

# A Status of Immune Suppression in Hemophilia A with Developed Factor VIII Inhibitors

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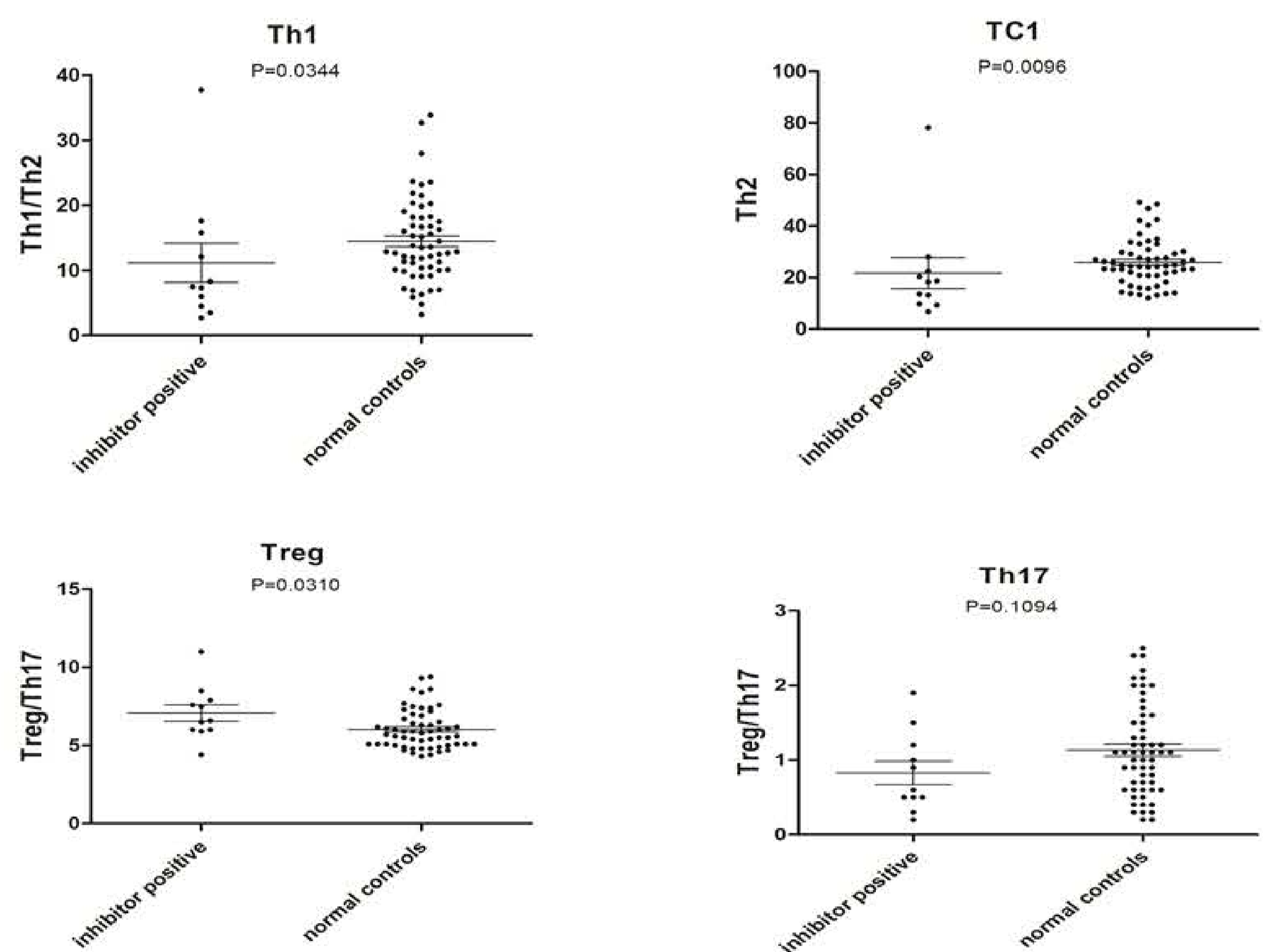
## OBJECTIVES

