CASE LETTER

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A Case of Acyclovir Neurotoxicity in a Patient with Herpes Zoster

Hoon Choi, Jun Ho Kwak, In Ho Bae, Bong Seok Shin, Min Sung Kim and Chan-Ho Na†

Department of Dermatology, Chosun University College of Medicine, Gwangju, Korea

Acyclovir is a widely used treatment for varicella-zoster virus (VZV) infections. It exhibits good tissue penetration, including within the cerebrospinal fluid (CSF), and is primarily excreted renally[1]. Although acyclovir is generally well tolerated, systemic adverse effects may occur. The most common of these is acute renal failure, although neurotoxicity has also been reported[2,3]. In particular, renal damage can result in drug accumulation, increasing the risk of neurotoxicity[2].

In this case report, a 55-year-old woman presented with painful grouped erythematous vesicles on her abdomen, left flank, and back that had developed 5 days prior. She was diagnosed with herpes zoster (Fig. 1). She had hypertension, end-stage renal disease, and vitiligo. Due to her creatinine clearance of 18 mL/min, intravenous acyclovir at a dosage of 5 mg/kg/day was administered for five days. On the third hospital day, the patient developed bilateral lower extremity weakness, blurred vision, dysarthria, dizziness, aggressive attitude, and disruptive behavior. The patient's psychosis was suspected to be delirium caused by administration of the medication, as the symptoms suddenly worsened. The Mini-Mental State Examination revealed disorientation, while brain magnetic resonance imaging showed no acute lesions. Attempts to perform a cerebrospinal tapping to rule out central nervous system infection were hindered by the patient's lack of cooperation. Repeated blood tests indicated a deterioration in creatinine clearance to 6 mL/min, three times worse than the previous assessment. Acyclovir treatment was ceased, and her symptoms significantly improved after three sessions of hemodialysis at two-day intervals. The immediate resolution of these symptoms upon discontinuation of acyclovir suggested a possible causal relationship with acyclovir neurotoxicity.

Neurotoxicity refers to a neuropsychiatric condition triggered by the administration of antiherpetic drugs such as acyclovir and valacyclovir. Age and renal dysfunction are identified as primary risk factors for neurotoxicity[4]. In this case, the neurotoxicity was thought to have occurred because of the patient's worsening creatinine clearance. The predominant symptom observed was disorientation, although other symp-

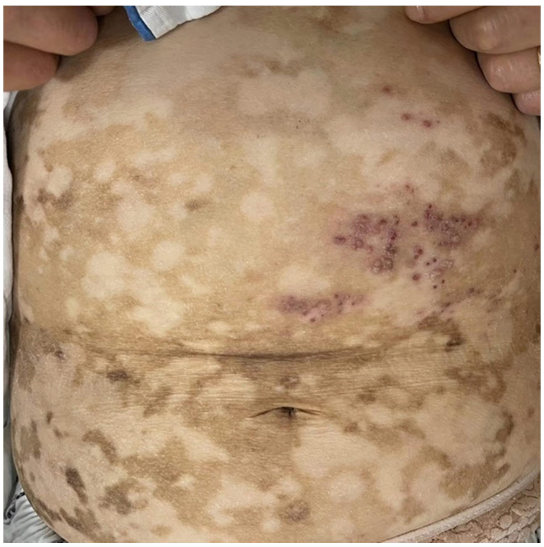

Fig. 1. The patient's abdomen exhibited several grouped erythematous vesicles, characteristics of herpes zoster lesions.

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†Corresponding: Chan-Ho Na, Department of Dermatology, Chosun University Hospital, Pilmundaero 365, Dong-gu, Gwangju 61453, Korea.
Phone: +82-62-220-3130, Fax: +82-62-222-3215, e-mail: chna@chosun.ac.kr

toms such as altered consciousness, hallucinations, agitation, dysarthria, seizures, delirium, irritability, and delusion were also reported[2].

A condition that requires differentiation from neurotoxicity is viral encephalitis. While both conditions can present with the psychiatric symptoms of disorientation and alterations in consciousness, viral encephalitis commonly includes symptoms such as fever, headache, and neck stiffness. The diagnosis of viral encephalitis can be confirmed by polymerase chain reaction testing for positive VZV antibodies and pleocytosis in a CSF analysis[5]. Furthermore, a key distinction lies in the timing of symptom onset. Neurotoxicity typically manifests three days after antiviral administration, whereas viral encephalitis typically arises seven days after the appearance of skin lesions[2]. Even though CSF analysis was not conducted in this study, the diagnosis of acyclovir neurotoxicity can be made based on the timing of psychiatric symptoms and disorientation, as well as the observed improvement following discontinuation of acyclovir and treatment with hemodialysis.

In conclusion, dermatologists should be vigilant regarding the potential neurological symptoms associated with acyclovir administration, particularly in patients with end-stage renal disease. Monitoring renal function is crucial in mitigating the risk of neurotoxicity.

Key Words: Acyclovir, Herpes zoter, Neurotoxicity

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CONFLICT OF INTEREST

In relation to this article, we declare that there is no conflict of interest.

ORCID

Hoon Choi: 0000-0001-8514-3550
Jun Ho Kwak: 0000-0002-1341-7986
In Ho Bae: 0000-0002-9166-4050
Bong Seok Shin: 0000-0001-9618-1763
Min Sung Kim: 0000-0002-8102-6653
Chan-Ho Na: 0000-0001-5259-5382

PATIENT CONSENT STATEMENT

The patient provided written informed consent for the publication and the use of her images.

REFERENCES

1. Gnann JW, Jr., Barton NH, Whitley RJ. Acyclovir: mechanism of action, pharmacokinetics, safety and clinical applications. Pharmacotherapy 1983;3:275-283
2. Brandariz-Nuñez D, Correas-Sanahuja M, Maya-Gallego S, Martín Herranz I. Neurotoxicity associated with acyclovir and valacyclovir: A systematic review of cases. J Clin Pharm Ther 2021;46:918-926
3. Perazella MA. Drug-induced renal failure: update on new medications and unique mechanisms of nephrotoxicity. Am J Med Sci 2003;325:349-362
4. Das V, Peraldi MN, Legendre C. Adverse neuropsychiatric effects of cytomegalovirus prophylaxis with valaciclovir in renal transplant recipients. Nephrol Dial Transplant 2006;21:1395-1401
5. Dworkin RH, Johnson RW, Breuer J, Gnann JW, Levin MJ, Backonja M, et al. Recommendations for the management of herpes zoster. Clin Infect Dis 2007;44(Suppl 1):S1-26