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HOSPITAL UNIVERSITARIO DE JAEN

TRANSIENT VALPROIC ACID TOXICITY: HYPERAMMONAEMIA IN A PEDIATRIC PATIENT

Félix Gómez-De Rueda , Bárbara Cancela Díez, Myriam Cárdenas Antón, Jesús de la Cruz Moreno
Hospital Pharmacy & Pediatric Units, Universitary Hospital of Jaén

BACKGROUND

Hyperammonemia is known as a metabolic disturbance due to the deficiency of some enzyme of the *"urea cycle"*, a biochemical process by nitrogenous products are purified from the organism and whose accumulation leads to neurological disorders, vomiting, seizures, coma and death.

OBJECTIVE

To evaluate the evolution and response of the patient after the administration of corrective treatment in a 5-month-old pediatric patient diagnosed with epilepsy in the infant who developed hyperammonemia secondary to high doses of valproic acid (VA).

METHOD

To reverse hyperammonemia, the patient's status epilepticus, the frequency of seizures, ammonium levels (mcg/dL) and VA (mcg/mL) were monitored.

RESULTS

Due to the persistence of seizures, intravenous VA treatment was started, initially a bolus of 400 mg and subsequent infusion of 20 mg/kg (rate 1mg/kg/h), and the rate of infusion should increase ten hours after the start of treatment at 1.5 mg/kg/h, controlling the crisis and performing sequential therapy with oral valproic acid at 40 mg/kg/8h. Later, cloning and disconnection episodes were again evident, forcing monitoring of valproic levels and assessment of the general state, diagnosing hyperammonemia with levels of 140 mcg/dL of blood ammonia (reference values 29-70 mcg/dL), There is a clinical and therapeutic agreement with valproic levels of 113 mcg/mL (range 50 to 100 mcg/mL).

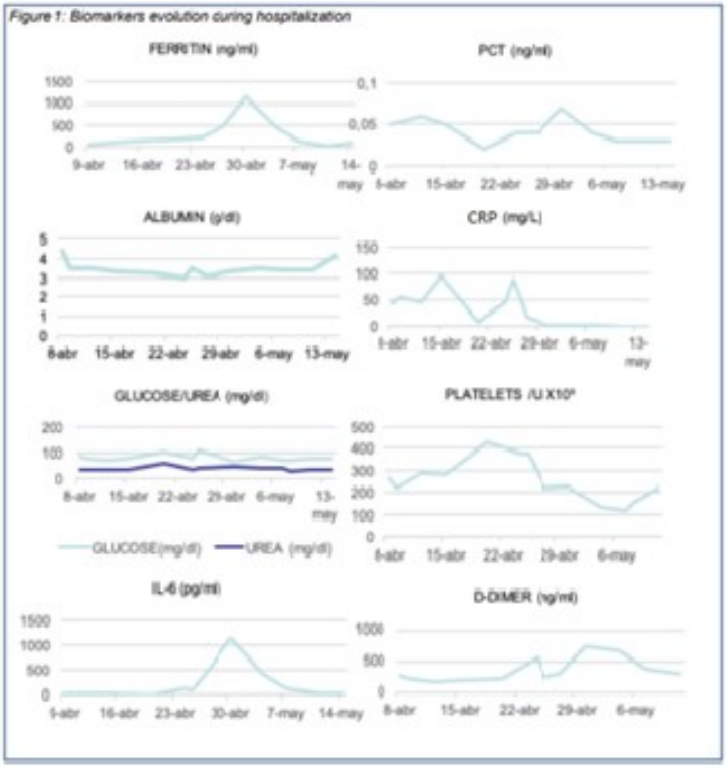
The PCCU (Pediatric Critical Care Unit) consulted the Pharmacy Unit to advise on detoxification treatment, suggesting arginine (0.15-0.4 g/kg/day), carnitine (20 mg/kg/day) and N-carbamyl glutamate (100 mg/kg/day), reserving phenylbutyrate as a corrective treatment. Toxic and analyte levels progressively improved (103 mcg/dL of ammonia and 47.3 mcg/mL of VA), allowing the use of phenylbutyrate to be postponed. After an approximate 20% reduction in ammonia (86.3 mcg/dL), treatment was interrupted, except for carnitine and levetiracetam. Finally, the stabilization of the epileptic seizures was achieved, maintaining normalized ammonia levels, and he was discharged from the hospital with outpatient treatment based on oxcarbazepine and levetiracetam.

CONCLUSIONS

Medication overdose to reverse particular situations can trigger unexpected toxic conditions, which could cause organic or metabolic alterations.

An adequate pharmacotherapeutic follow-up could avoid risk situations, especially in the pediatric population.

Figure 1: Biomarkers evolution during hospitalization



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