Serum Cytokine and Complement Levels in ALS and Their Association With LRP4 Antibody Positivity

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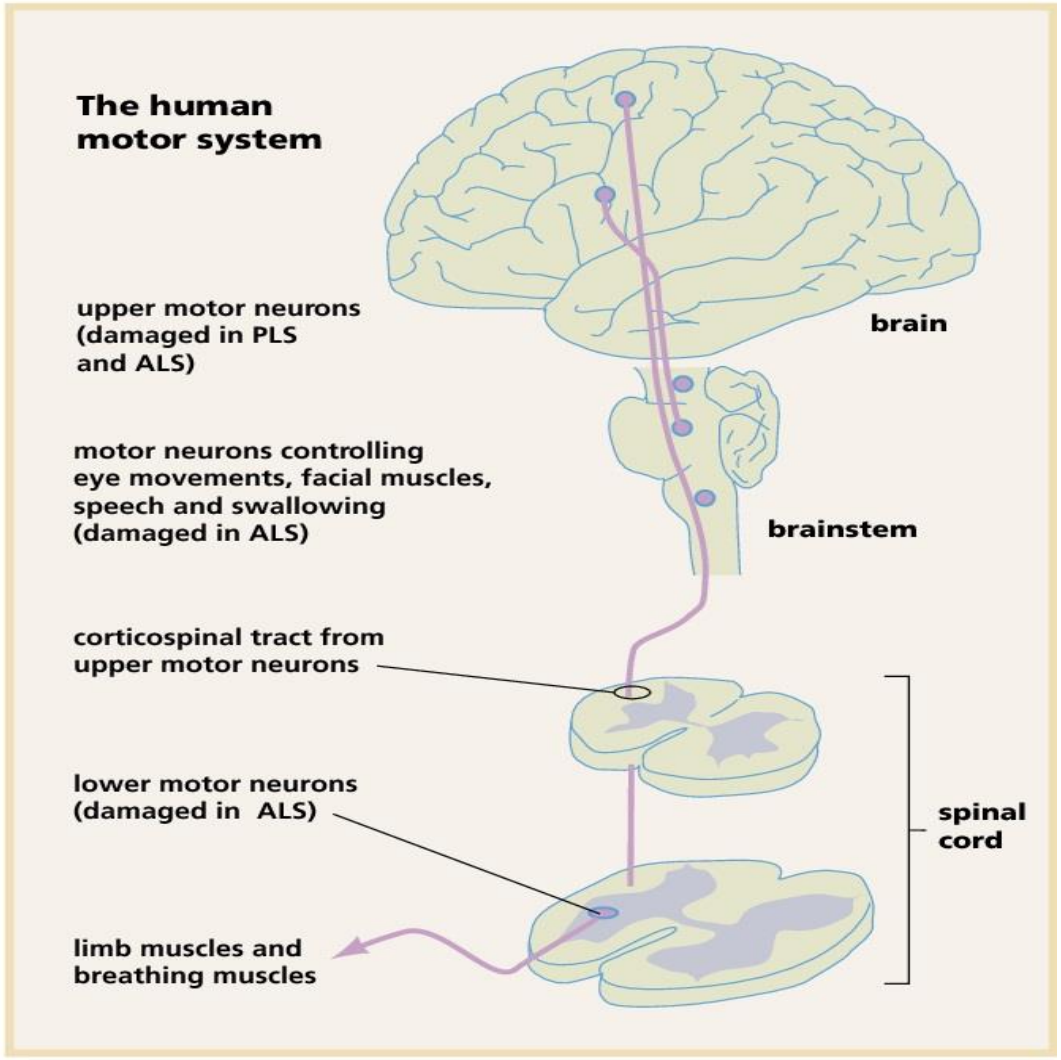
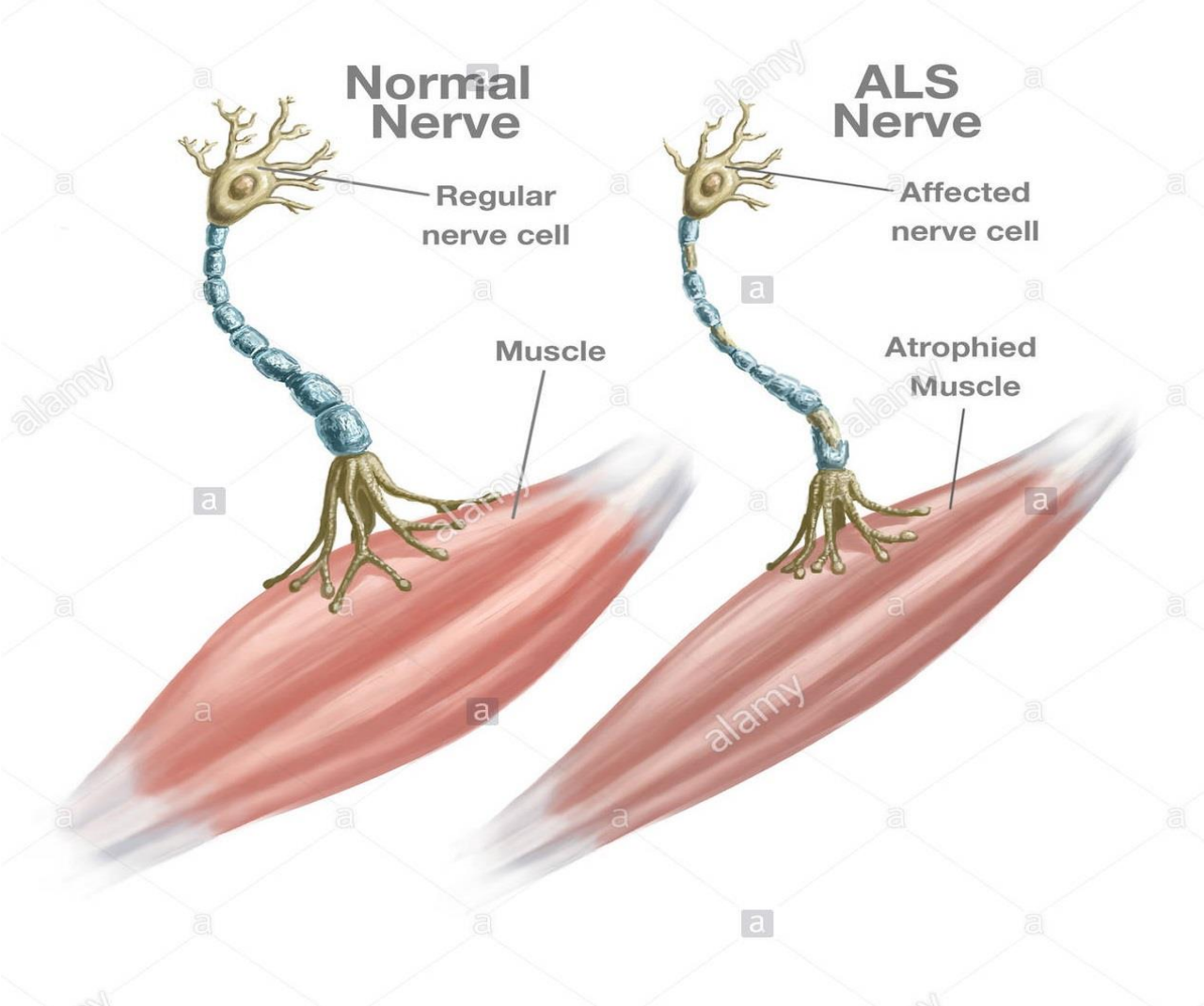
Amyotrophic Lateral Sclerosis (ALS)





