

# Role of adaptive and innate immunity in Restless Legs Syndrome

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## Introduction

Restless legs syndrome (RLS) is one of the most common sleep-related movement disorders. The underlying pathogenetic mechanisms are mainly dopaminergic dysregulation in the central nervous system and brain iron deficiency. Recent studies, however, suggest some other theories on RLS pathophysiology, such as peripheral neuropathy, small intestinal bacterial overgrowth, and immunologic alterations. In this study, we aimed to assess the potential role of innate and adaptive cells of the immune system on RLS.

## Methods

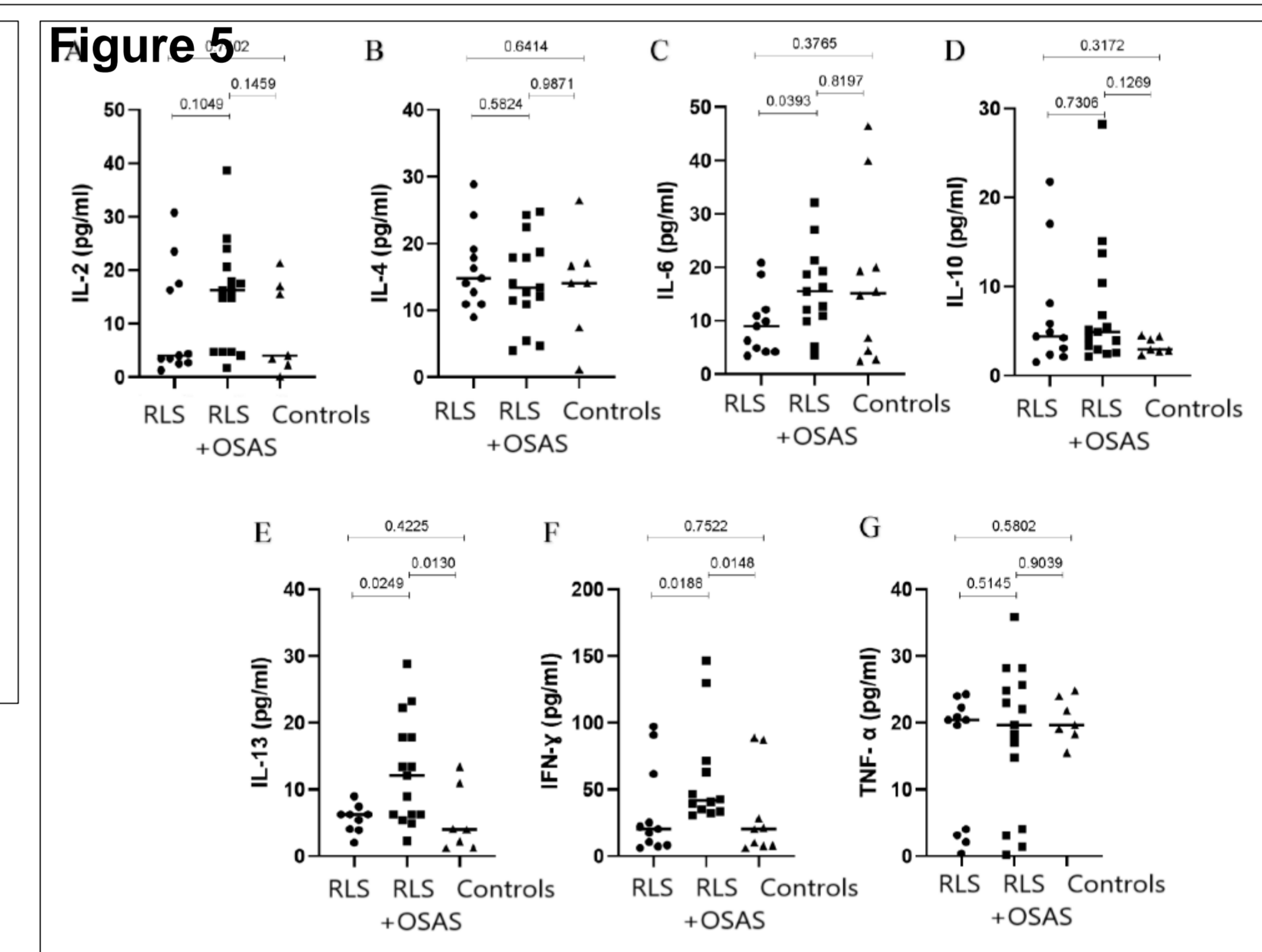
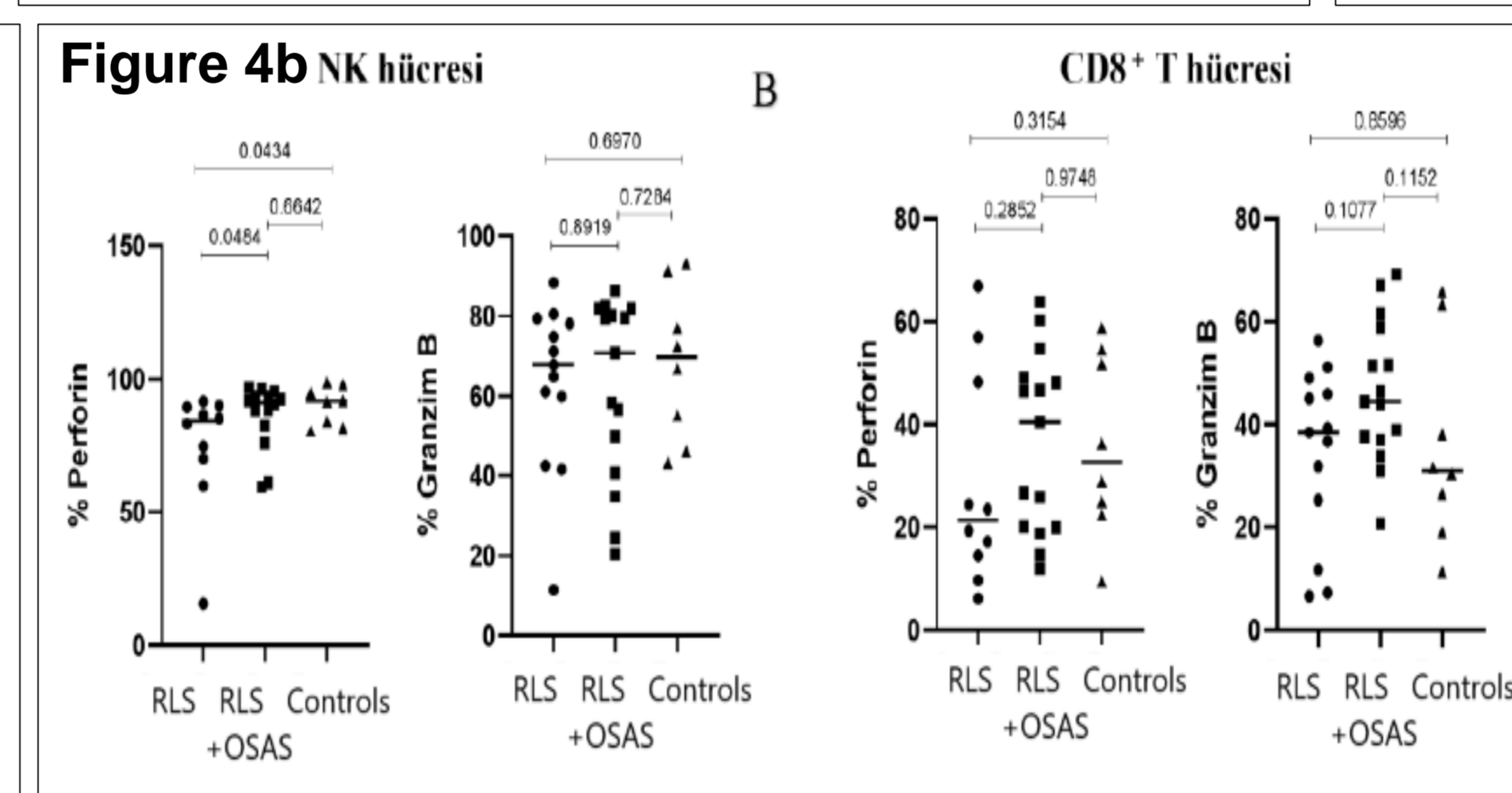
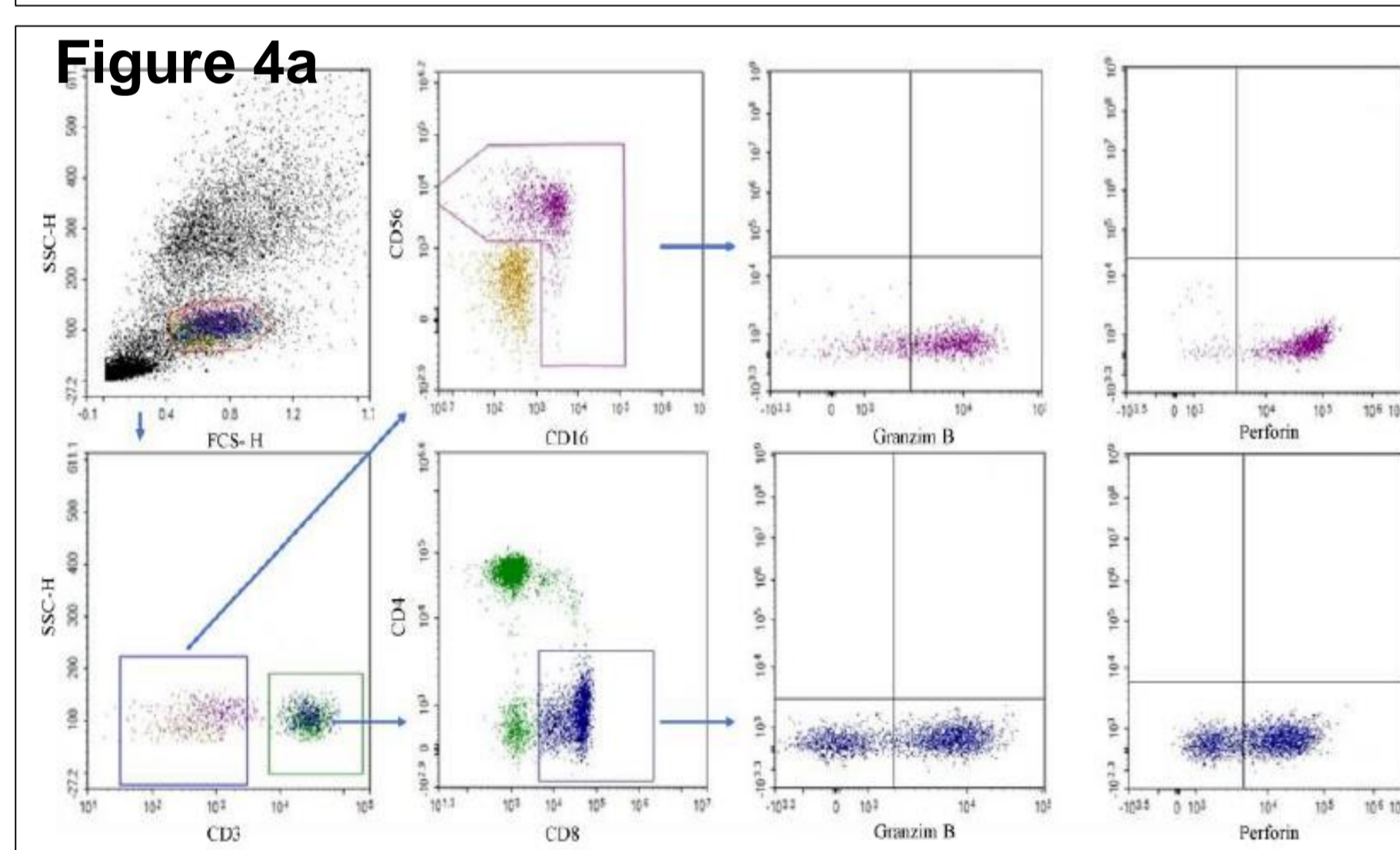
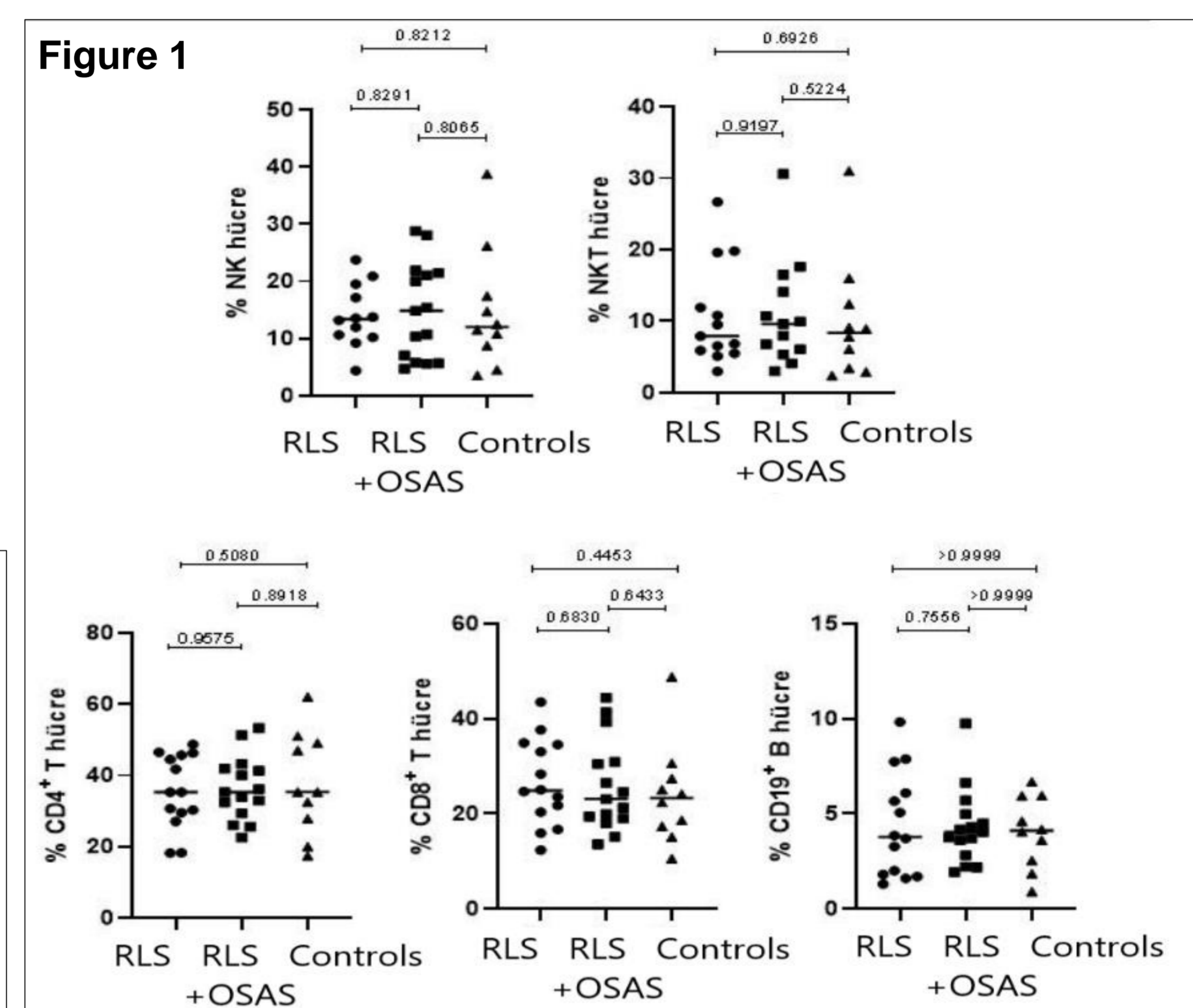
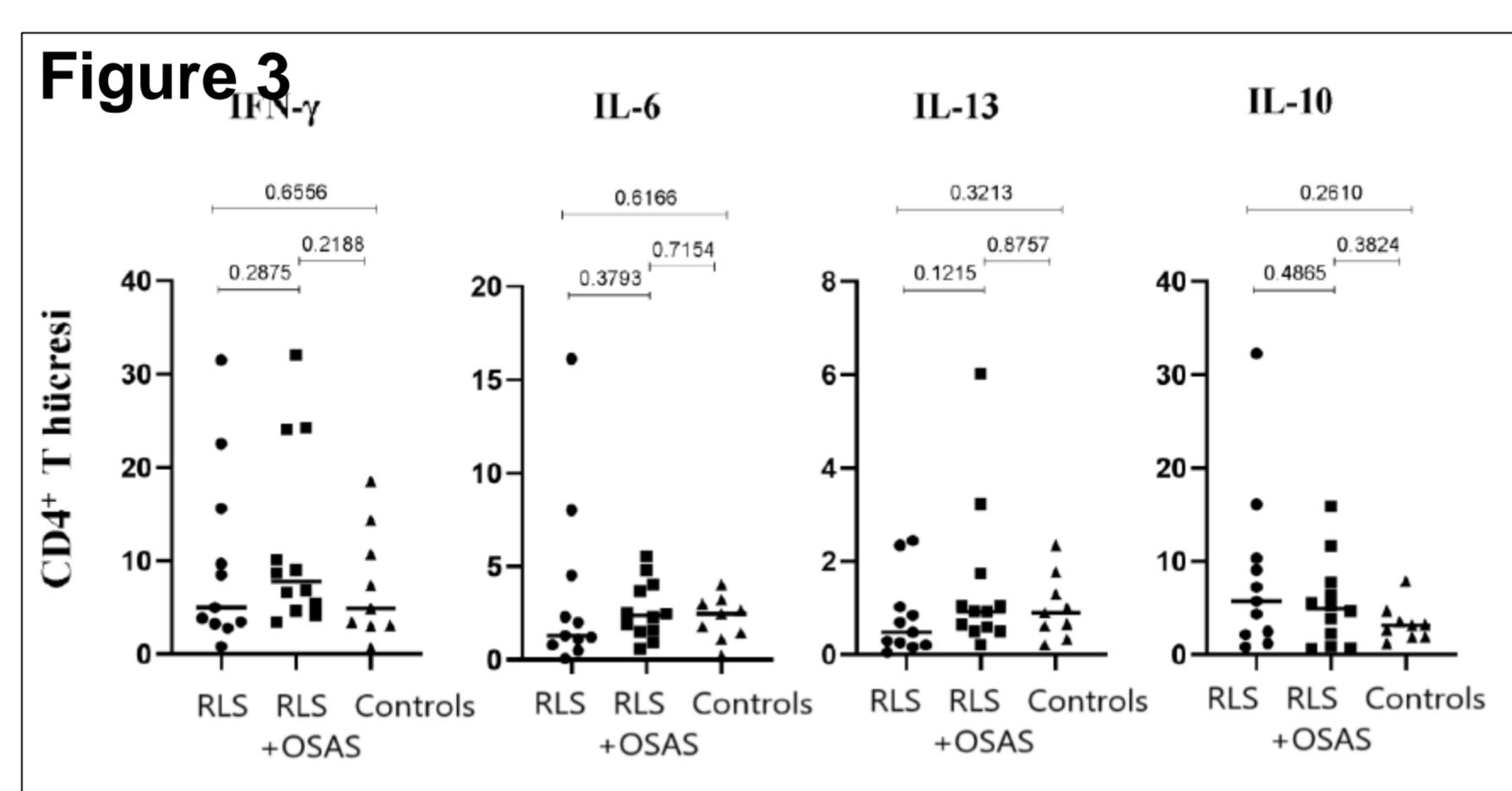
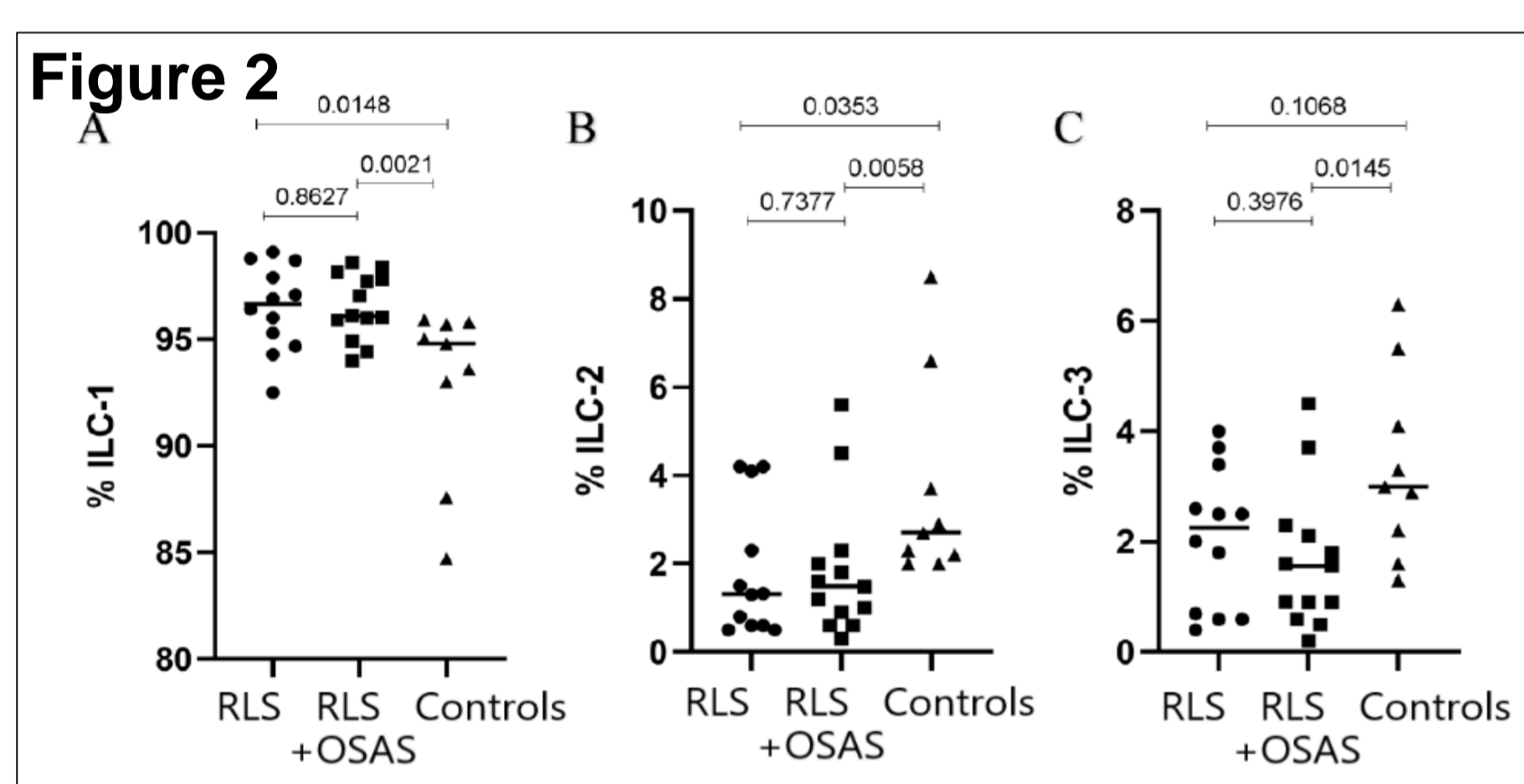
