Poster

[P26-3] P26-3: Central nervous system drugs (2)

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[P26-3-1] Acute cholinergic syndrome observed with the use of cholinesterase inhibitors in two patients with Alzheimer's type dementia

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Background

We report two cases of acute cholinergic syndrome caused by cholinesterase inhibitors prescribed to treat Alzheimer’ s type dementia.

Methods/Results

Case1

A 91-year-old woman with Alzheimer’ s type dementia was transferred to the Poison Center. On admission, she was drowsy and had miosis (diameters of both pupils; 1.5 mm), remarkable sweating on her face, and enhanced bowel sound. Moreover, we found ten transdermal patches each containing 18 mg of rivastigmine (totally 180 mg) on her low back and both thighs. She was diagnosed with acute cholinergic syndrome caused by rivastigmine intoxication. After removal of the patches, her symptoms and signs were gradual recovery in 18 hours. Toxicological analysis using GC / MS revealed that serum rivastigmine concentration on admission was remarkably high (150.6 ng/mL) and the half-life was notably prolonged (approximately 7 hours).

Case2

An 87-year-old man with Alzheimer’ s type dementia was taking a tablet containing 12mg of galantamine twice per day. He was transferred to the Poison Center. On admission, he was drowsy and had miosis (diameters of both pupils; 1.5 mm), sinus bradycardia of 54 beats/min, and enhanced bowel sound. The provisional diagnosis of acute cholinergic syndrome caused by galantamine intoxication was made. Fluid therapy with symptomatic treatment was done. His symptoms and signs were gradual recovery in 7 hours. Toxicological analysis using LC / MS revealed that serum galantamine concentration on admission was not elevated (35.0 ng/mL).

Discussion

In case1, the patient took rivastigmine transdermal patches by mistake with the analgesic patches. We suggest that remarkably elevated serum rivastigmine concentration and prolonged half-time than predicted were observed due to the dryness of skin and the lowering of metabolic function in elderly.

In case 2, the patient presented poisoning symptoms, whereas serum galantamine concentration was not elevated. Galantamine has a remarkably high volume of distribution (182±23 L/kg). Thus, those demonstrate that the amount of galantamine distributed into tissue was not correlated with serum galantamine concentration.

Conclusions

We should consider that, in elderly, cholinesterase inhibitors may develop acute cholinergic syndrome by overdose or usual doses.