyte alterations in trauma patients

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See related research by Heffernan *et al.*, <http://ccforum.com/content/16/1/R12>

We read with great interest the article by Heffernan and colleagues reporting an association between persistent lymphopaenia and increasing mortality in trauma patients [1]. We would like to provide some additional data obtained in a similar cohort of patients.

In parallel with a study recently published in *Critical Care* in which mHLA-DR expression was assessed [2], we evaluated the CD4⁺ lymphocyte count and the percentage of CD4⁺CD25⁺ regulatory T cells in trauma patients. Sixty-five patients were included (mean ± standard deviation): age 41 ± 18 years, Simplified Acute Physiology Score II 45 ± 16, and Injury Severity Score 38 ± 10. Of these patients, 21 developed sepsis (mainly pneumonia – median delay 4 days) and two died of septic shock. Importantly, 3 days after trauma the patients presented with significant CD4⁺ lymphocyte alterations: a significantly decreased CD4⁺ T-cell count and an increased regulatory T-cell percentage (versus control values, $P < 0.0001$; Table 1). Interestingly, we observed a trend toward lower CD4⁺ T-cell values in patients presenting with secondary infections versus non-infected individuals (343 cells/μl vs. 454 cells/μl, respectively).

Our results reinforce the observations made by Heffernan and colleagues [1]. We confirm here that trauma patients exhibit CD4⁺ T-cell loss with a relative increase in regulatory T-cell values – both parameters associated with unfavourable outcomes after septic shock [3]. Collectively, these data suggest that, in addition to monocyte anergy [2], lymphocyte alterations should be taken into account in the monitoring of trauma patients.

Lymphocyte subset counts and phenotyping deserve to be investigated in large cohorts of trauma patients to minutely delineate association with specific clinical outcomes.

Abbreviations

mHLA-DR, monocytic Human Leukocyte Antigen DR.

Competing interests

The authors declare that they have no competing interests.

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Table 1. Trauma patients' immunological characteristics

Parameter	Overall population (n = 65)	Septic (n = 21)	Nonseptic (n = 44)	Healthy volunteers (n = 50)
CD4 ⁺ lymphocytes (cells/μl)	463 ± 274	377 ± 157	500 ± 319	881 ± 261
Regulatory T cells (% of CD4 ⁺ lymphocytes)	9.1 ± 2.5	9.6 ± 2.9	8.9 ± 2.3	6.5 ± 1.5
mHLA-DR (antibodies/cell)	8,897 ± 5,762	6,834 ± 4,268	9,927 ± 6,169	>15,000 ^a

Data expressed as the mean ± standard deviation. ^aNormal values from [4].

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