Allopregnanolone, Gap Difference Blood Plasma (Pl) > Cerebrospinal Fluid (CSF) (Allopregnanolone Gap Pl > CFS) - biomarker of Status Epilepticus (SE). Review
Problems and prospects

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Keywords: Status Epilepticus, Allopregnanolone.

Aim: To review scientific information about allopregnanolone for practical and scientific purposes.

In published works, we have discussed for the advisability of using and other markers for targeted therapy. Biomarker NL-F is one of the early diagnostic biomarkers in cognitive decline, in neurological disorders [1,2]. Biomarker of tissue hypoxia pCO2 (AV gap) > 6 mmHg to confirm Microcirculatory Mitochondrial Distress Syndrome (MMDS) [3]. Biomarker galectin-3 with the diagnosis of heart disease before fatal complications [4,5].

Introduction: Allopregnanolone (APG) is a neuro-steroid, and the metabolite of the progesterone [6]. In animal model it was presented that APG had neuroprotective, anti-seizure effects [7], and the analgesic properties, that have been candidates as biomarkers therapeutic targets for pain [8]. Some studies showed a modulatory effect

on gamma-aminobutyric acid type A (GABA-A) receptor, that how it intensified inhibitory effect on tonic phase of seizures. Status epilepticus (SE) is a neurological emergency with the incidence rate, approximately 7 to 40 cases per 100,000 persons/year. The mortality of SE is approximately from 7,6-22%.

Material and Methods: This paper provides a literature-review, using PubMed database, based on English articles. Key words used in the searching were: allopregnanolone, biomarkers and Status Epilepticus. Source selection was made from 1938 to the present [6-15].

Results: Literature analysis didn't find a correlation between APG serum level, but it was showed a decreased level of APG in cerebrospinal fluid (CSF) in patients with SE. However, not in all samples was found APG. Also, it was analyzed the possibility of sex correlation, between males and females, but samples from both groups, showed such APG levels from CSF. Also, it was analyzed levels of pregnanolone sulfate, a neuro-steroid with an excitatory effect on Central Nervous System (CNS), but stable ranges in CSF were noted. A recent study used APG and Perampanel as adjuncts to Midazolam (MDZ) treatment of SE in animals. They tried combination between Perampanel and MDZ that showed slow action, APG and MDZ showed fast action and persistent suppression on electroencephalogram in 80 % of cases; and combination of APG, Perampanel and MDZ showed fast suppression and elimination of seizure in all animals [12]. Another study used a different combination MDZ-Ketamine - APG in rats, also with good outcome [13]. First report of administration in continuous infusion of APG in patients in 2017, in two cases, showed a good recovery from refractory SE [14]. Intravenous Phenytoin has also proven itself in the ICU, in the context of neurovegetative correction [16] when monitoring the patient [17,18].

Conclusion: Allopregnanolone Gap Difference Blood Plasma (Pl) > Cerebrospinal Fluid (CSF) (Allopregnanolone Gap Pl > CFS) can be used as a biomarker of SE. That why, APG can be therapeutic target in patients with low level in CSF [19].

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