## **Galanin in Epilepsy**

Galanin in the hippocampus is an inhibitor of glutamate but not of GABA. This means that galanin is capable of increasing the seizure threshold and, therefore, is expected to act as an anticonvulsant. To be specific, GalR1 has been linked to the suppression of spontaneous seizures.

An agonist antiepileptic drug candidate is NAX 5055.

After VNS treatment, the GAL level in plasma increased. This increase of GAL after VNS treatment was correlated with the therapeutic effect of VNS. The upregulation of GAL expression may be one of the therapeutic mechanisms of VNS in epilepsy treatment. Before VNS treatment, the GAL level in plasma of the effective group was significantly lower than that in the ineffective group. Gao et al. speculate that VNS treatment in epilepsy patients with low plasma GAL concentration is more effective. According to this data, the effectiveness of VNS treatment in patients with plasma concentrations lower than 27.93 pg/ml before treatment is significantly increased. However, further clinical research is necessary to establish more accurate standards. In conclusion, epilepsy patients with low plasma GAL may gain more benefits from VNS treatment <sup>1</sup>.

In 15 SUDEP cases, 12 epilepsy controls, and 10 nonepilepsy controls, they quantified the labeling index (LI) for galanin, neuropeptide Y (NPY), and somatostatin (SST) in the lateral, basal, and accessory basal nuclei and periamygdala cortex with whole slide scanning image analysis. Within the SUDEP group, seven had recent generalized seizures with recovery 24 hours prior to death (SUDEP-R).

Galanin, NPY, and SST LIs were significantly lower in all amygdala regions in SUDEP cases compared to epilepsy controls (P < .05 to P < .0005), and galanin LI was lower in the lateral nucleus compared to nonepilepsy controls (P < .05). There was no difference in the LI in the SUDEP-R group compared to other SUDEP. Higher LI was noted in epilepsy controls than nonepilepsy controls; this was significant for NPY in lateral and basal nuclei (P < .005 and P < .05).

A reduction in galanin in the lateral nucleus in SUDEP could represent acute depletion, relevant to postictal amygdala dysfunction. In addition, increased amygdala neuropeptides in epilepsy controls support their seizure-induced modulation, which is relatively deficient in SUDEP; this could represent a vulnerability factor for amygdala dysfunction in the postictal period <sup>2)</sup>.

## References

1)

Gao JB, Bao M. Plasma neuropeptide as a prognostic marker of vagus nerve stimulation in the treatment of epilepsy. Brain Stimul. 2020 Apr 1;13(4):959-960. doi: 10.1016/j.brs.2020.03.021. [Epub ahead of print] PubMed PMID: 32380447.

2)

Somani A, Perry C, Patodia S, Michalak Z, Ellis M, Sisodiya SM, Thom M. Neuropeptide depletion in the amygdala in sudden unexpected death in epilepsy: A postmortem study. Epilepsia. 2020 Jan 20. doi: 10.1111/epi.16425. [Epub ahead of print] PubMed PMID: 31958887.

From: https://neurosurgerywiki.com/wiki/ - **Neurosurgery Wiki** 

Permanent link: https://neurosurgerywiki.com/wiki/doku.php?id=galanin\_in\_epilepsy



Last update: 2024/06/07 02:56