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Poster

## [P26-1] P26-1: Anticonvulsant drugs

Chair: Ikuko Yano, Japan

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### [P26-1-6] Levetiracetam dosing recommendation in patients with continuous venoveous hemodiafiltration

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#### Background

The primary mechanism of levetiracetam (LEV) clearance is renal. Therefore, it is expected that LEV will be removed by continuous venovenous hemodiafiltration (CVVHDF). Information to guide clinicians on LEV CVVHDF dose adjustments is limited. The aim of this study was to describe LEV dosing and pharmacokinetics in the setting of CVVHDF.

#### Methods

Retrospective observational study of 100% of adult inpatients in an intensive care unit, who were receiving LEV and undergoing CVVHDF, in January 2017.

Pharmacokinetics sampling was performed at three moments: immediately before the initiation of CVVHDF, during CVVHDF and following its discontinuation. During CVVHDF: Pre- and post-membrane venous blood samples were obtained from patients before and 1 h after completion of drug infusion, and dialysate samples were obtained simultaneously with blood samples at each time.

LEV concentrations were measured by spectrophotometry in an ARCHITECT-C8000 using the ARK Levetiracetam Assay (therapeutic range: 12-46 mcg/mL).

#### Results

5 patients were enrolled in the study (3 men, 2 women). Before CVVHDF (creatinine:  $3.6 \pm 0.8$  mg/dL): the LEV trough concentrations were  $33 \pm 6.2$  mcg/mL (range: 31-42 mcg/mL) and during CVVHDF (The Prismaflex System with a blood flow rate of 180 mL/minute, a hemofiltration rate of 1800 mL/h and with 50% of replacement fluid administered) were  $17 \pm 2.8$  mcg/mL (range: 13-18 mcg/mL), showing a decrease of  $60 \pm 5.6$  % (range: 50-70 %). To obtain therapeutic concentrations during CVVHDF, the adjusted daily dose was increased from  $833 \pm 370$  mg/day (range: 750-1500 mg/day) to  $2073 \pm 418$  mg/day (range:  $1500 \pm 2500$  mg/day). The amount of LEV recovered in dialysate was  $949 \pm 98$  mg/day (48% of dose). After the discontinuation of CVVHDF (creatinine:  $1.2 \pm 0.29$  mg/dL), the adjusted daily dose was reduced to  $1442 \pm 447$  mg/day (range: 1000-2000 mg/day) to obtain LEV therapeutic levels ( $22 \pm 6.7$  mcg/mL, range: 14-22 mcg/mL).

#### Conclusions

Our results suggest that close monitoring of LEV concentrations should be recommended in patients undergoing CVVHDF, and dose adjustments may be required on and off CVVHDF in order to maintain therapeutic concentrations.

