

# Valacyclovir-Induced Psychosis in an Elderly ESRD Patient with Herpes Zoster

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## Abstract

Valacyclovir is a common antiviral drug primarily used to treat herpes virus infections, such as herpes zoster or shingles infection. It is renally metabolized, thus, dose adjustments for patients with impaired renal function or comorbidities are instituted to mitigate side effects due to accumulation. **This retrospective case report explores valacyclovir-induced neurotoxicity in a patient with hemodialysis-dependent ESRD.**

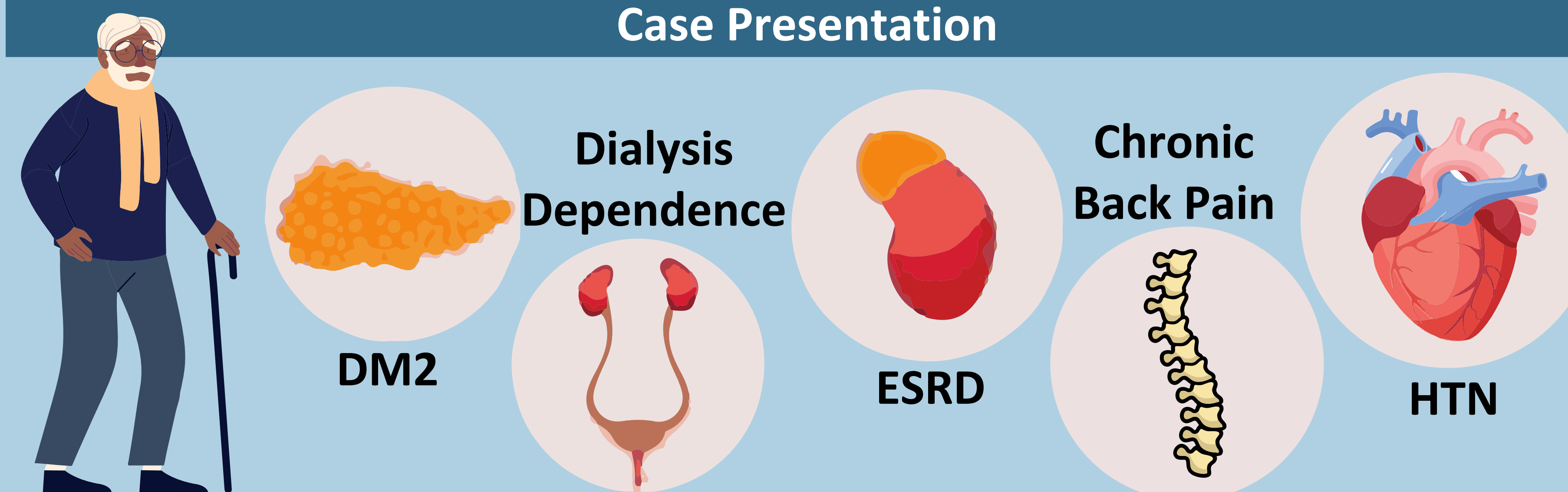
Psychosis presented after recommended renal-adjusted dosing of the medication. This patient was originally prescribed a seven-day course of valacyclovir, however, returned to the hospital on day four with neurologic sequelae, including blurry vision, weakness, and falls. After a full workup for CVA, encephalopathy, and dementia, the patient's symptoms were found to be most associated with the timing of valacyclovir initiation and in concordance with the understood neurologic manifestations of valacyclovir use.

We attribute the missed hemodialysis sessions to be a major contributor to the accumulation of toxic drug and metabolite levels in this patient. Thus, we advise that patients with ESRD on valacyclovir either be closely monitored for adherence to the dialysis schedule or that the dose is further lowered given the low threshold for toxicity in this patient population. This risk is magnified in patients with frailty, advanced age, or multiple comorbid conditions.

## Background

- Herpes Zoster, aka "shingles," is an infection characterized by reactivation of varicella-zoster virus in the dorsal root ganglion causing pain with vesicular eruption 2-3 days later. Oral purine guanosine nucleoside antiviral drugs such as acyclovir prodrug valacyclovir inhibit replication and reduce duration and severity.
- Most patients experience no side effects, or only mild gastrointestinal upset, headache, or nasopharyngitis. Serious, yet rare, side effects from this class include acute kidney injury (5-10%) and neurotoxicity (2-12%) with confusion, delirium, vertigo, agitation, lethargy, and hallucination within one to five days of starting the drug [1].
- Side effects can be prevented through ample hydration and natural renal clearance. If this fails, dialysis clears the drug and metabolites [2].
- Individuals show genetic predisposition to this toxic effect, and there is a direct dose-dependent relationship between CMMG levels and the degree of impairment.

