

Title: *Creatinine-Cystatin C Discordance in Hematopoietic Stem Cell Transplant Recipients with Neurotoxicity: A Case Series*

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BACKGROUND: Accurate assessment of kidney function is essential for dosing renally-cleared medications. Patients with cancer often have sarcopenia and reduced muscle mass; thus, estimated glomerular filtration rate (eGFR) based on serum creatinine (eGFR_{Cr}) may overestimate renal clearance compared to cystatin C-based estimates (eGFR_{cys}). Impaired kidney function may lead to accumulation of renally-cleared medications. We evaluated patients who underwent allogeneic hematopoietic stem cell transplantation (HSCT) to determine whether eGFR discordance contributes to medication-related neurotoxicity.

METHODS AND CASE DESCRIPTIONS: We retrospectively reviewed clinical and radiographic data from patients who underwent HSCT between January 2024 and March 2026 at two major academic centers. Of 166 patients with eGFR discordance, defined as eGFR_{cys} $\geq$ 30% lower than eGFR_{Cr}, 3 developed medication-related neurotoxicity, as adjudicated by treating physicians. The first was a 62-year-old male with acute myeloid leukemia (baseline eGFR_{Cr} 18 mL/min/1.73m², eGFR_{cys} 9 mL/min/1.73m²) who developed severe leukoencephalopathy following fludarabine and thiotepa conditioning, resulting in a comatose state and irreversible neurologic damage. MRI showed extensive periventricular FLAIR hyperintensities and DWI restriction (Figure 1). The second was a 74-year-old male with chronic myelomonocytic leukemia (baseline eGFR_{Cr} 80 mL/min/1.73m², eGFR_{cys} 37 mL/min/1.73m²) who developed visual hallucinations after receiving cefepime, which resolved with discontinuation of the offending agent. Head CT and cerebrospinal fluid (CSF) analysis were not performed. The third was a 69-year-old female with myelofibrosis (baseline eGFR_{Cr} 75 mL/min/1.73m², eGFR_{cys} 36 mL/min/1.73m²) who developed confusion and bilateral upper extremity myoclonus following treatment with cefepime. EEG showed mild-moderate encephalopathy with no epileptiform abnormalities. Her symptoms resolved with discontinuation of cefepime; thus, head CT and CSF analysis were not performed.

CONCLUSION: Neurological symptoms in patients with discordant eGFR values should prompt careful evaluation of renally cleared medications as potential contributors to neurotoxicity. Additional studies are needed to determine whether eGFR discordance can inform dosing strategies for renally-cleared neurotoxic medications.

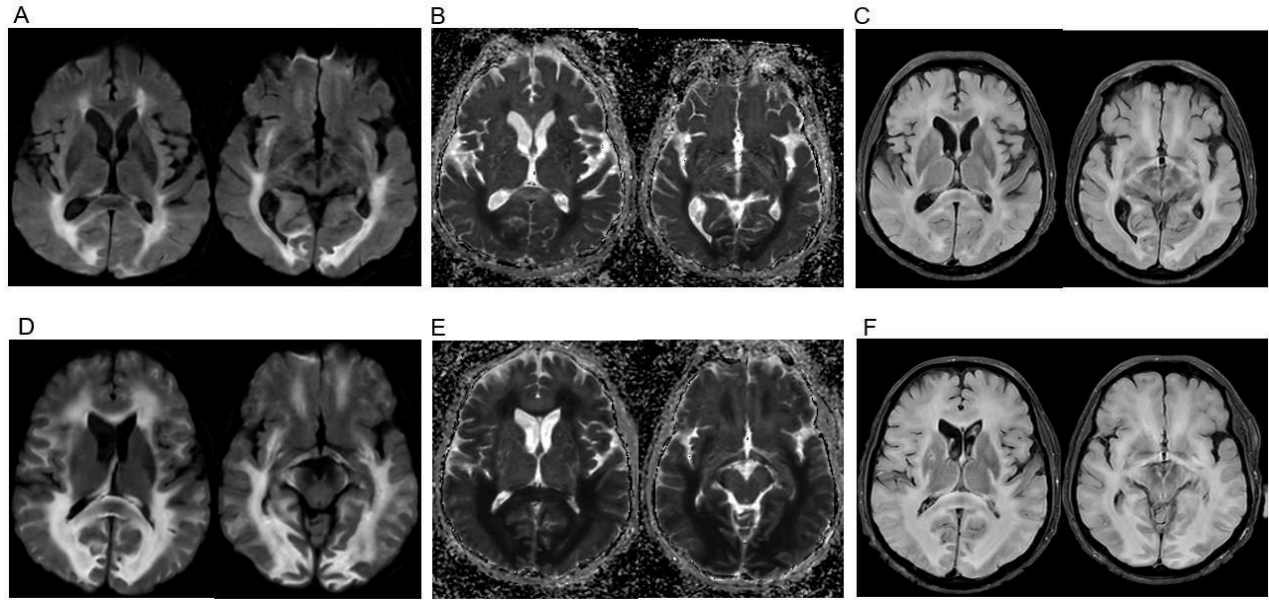


Figure 1. Axial MRI imaging from a 62-year-old male with leukoencephalopathy. (A-C) MRI images taken 20 days after HSCT showed (A) symmetrical restricted diffusion in the periventricular white matter on diffusion weighted imaging, (B) corresponding decreased signal on apparent diffusion coefficient imaging, and (C) diffuse FLAIR hyperintensities. (D-F) MRI images taken 29 days after HSCT showed (D) worsening restricted diffusion on diffusion weighted imaging, (E) decreased signal on apparent diffusion coefficient imaging, and (F) increased FLAIR hyperintensities.