Purpose: To determine whether the treatment with high-dose oral diazepam could control dyskinesia in anti-NMDA receptor encephalitis, we analyzed therapeutic efficacy of high-dose diazepam in dyskinesia associated with anti-NMDA receptor encephalitis.

Methods: We reviewed the cohort data of patients diagnosed with anti-NMDA receptor encephalitis who were admitted to Seoul National University Hospital between January 2012 and July 2018 with moderate to severe dyskinesia. Diazepam was administered orally or via a nasogastric tube, 3 to 6 times a day. We assessed the treatment effect by comparing dyskinesia severity using a grading system at the initiation of diazepam treatment, on the first day of high-dose diazepam, and after one week of treatment with high-dose diazepam.

Results: Thirty-three patients with anti-NMDA receptor encephalitis and dyskinesia were treated with high-dose oral diazepam (ranging from 6 mg to 180 mg), along with immunotherapy. The severity of dyskinesia improved significantly (p-value<0.001), from median grade 3.5 (ranging from 2 to 4) to median grade 2 (ranging from 0 to 4), after one week of high-dose diazepam. No patients had serious adverse events except mild sedation.

Conclusions: We have treated the dyskinesia with high-dose oral diazepam in number of cases, and the treatment was effective and safe. This study suggests that oral administration of high-dose diazepam could be a promising treatment option for the management of severe dyskinesia in anti-NMDA receptor encephalitis.

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Assessment of antiseizure and neuroprotective effects of novel compounds in a delayed-treatment rat model of organophosphate (OP) exposure

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Background: It is well-known that exposure to organophosphates (OP), including nerve agents, results in status epilepticus (SE) and neuronal damage in the brain. Early control of seizure activity reduces mortality and damage. In the event of a mass release, treatment is likely to be greatly delayed compared to what would occur in a hospital setting. Therefore, there is a pressing need for treatments that can be administered after a significant delay and in a pre-hospital situation. The CounterACT Neurotherapeutic Screening (CNS) Program has now tested 9 externally submitted and 8 internally chosen compounds for this purpose.

Methods: Male, Sprague Dawley rats (150-200 g) were implanted for electroencephalogram (EEG) recordings. SE was induced by diisopropyl fluorophosphate (DFP). One hour after SE onset, rats were co-administered midazolam (MDZ) and a test compound or MDZ alone. EEG was recorded for 24 hr, followed by perfusion, tissue collection and labeling with Fluoro-Jade B. Neurons positive for Fluoro-Jade B were counted in 10 brain regions: dorsal CA1, dorsal CA3, hilus, ventral CA1, ventral CA3, amygdala, thalamus, and the parietal, entorhinal and piriform cortices. All data were analyzed quantitatively with blind procedures.

Results: Of the externally submitted compounds, compared to MDZ alone, significant anti-seizure effects were found for two compounds. These compounds reduced both seizure power and seizure duration. Each of these compounds also reduced neuronal death, compared to when MDZ was administered alone. In the same protocol, these data were compared to: (1) ganaxolone (with MDZ), which had a minimal effect on seizures, and (2) bumetanide (also with MDZ), which had no effect on seizures. Both of these latter compounds also had no effect on neuronal death.

Conclusions: These data demonstrate that MDZ-induced suppression of OP-mediated SE can be enhanced by co-administration of other compounds, even when both compounds are administered at a long-delay (i.e., 1 hr) after SE onset. Furthermore, this delayed treatment can significantly reduce neuronal death. This screening program will continue to search for other compounds that may provide better treatment of OP-induced SE.

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Development of Antiepileptic Drugs Box for Status Epilepticus Fast Track (SE BOX)

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Background and Objective: Status epilepticus (SE) is one the most concerned issue in patient treatment. Due to it can lead to disability and mortality. Hence, the most important key is to control the seizure within 1 hour after patient had symptom. The principle of SE treatment is to shorten the time to receive the treatment. Physician must be able to give an early diagnose (Time to diagnosis) and start medicine immediately (Time to Treatment). This study aims to root cause analysis SE service problems and development SE BOX for ready to use.

Methods: The study design was action research phase I, we root cause analysis about problems of SE service by collected data from electronic hospital database between 1st October 2017 and 30st September 2018 at Srinagarind hospital.

Results: The important problems of SE service from root cause analysis 19 patients with SE were delay of treatment such as the mean time to diagnosis was 272 minutes (0-53 hours) and mean time to treatment was 32 minutes (0-80 minutes). The average waiting time of stat dose was 13.24 minutes and the percent achievement of 20 minutes guarantee time was 82.6%. However, this waiting time was collected only in pharmacy department not include the delivery time to carry the medicine to wards. Moreover, from drug information service data there were 17 questions about IV antiepileptic drug which were asked by physicians and nurse the most stability/compatibility, dose/administration, ADR/side effect respectively. From those issues, there are many steps and these can lead to the delay of treatment. As a result, Integrated Epilepsy Research Group is developing the system of antiepileptic drugs to be ready-to-use by preparing SE Box. The box consists of 4 drugs; Phenytoin injection (6 vials), Phenobarbital injection (5 amp),