CRITICAL CARE

LETTER

Measurement of monocyte apoptosis, plasma IL-1β and PR3 activity as an approach to evaluate the immunological status in sepsis

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See related research by Giamarellos-Bourboulis *et al.*, http://ccforum.com/content/15/1/R27

In a previous issue of *Critical Care*, Giamarellos-Bourboulis and colleagues published an article in which they drew a conclusion that inhibition of caspase-1 and defective IL-1β production is an important immunological feature in sepsis [1]. Based on the knowledge of previous research, we would like to make some remarks.

Firstly, peripheral blood mononuclear cells (PBMC) mainly consist of monocytes, T cells, B cells and natural killer cells, of which only monocytes are the high producer of IL-1β and TNFα. The proportion of monocytes in PBMC may therefore greatly affect production of these cytokines. In earlier research, Giamarellos-Bourboulis and colleagues demonstrated that the percentage of monocyte apoptosis was over 50% in about half of their septic subjects [2]. In their recent study, however, these authors found that downregulation of IL-1β followed a different pattern to TNFα; release of TNFα was not impaired after lipopolysaccharide stimulation of PBMC of patients with uncomplicated sepsis and with severe sepsis [1], suggesting that the monocytes of these subjects did not undergo apoptosis. The introduction of methods to check the apoptosis of monocytes and their proportion in PBMC is thus quite necessary.

Secondly, the authors concluded that defective IL-1β production is an important immunological feature in sepsis. According to Fahy and colleagues' research, however, the plasma IL-1β level was significantly elevated in patients with septic shock in comparison with normal control subjects [3]. A possible explanation for this difference is that caspase-1 is not the unique enzyme that can activate IL-1β. Recent studies suggest that neutrophils are the major source for processing IL-1β via PR3 during acute inflammatory conditions [4]. To reveal the real immunological status in sepsis, therefore, it would be better in future research to measure the plasma IL-1β level and the activity of PR3 in neutrophils in septic patients simultaneously, in addition to *ex vivo* experiments.

Abbreviations

IL, interleukin; PBMC, peripheral blood mononuclear cells; TNF, tumor necrosis factor.

Competing interests

The authors declare that they have no competing interests.

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