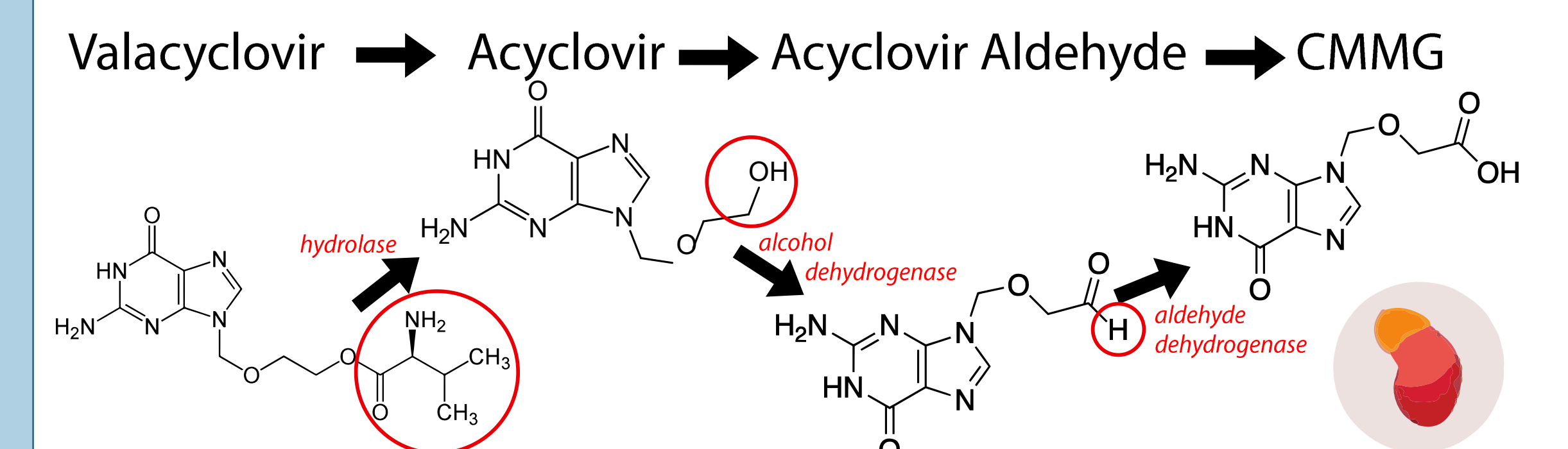
## Case Presentation



- 76 y.o. patient presented to the ED with itching and burning in the posterior T10 dermatome, like prior herpes zoster flare. Prescribed 7 days of renally dosed valacyclovir 500 mg to be taken after dialysis. He was discharged to home at this time and did not receive dialysis until readmission.
- Patient returned after 4 days with double & blurry vision, difficulty walking, weakness, hallucinations, diarrhea, expressive aphasia, and dysarthria. He had only taken valacyclovir and no other medications.
- On physical exam, he was afebrile and had hypertensive urgency to 214 systolic, a 3/6 intensity systolic murmur at the left lower sternal border, clear lungs, and 1+ pitting edema bilaterally.
- Rapid alternating movements were slowed and uncoordinated, and there was pronator drift. He was alert, but disoriented to day. He also made fast, impulsive, unprovoked movements and utterances.
- Thorough rule out for CVA, c-spine stenosis, hypertensive encephalopathy, or worsening of dementia.
- Head CT, CXR, and labs unremarkable and telemetry consistent with preexisting atrial fibrillation.
- Mental status through admission waxed and waned, with episodes of sleepiness, agitation, sundown effect, poor balance, word finding difficulty, ataxia, visual hallucinations, and poor recall.
- Symptoms were refractory to haloperidol and lorazepam during admission, and only improved after reinstating M/W/F dialysis. Speech dysarthria improved daily and resolved prior to visual hallucinations resolving. Diplopia and blurry vision were the last symptoms to resolve.

