CRITICAL CARE

LETTER

Contribution of activated platelets to plasma IL-27 levels

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In a recent issue of *Critical Care*, Wong and colleagues [1] demonstrated that the serum concentration of IL-27 in critically ill children was a predictor of infection. Our study aims at determining whether platelet activation contributes to the elevated plasma IL-27 concentration. Here we demonstrate that activation of platelets with thrombin receptor activating peptide (TRAP) significantly increased IL-27 levels in supernatants (Figure 1a). Moreover, B cells incubated *in vitro* with supernatants from activated platelets upregulated membrane expression of CD86, which was restored to baseline when B cells were pre-incubated with a gp130 blocking antibody (Figure 1b). Our data strongly suggest that platelet activation contributes, along with classical sources [2], to elevated plasma levels of IL-27. Recent advances place platelets as an important link between innate and adaptive immunity [3]. Indeed, platelets modulate their inflammatory response after sensing the presence of an infectious agent [4]. Therefore, platelet activation could contribute to increased plasma concentrations of IL-27 along with cytokines such as soluble CD40L [5], and thus may contribute towards immune dysregulation in patients with sepsis.

Abbreviations
IL, interleukin; TRAP, thrombin receptor activating peptide.

Competing interests
The authors declare that they have no competing interests.

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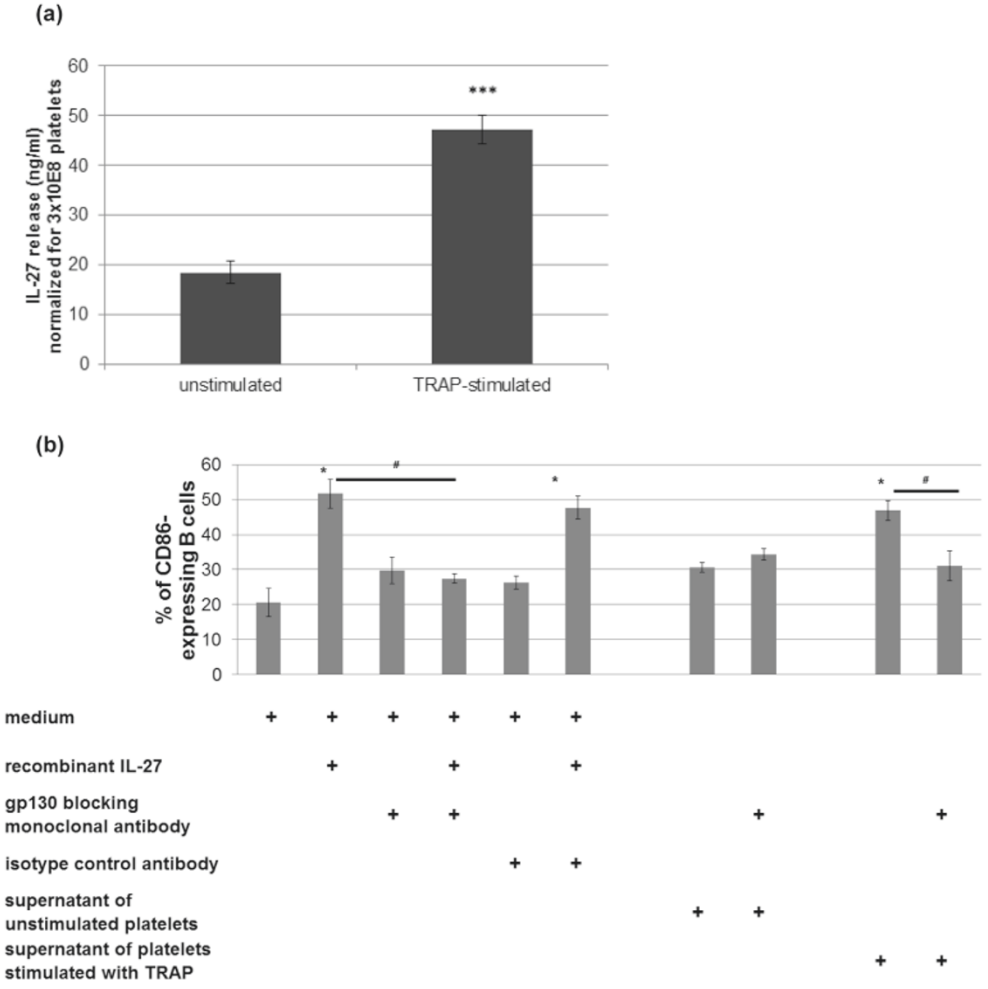

Figure 1. Activated platelets release abundant and functional IL-27. (A) Platelets from apheresis platelet concentrates (n = 11) were stimulated with TRAP-SFFLRN peptide (50 μg/ml, 30 minutes; Sigma-Aldrich, Saint-Quentin Fallavier, France); negative controls were not stimulated. IL-27 concentration in platelet supernatants was determined using a commercial enzyme-linked immunosorbent assay kit (RnD Systems Europe, Lille, France). Thrombin receptor activating peptide (TRAP) stimulation significantly increased IL-27 release from 18.42 ± 2.28 ng/ml to 47.17 ± 2.99 ng/ml (***$P < 0.0005$, *t*-test). **(B)** Then, the influence of IL-27-rich platelet supernatants on the expression of the activation marker CD86 was assessed *in vitro* on five independent highly purified blood B lymphocyte sets by means of flow cytometry, in duplicate for each condition. As a control, each set of B cells was incubated in minimal medium for 48 h with recombinant IL-27 (10 ng/ml; RnD Systems). We found that, in contrast to supernatants of non-activated platelets, supernatants of activated platelets provoke a significant increase in CD86 expression on B cells from 21 to 47% (*$P < 0.05$, *t*-test). CD86 expression was restored to baseline when B cells were pre-incubated with an antibody blocking the gp130 subunit of the IL-27 receptor (0.5 μg/ml; clone 28126, RnD Systems; #$P < 0.05$, *t*-test). Results are presented as mean values ± standard deviations.