LETTERS TO THE EDITOR

Cefepime-Induced Encephalopathy: A Possible Additional Mechanism of Neurotoxicity

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We read with interest the article “Clinical, electroencephalographic features and prognostic factors of cefepime-induced neurotoxicity: a retrospective study” by Li et al. [1]. Regarding the pathogenesis, as the authors mention, the commonly accepted hypothesis is that cefepime acts as a competitive antagonist of gamma-amino butyric acid (GABA) and subsequently inhibits the inhibitory response, which leads to the over-excitation of electrical activity of neurons and the occurrence of neurological symptoms, including seizure [2]. We would like to comment on a possible additional mechanism of neurotoxicity.

Hypocarnitinemia-associated encephalopathy through increased excretion of carnitine as pivaloylcarnitine in urine has been reported with ceftidoren, another cephalosporin [3]. Cefepime could also lead to carnitine deficiency although by a different mechanism from that of ceftidoren [4, 5]. OCTN2 is an organic cation/carnitine transporter that is expressed at high levels in the kidney. This transporter is responsible for transport of carnitine in the kidney and other tissues. Ganapathy et al. [4] studied the interaction of several β -lactam antibiotics with OCTN2 using an experimental model. They found that, among other antibiotics, cefepime inhibited

OCTN2-mediated carnitine transport and it would probably result in increased urinary loss of carnitine. We think that it would be of interest to measure serum carnitine levels in patients with cefepime-induced encephalopathy to know whether carnitine deficiency is present.

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