

[ LETTERS TO THE EDITOR ]

**Author's Reply: Why Did the Patient Not Show Any Neurological Symptoms on the Day of the Higher Serum Concentration of Ceftriaxone?**

**Key words:** blood-brain barrier, cerebrospinal fluid, albumin, dialysis

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*The Authors Reply* Thank you for your letter regarding our case report (1). In end-stage kidney disease patients, the prolonged half-life of ceftriaxone can reportedly increase the concentration of the drug in plasma. In general, the protein-unbound free fraction of drugs can freely penetrate the blood-brain/blood-cerebrospinal fluid (CSF) barrier. As for ceftriaxone, about 90% to 95% of the drug is protein-bound, so it rarely penetrates the blood-CSF barrier (2); in addition, the elimination of ceftriaxone in CSF is considerably slower than that in serum (3). A previous report suggested that the accumulation of cephalosporins in the central nervous system might lead to the development of neurological manifestations (4).

In our case, the proportion of protein-unbound ceftriaxone might have been high due to the low albumin level and renal dysfunction. Therefore, the penetration of the drug into the blood-CSF barrier was relatively high; however, the drug

removal rate from plasma by dialysis may also have been high. In such a situation, it might take a while for the drug to accumulate in the CSF. We concluded that this might explain why our patient did not show any neurological symptoms despite her elevated plasma concentration of the drug, and with neurological symptoms manifesting only later.

**The authors state that they have no Conflict of Interest (COI).**

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**References**

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