

Neuronal Antibodies and Brain alterations in APECED Patients

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APECED (Autoimmune Polyendocrinopathy-Candidiasis-Ectodermal Dystrophy) is a rare autosomal recessive disorder. We previously found that sera samples from 9/14 patients revealed autoantibodies (Auto-Abs) reacting with cerebellum (GABAergic cells, n=5) and substantia nigra (SN; dopaminergic cells, n=5) [1]. Follow-up of the large majority of these patients was performed at least 10 years after the previous investigation. Indeed, on these patients, and on control age-matched subjects (n=14), we performed brain examinations using an MRI scanner. Obtained images were used to evaluate the volumes of white and gray matter (W.M and G.M., respectively) as well as the ventricles (III and IV). In addition, we used immunohistochemistry (IHC) on tissues from rat brain (after perfusion with 4% paraformaldehyde) in order to confirm the previous immunoreactivities or found new Auto-Abs cell targets. The brain MR revealed a reduction of G.M ($p = 0.042$) and cerebellum ($p = 0.0012$), and an increase of ventricles ($p = 0.0001$), compared to controls. Through IHC, after 10 years, we found 11/14 patients producing Auto-Abs against different brain neuronal cells. In detail, among the patients previously investigated and containing Auto-Abs against GABAergic perikarya in the cerebellum, 3 still contained the same immunoreactivity while 1 was unavailable, and 1 lost the reactivity. Instead, as to Auto-Abs against dopaminergic perikarya in the SN, 4 patients confirmed their previous reactivity, while 3 previously negative patients, revealed novel positivity (in total, n=7). A new immunoreactivity against the 5HT cells in the brainstem were also revealed in the same patients with Auto-Abs to SN (n=7). In conclusion, the co-presence of brain volume changes and neuronal Auto-Abs in APECED patients could suggest an autoimmune manifestation at the brain level that should be taken in consideration.

References

- [1] Cocco et al. (2012) Novel neuronal and endocrine autoantibody targets in Autoimmune Polyendocrine Syndrome type 1. *Autoimmunity* 45(6):485-94.

Keywords

APECED, Autoantibodies, dopaminergic cells, GABAergic cells