Hemophilia A is genetic disease, which inherited deficiency of coagulation factor VIII. Up to now, the main treatment for hemophilia A remains coagulation factor VIII replacement therapy. However, there are more and more patients with hemophilia A developed factor VIII inhibitor with increased use of coagulation factors VIII preparation. This is the most serious complication in replacement therapy of hemophilia A. Objective: to assess the relationship of Th1, Th2 cytokines and factor VIII inhibitor in hemophilia A.

## METHODS

Total of 51 boys with moderate and severe hemophilia A and 57 age and gender- matched healthy controls were recruited in this study between 2012 Jan and 2013 Jun. The inhibitor of factor VIII was detected by Bethesda method. Meanwhile, we detected the percent of Th1 cells (CD3+CD4+IFN+), Th2 cells (CD3+CD4+IL4+), Tregs(CD4+CD25+Foxp3+), Th17 cells (CD3+CD4+IL17A+), Tc1 cells (CD3+CD8+IFN+) and Tc2 cells (CD3+CD8+IL4+) in peripheral blood by flow cytometry. All of the data were statistical analysis by Mann-Whitney test. The results would be considered statistical significance if  $p < 0.05$ .

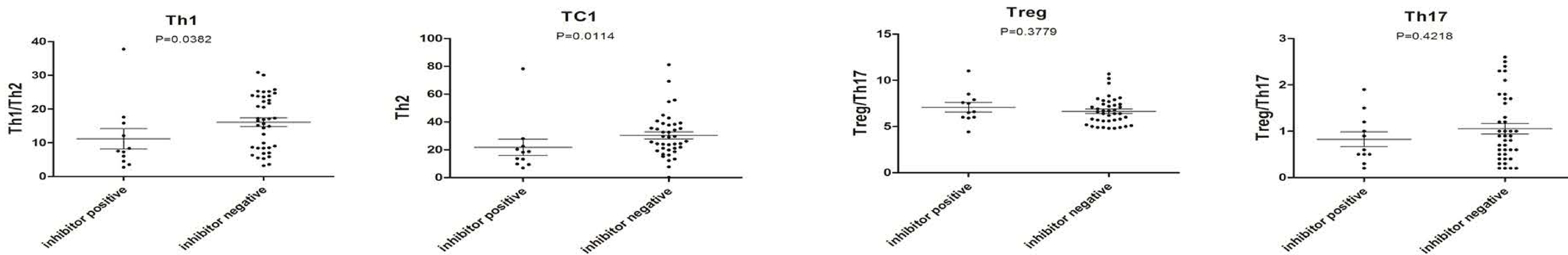
Fig 1: Hemophilia A vs. healthy controls



## RESULTS

There were 11 cases of FVIII inhibitor positive in all 51 patients with hemophilia A. Surprisingly, the group of inhibitor positive showed lower levels of Th1 ( $P=0.0382$ ) and Tc1 ( $P=0.0114$ ) than the inhibitor negative patients with hemophilia A ( $P=0.4162$ ). The group of inhibitor positive showed lower levels of Th1 ( $P=0.0344$ ), Treg ( $P=0.0310$ ) and Tc1 ( $P=0.0096$ ) than the group of healthy controls. Moreover, the group of inhibitor positive showed higher ratio of Treg/Th17 ( $P=0.0448$ ) and lower ratio of Th1/Th2 ( $P=0.0128$ ) than the group of healthy controls.

Fig 2: Inhibitor positive vs. negative in Hemophilia A



## CONCLUSIONS

Our current study firstly demonstrates the status of immune suppression in hemophilia patients with FVIII inhibitor positive. The types of mutations in the FVIII gene and replacement treatment measures may be main responsibility for the developing of FVIII inhibitor in hemophilia A.

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