OBJECTIVE

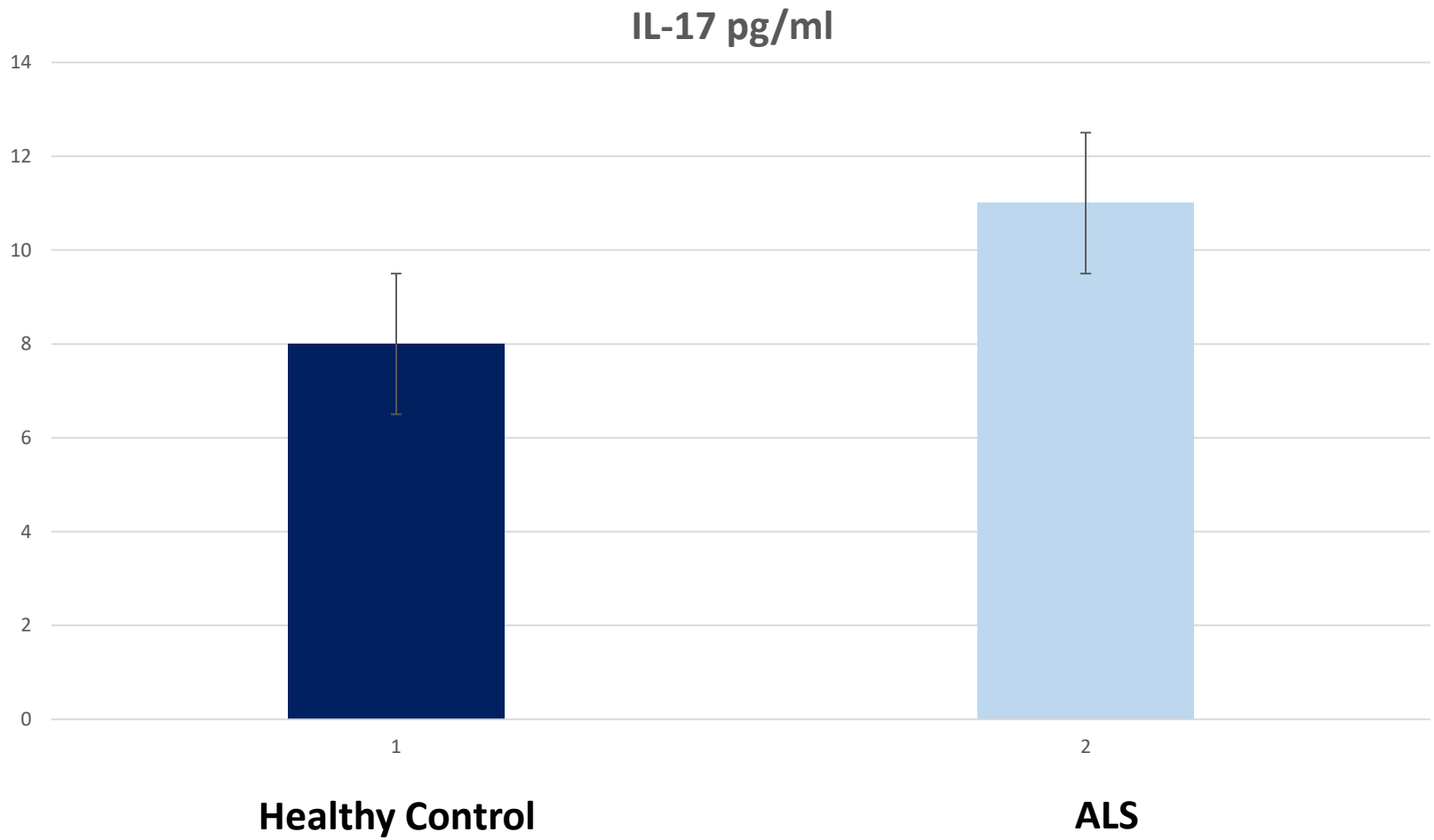
- The aim of this study was to investigate the role of primary T helper subset Th1 (IFN-gama), Th2 (IL-4) and Th17 (IL-17) cytokines and their association with complement factors.

- Their association with LRP4 (low-density lipoprotein receptor-related protein)antibody positive.