## Learning Points & Take-Home Message

- This case highlights the importance of **closely monitoring patients with herpes zoster or other viral syndromes such as HSV requiring antiviral treatment, particularly frail, elderly, or patients with multiple comorbid conditions.**
- Renal impairment requires not only dose adjustment, but also more frequent monitoring for adverse medication effect.**
- Patients with hemodialysis-dependent ESRD may benefit from more frequent dialysis sessions or lower valacyclovir dosing to avoid toxic accumulation.**



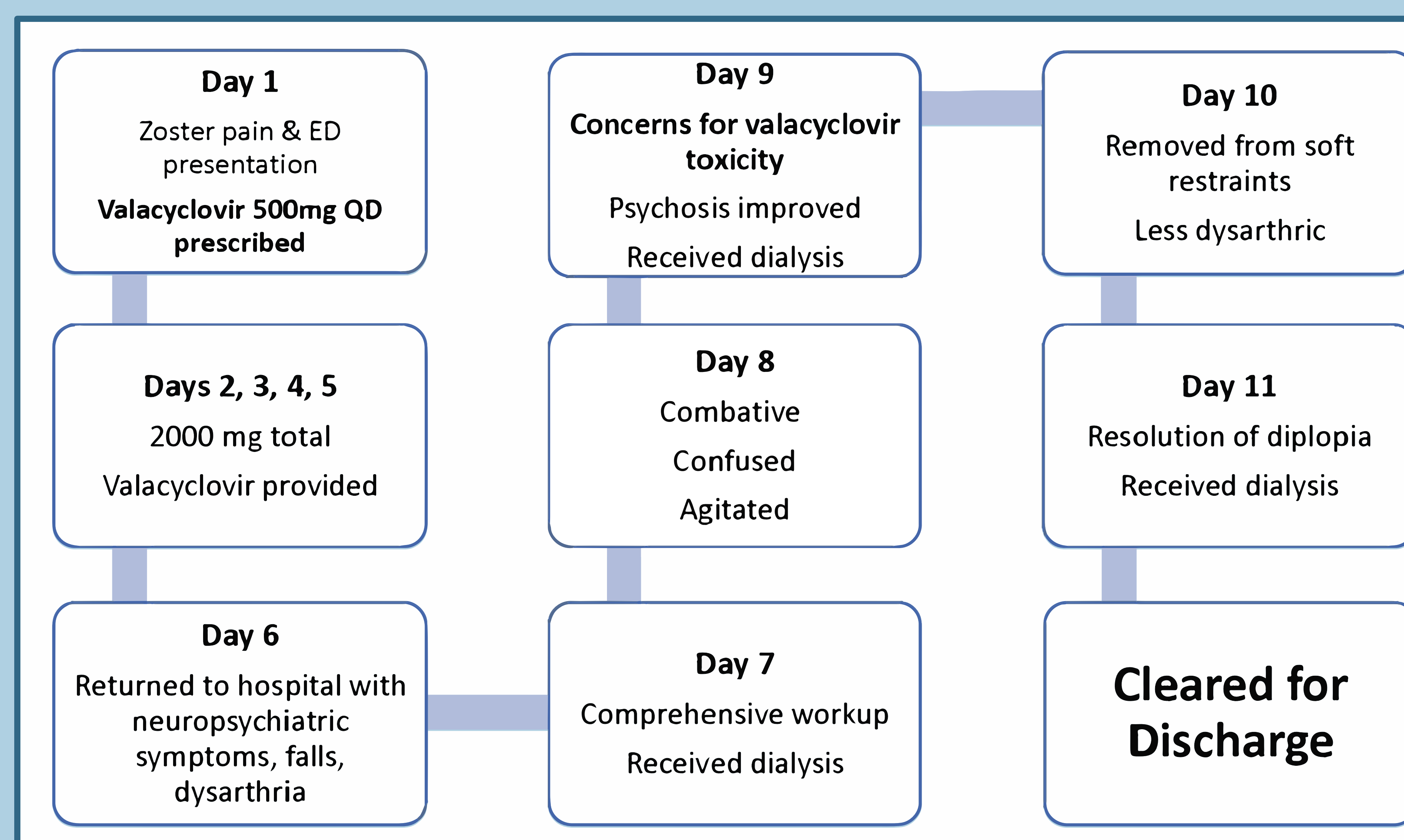
**Figure 2:** Renal metabolism of valacyclovir to produce neurotoxic metabolite CMMG

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**Figure 1.** Hospital course by day during eleven-day hospitalization.