

Chronic kidney disease

In neurosurgery

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Traumatic brain injury (TBI) is a highly prevalent neurological disorder that affects a gradually increasing proportion of older adults. Chronic kidney disease (CKD) significantly contributes to global years of life lost, with an estimated one-tenth of the global population affected by CKD. TBI patients comorbid with CKD have a poorer prognosis than those with normal kidney function ¹⁾.

The diagnosis of [Cushing's disease](#) (CD) is particularly challenging in patients with chronic kidney disease (CKD), due to abnormalities of the hypothalamo-pituitary-adrenal axis associated with the latter.

A case report presented discrepant biochemical findings in a patient with CKD who was subsequently diagnosed with CD, and outlines principles which may guide the definitive diagnosis of CD in this context.

The case of a patient with Stage 4 CKD who underwent [transsphenoidal](#) surgery for pituitary-dependent CD is presented. A literature review was conducted to identify similar cases and characterise features of hypothalamo-pituitary-adrenal axis dysfunction in CKD.

The patient discussed herein presented with markedly elevated plasma adrenocorticotrophic hormone (ACTH) due to a [pituitary macroadenoma](#), with normal 24-hour [urinary free cortisol](#) (24-UFC) but abnormal overnight [dexamethasone suppression testing](#) and elevated [midnight salivary cortisol](#). He experienced biochemical remission after undergoing transsphenoidal adenomectomy. A literature review revealed that CKD can be associated with elevated serum cortisol, reduced UFC and elevated plasma ACTH. Only four other cases of CD being diagnosed in a patient with CKD have been published. The loss of a circadian rhythm of cortisol secretion was the most common feature amongst

all cases.

To establish a definitive [Pituitary corticotroph adenoma diagnosis](#) in the context of pre-existing [chronic kidney disease](#), the absence of circadian rhythms of [cortisol](#) and [ACTH](#) is a more sensitive indicator than 24-hour [urinary free cortisol](#) (24-UFC) and low-dose [dexamethasone suppression test](#) ²⁾.

¹⁾

Mo H, Fan F, Liu J, Zhang W, Wang Q, Yuan X. Chronic kidney disease as a predictive factor for poor prognosis in traumatic brain injury among older adults: a case-control study. *Front Neurol*. 2023 Nov 30;14:1286592. doi: 10.3389/fneur.2023.1286592. PMID: 38099070; PMCID: PMC10720628.

²⁾

Stroud A, Zhang J, McCormack AI. Diagnosing Cushing's disease in the context of chronic kidney disease: A case report and literature review. *Eur J Endocrinol*. 2019 Aug 1. pii: EJE-19-0326.R2. doi: 10.1530/EJE-19-0326. [Epub ahead of print] PubMed PMID: 31382242.

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