Phase 2 clinical trial with perampanel for sporadic amyotrophic lateral sclerosis

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Background
Perampanel, a selective non-competitive AMPA receptor antagonist, has been reported to prevent the progression of the model mouse for sporadic amyotrophic lateral sclerosis (ALS) (ARZ mice)¹, in which an RNA editing enzyme adenosine deaminase acting on RNA2 (ADAR2) is conditionally knocked out in the motor neurons². Because of the therapeutic potency of perampanel for sporadic ALS, we planned to perform a clinical trial with perampanel for sporadic ALS.


Structure of Perampanel

Objective
To investigate the safety and the efficacy of perampanel in patients with sporadic ALS.

Patients and Methods
We designed a multicenter randomized, double-blinded, placebo-controlled, parallel-group phase 2 clinical trial. The patients eligible for inclusion criteria and not applicable for exclusion criteria will be enrolled for the interim registration. After 12 weeks of observation period, the patients with the progression on score of ALS functional rating scale (ALSFRS-R) between -2 and -5 will proceed to the registration. Then the patients will be allocated into three groups: placebo, 4mg of perampanel, and 8mg of perampanel. The patients will take placebo or perampanel once daily before bedtime with dose-escalation method. The Primary outcome measure is change in ALSFRS-R after 48 weeks of the treatment. (ClinicalTrials.gov ID: NCT03019419; UMIN 000025614)

Study design
multicenter randomized, double-blinded, placebo-controlled, parallel-group phase 2 clinical trial

Flow diagram of the study

Results
We ensured the budget for this clinical study approved by Japan Agency for Medical Research and Development. This study was started April 2017, and is still on going and recruiting ALS patients in twelve hospitals in Japan.

Conclusion
Phase 2 clinical trial with perampanel for sporadic ALS has been performed based on its clinical efficacy on sporadic ALS model mice.

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References