

Lymphocyte subsets in 32 patients with multisystem inflammatory syndrome in children (MIS-C)

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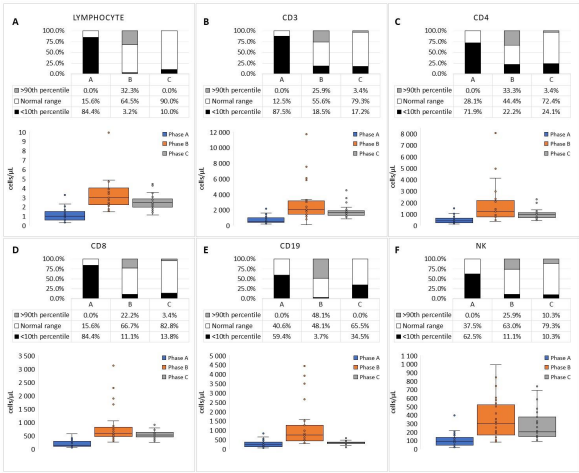
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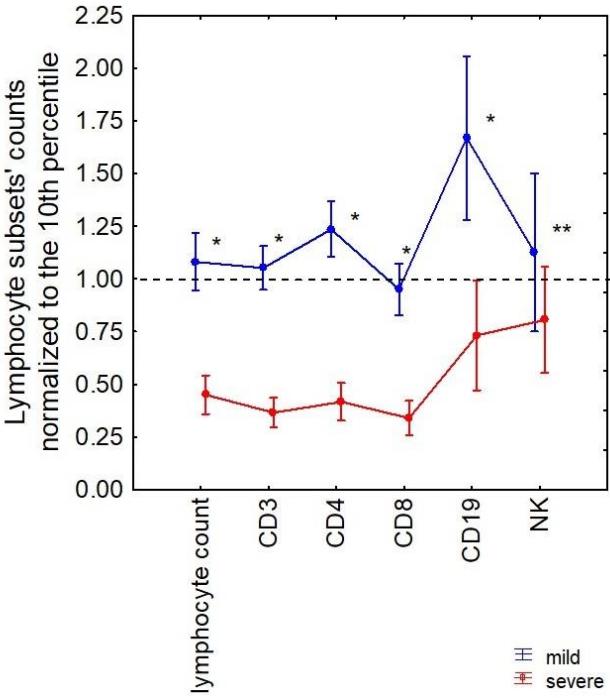
Abstract

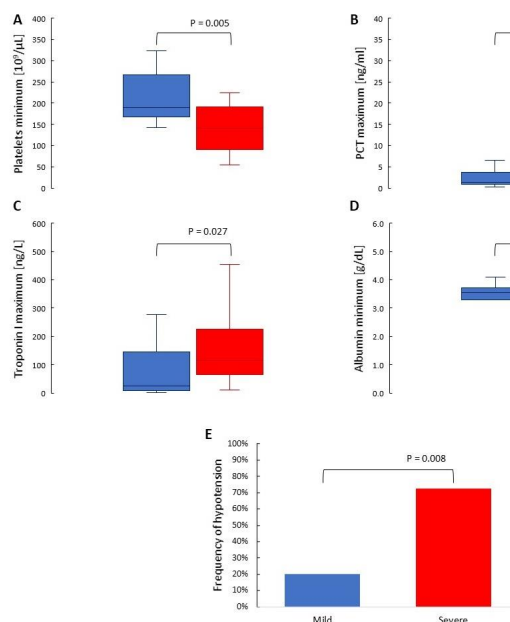
BACKGROUND: Lymphopenia is a hallmark of multisystem inflammatory syndrome in children (MIS-C). We aimed to characterize lymphocyte subsets' shifts and their correlations with other severity markers of MIS-C. **METHODS:** In this prospective cross-sectional study, we performed peripheral lymphocyte phenotyping in 32 patients with MIS-C. We analyzed lymphocyte subsets at three time-points of the disease: the acute (A), convalescent (B), and recovery (C) phases. Based on age-normalized lymphocyte counts, we distinguished two groups of patients: "the mild" and "the severe". In addition, we examined differences between these groups regarding other severity markers. **RESULTS:** In phase A, 84% of children had lymphopenia. Decreased absolute counts of CD3, CD4, and CD8 cells were observed in, respectively, 88%, 72%, and 84% of patients. The natural killer cells were decreased in 63% and CD19 in 59% of children. "The severe" group had significantly higher procalcitonin and troponin I levels and lower platelets and albumin. Moreover, "the severe" group had hypotension more frequently (73% vs. 20%, $p=0.008$). In phase B, all lymphocyte counts increased, and 32% of children had lymphocytosis. The increase of CD3, CD4, and CD8 counts correlated with some laboratory severity markers (hemoglobin, procalcitonin, D-dimer, lactate dehydrogenase, N-terminal prohormone of brain natriuretic peptide, albumin), but not with steroid use. In phase C, most children had normal lymphocyte counts. **CONCLUSIONS:** Substantial shifts in lymphocyte counts during MIS-C apply most to T lymphocytes and correlate with the disease severity markers, particularly hypotension prevalence. A proportion of children with MIS-C develops transient lymphocytosis during convalescence.

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