METHODS

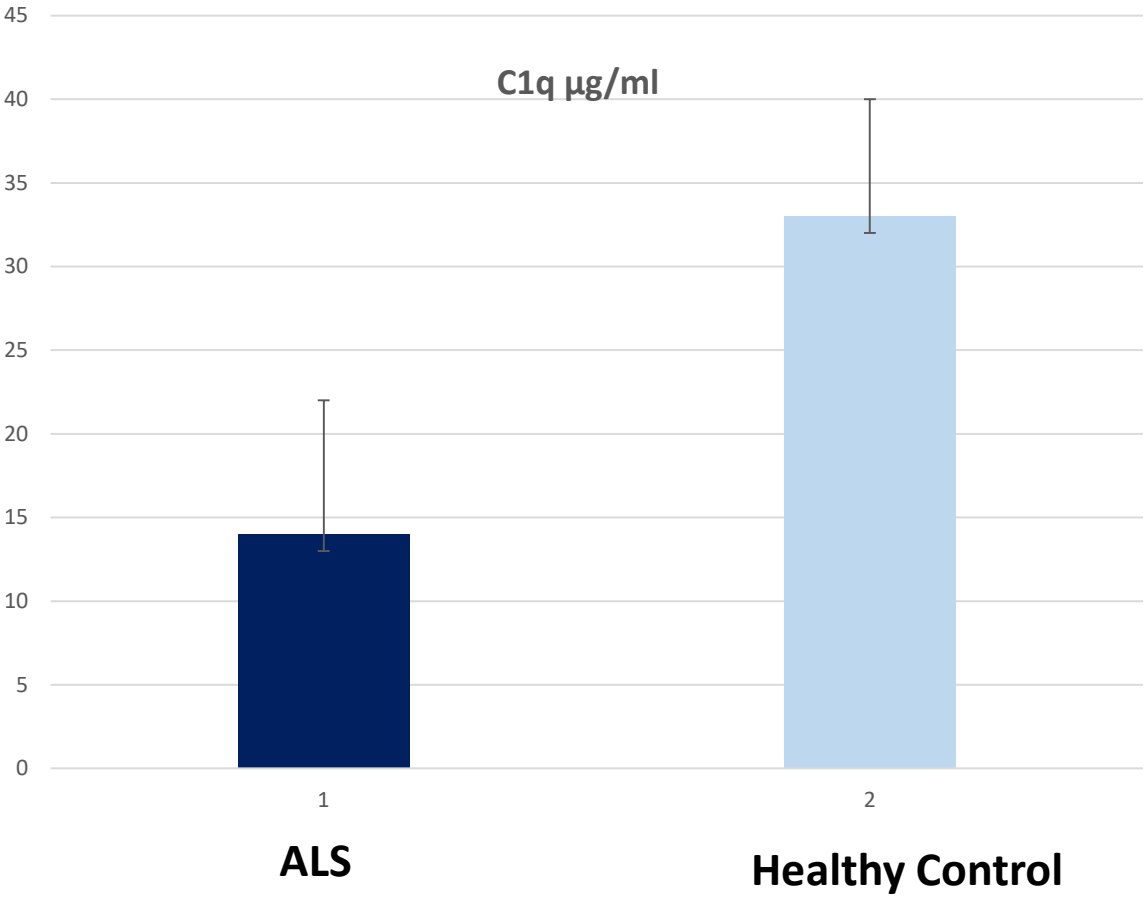
- 25 patients with ALS (mean age 56.5±6.9 years;16 males/9 females)
- 25 healthy controls (58.7±8.5 years;14 males/11 females)
- C1q, C3, IL-4, IL-17 and IFN-gama levels were measured by ELISA
- IgG immunoreactivity of sera with neuronal membrane antigens was detected by using cultured rat cortical neurons
- LRP4-antibody was demonstrated by Cell Based Assay

