

Nonconvulsive status epilepticus triggered by hemodialysis in an epileptic patient

Lucio Marinelli, Daniela Audenino, Alberto Primavera

Lucio Marinelli: postdoc, Department of Neurosciences, Ophthalmology and genetics, section of neurology, University of Genova

Daniela Audenino: neurologist, E.O. "Ospedali Galliera", Genova

Alberto Primavera: associate professor, Department of Neurosciences, Ophthalmology and genetics, section of neurology, University of Genova

Corresponding author:

Lucio Marinelli, Clinica Neurologica, Università di Genova, via De Toni 5, 16132 Genova, Italy; tel +390103537040, fax +390103538631, lucio.marinelli@unige.it

Short title: NCSE and hemodialysis

Word count: 219

This is the peer reviewed version of the following article: "Marinelli L, Audenino D, Primavera A. Non-convulsive status epilepticus triggered by haemodialysis in an epileptic patient. Intern Med J. 2010 Mar;40(3):235-6", which has been published in final form at doi: 10.1111/j.1445-5994.2010.02177.x. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Self-Archiving.

A 65 year-old man with a history of convulsive generalized epilepsy since childhood was taking phenobarbital (PB) 150mg/day (average blood levels: 18.2mg/l, effective levels: 15-40mg/l). Seizure control was good. He started haemodialysis for chronic renal failure. After a haemodialysis session (HS) (DAY_1), the patient became slowed, confused and irritable. Mini-mental state examination (MMSE) score was 10/30 and an electroencephalogram (EEG) showed a continuous generalized spike, polyspike and slow-wave pattern, suggestive of nonconvulsive status epilepticus (NCSE). PB blood level was 12.5mg/l. Diazepam, 5mg, was given intravenously. A computed tomographic scan of the brain was normal. The next day (DAY_2) the patient improved: MMSE score was 27/30, the EEG showed occasional paroxysmal activity, PB level was 15.5mg/l. On DAY_3, the EEG was normal, PB level was 17.8mg/l and the patient was asymptomatic. On this basis the patient started taking an extra 50mg of PB before each HS. No more epileptic seizures or NCSE appeared during subsequent haemodialyses.

During haemodialysis, water-soluble and low-protein-bound molecules with small distribution volume are easily removed¹. PB is a readily dialyzable antiepileptic and does not prevent haemodialysis-associated seizures². NCSE is an underestimated but treatable cause of impaired consciousness and may occur during dialysis^{3,4}. This case underlines that patients undergoing dialysis while taking dialyzable anti-epileptic drugs may have NCSE with altered mental status as the only clinical feature.

References

- 1 Lacerda G, Krummel T, Sabourdy C, Ryvlin P, Hirsch E. Optimizing therapy of seizures in patients with renal or hepatic dysfunction. *Neurology* 2006; 67: S28-33.
- 2 Sönmez F, Mir S, Tütüncüoğlu S. Potential prophylactic use of benzodiazepines for hemodialysis-associated seizures. *Pediatr Nephrol* 2000; 14: 367-9.
- 3 Scorza FA, Albuquerque MD, Arida RM, Cysneiros RM, Henriques TMG, Scorza CA, et al. Seizure occurrence in patients with chronic renal insufficiency in regular hemodialysis program. *Arq Neuropsiquiatr* 2005; 63: 757-60.
- 4 Tanimu DZ, Obeid T, Awada A, Huraib S, Iqbal A. Absence status: an overlooked cause of acute confusion in hemodialysis patients. *J Nephrol* 1998; 11: 146-7.