In this study, we prospectively enrolled patients with RLS admitting to our Sleep and Disorders Unit. All patients had detailed clinical evaluation and all had one-night polysomnography (PSG) in sleep laboratory to exclude any associated sleep disorders, such as sleep apnea. The presence of medical diseases and/or use of any medications and/or substances were also set as the exclusion criteria. A sex- and age-matched healthy controls were also prospectively enrolled; detailed clinical evaluation and one-night PSG were also performed in all healthy subjects. Blood samples obtained from all participants were investigated for the following parameters: T, B, NK, NKT and ILC cell ratio; intracellular IFN- $\gamma$ , IL-6, IL-10, IL-13 cytokines in T, B, NK cells; CD8+ T and NK cell cytotoxic activity (which were analyzed by flow cytometry); IFN- $\gamma$ , TNF- $\alpha$ , IL-2, IL-4, IL-6, IL-10 and IL-13 levels (which were analyzed with ELISA).

## Results

A total of 14 patients with RLS and 10 healthy subjects were investigated in our study. The ratios of CD3+CD4+ T cells CD3+CD8+ T cells, CD3-CD16+CD56+ NK and CD3+CD19+ B cell were not significantly different between patients with RLS and controls (Figure 1).

We observed that the ratio of ILC-1 subset (Figure 2) and IL-13+CD4+ T cells (Figure 3) were increased in RLS patients in compared to those in healthy subjects. The levels of ILC-2 cells, however, were decreased in RLS group than in healthy group (Figure 2).

NK perforin levels (Figures 4a and b) and plasma IFN- $\gamma$  and IL-13 levels (Figure 5) were not different between patients with RLS and healthy controls.



## Conclusion

**Our results showed that innate rather than adaptive immunity is altered in RLS.**

## References

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