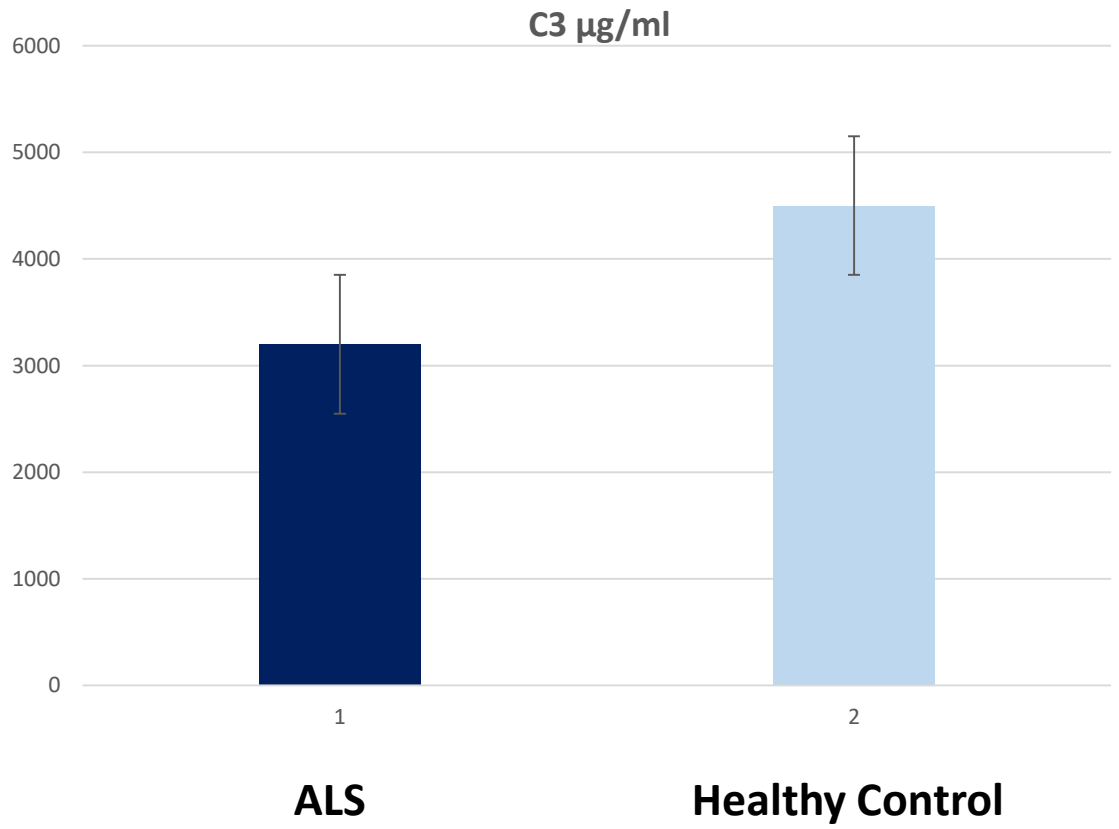
RESULTS



p = 0.005 and p = 0.007 for IL-17 by Mann-Whitney U

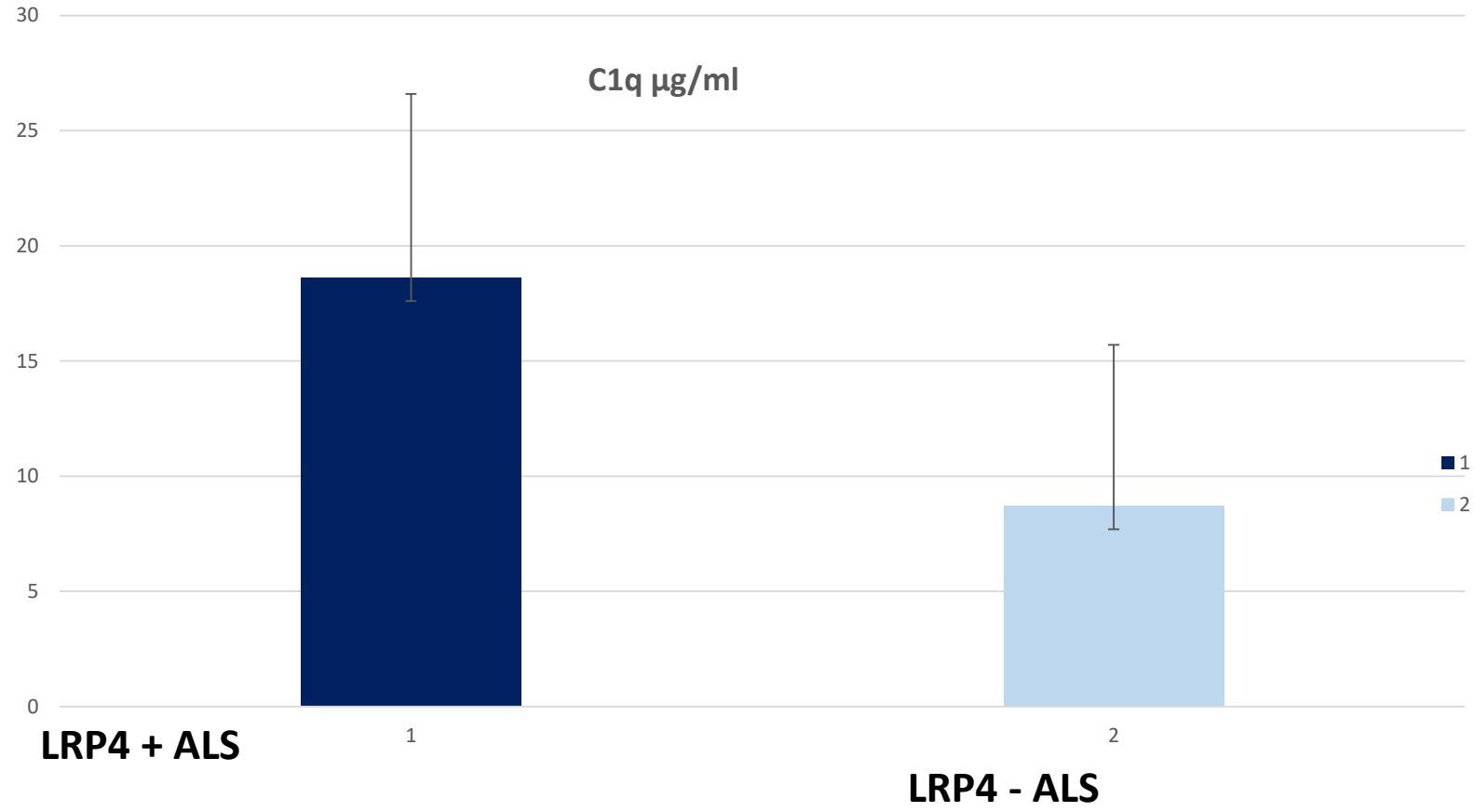
RESULT



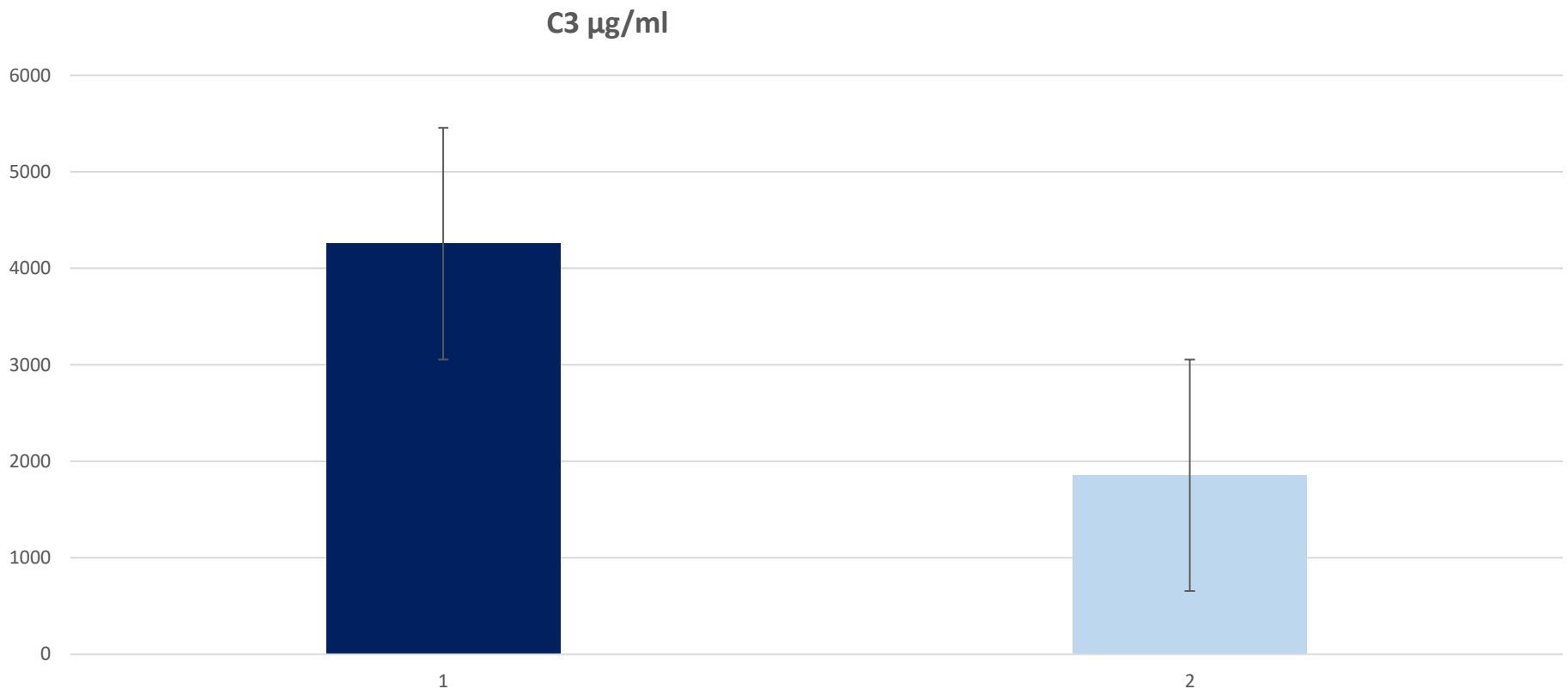


p = 0.005 and p = 0.008 for C1q and C3 by Mann-Whitney U

RESULTS



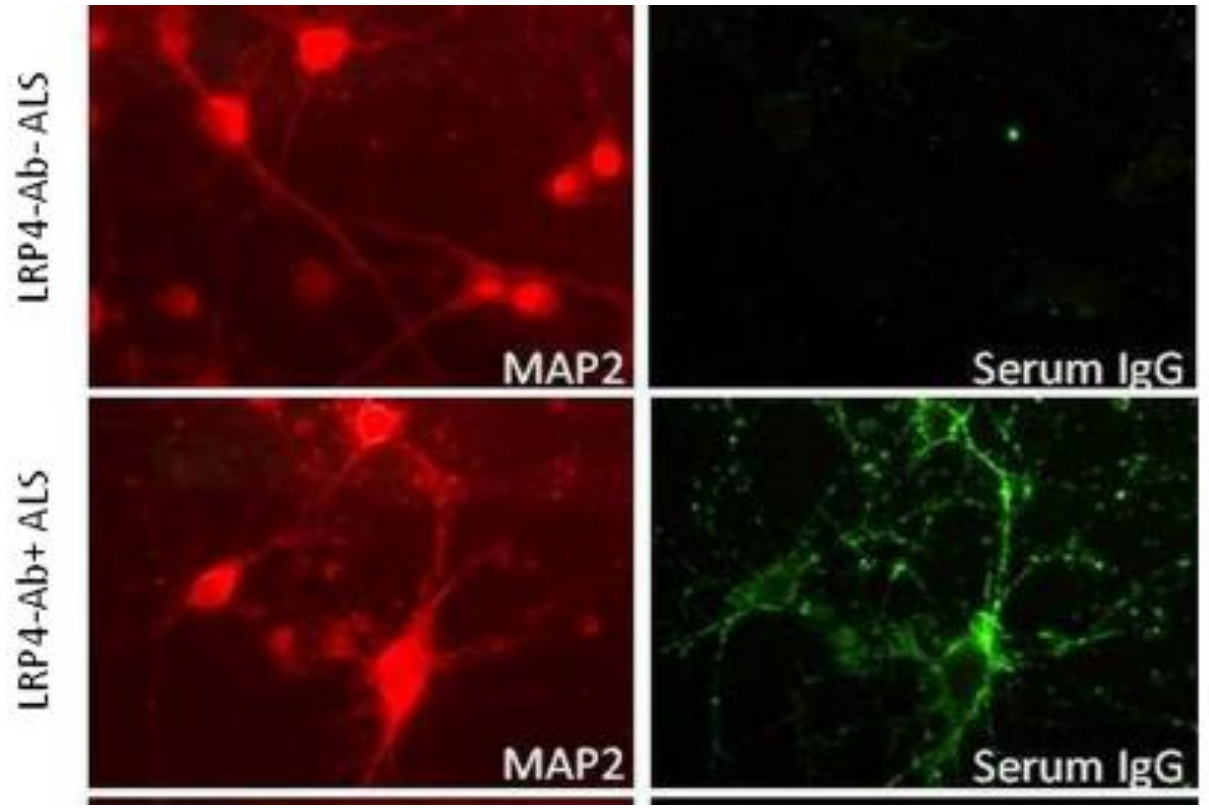
p = 0.005 and p = 0.008 for C1q by Mann-Whitney U



LRP4 + ALS **LRP4 - ALS**

p = 0.005 and p = 0.008 for C3 by Mann-Whitney

RESULTS



Representative images of cultured rat cortical neurons incubated with sera of LRP4-antibody (Ab) positive and negative ALS patients

CONCLUSION

- Our results support that the predominant role of Th17-type immunity in ALS. The increase of complement factors in spinal-onset cases suggests that the complement system is involved in pathogenesis of these patients. LRP4 antibody may be one of these factors.
- Conceivably, LRP4 antibodies might bind LRP4-expressing motor neurons thereby activating the complement system and thus contributing to motor neuron destruction.
- Further studies should be performed to investigate colocalization of LRP4-Ab with other neuropil antigens to better address a potential pathogenic role.