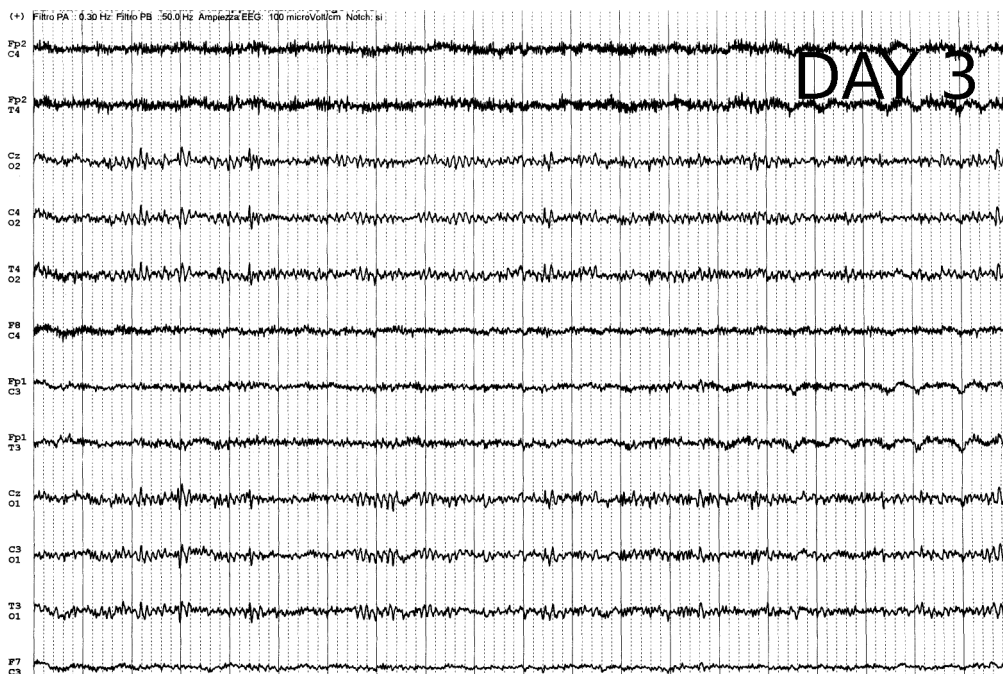
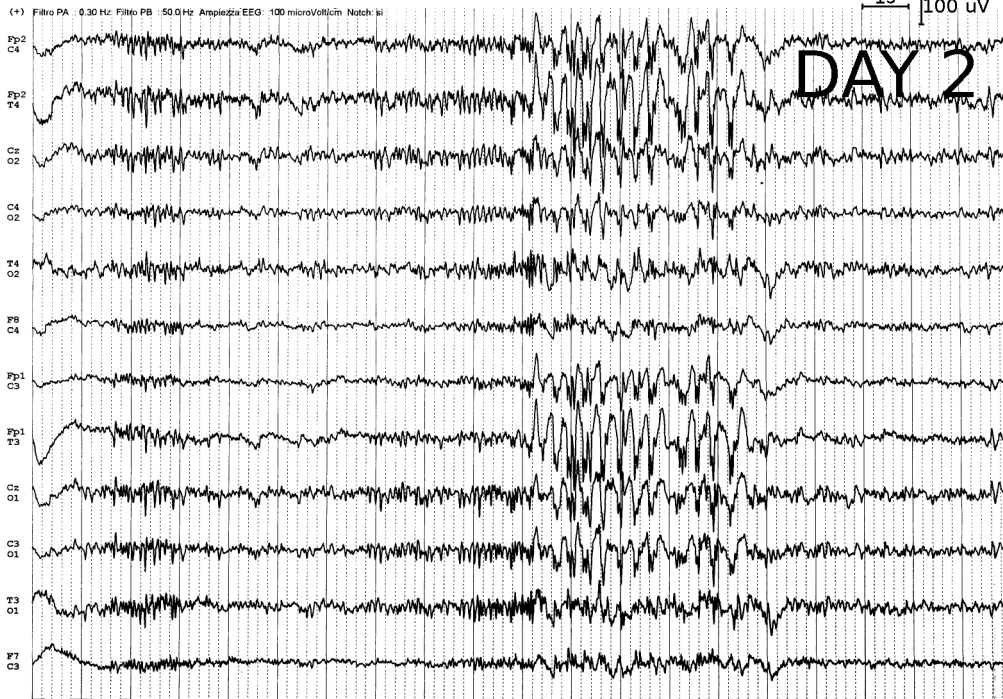
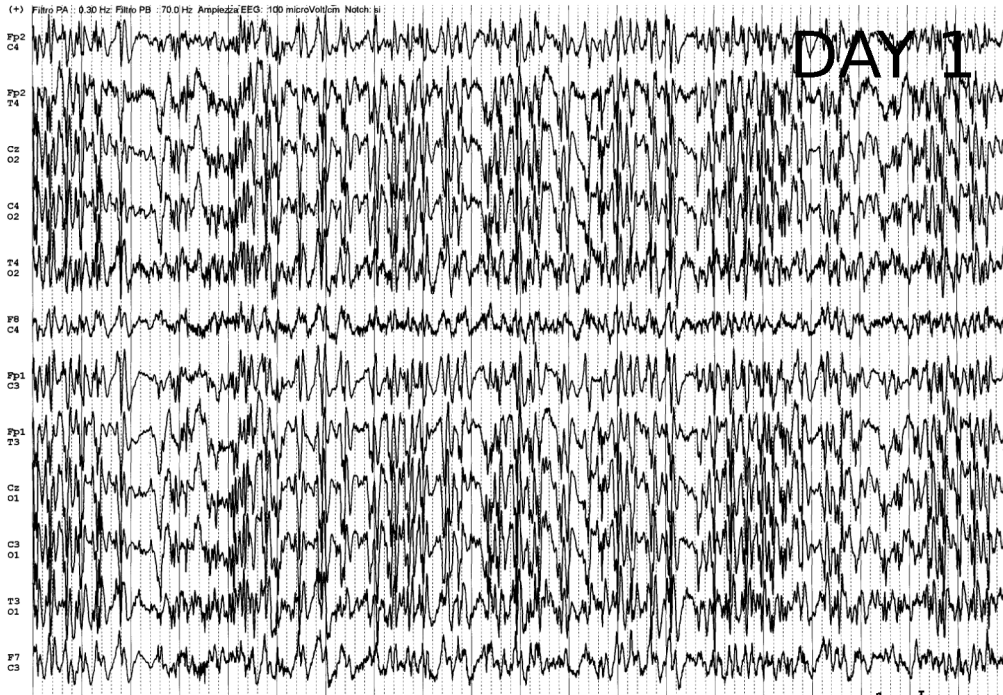


Figure legend

EEG recording showing paroxysmal activity after hemodialysis (DAY_1) which decreased as phenobarbital blood levels returned within normal range (DAY_2 and DAY_3). See text for phenobarbital blood levels and mini-mental status examination values.