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Characterising Rates of Renal Dysfunction and Sarcoidosis in Patients with Elevated Serum Angiotensin-Converting Enzyme

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Abstract : Background: Sarcoidosis is a systemic, non-infectious disease of unknown aetiology, characterized by non-caseating granulomatous inflammation. The lung is most often affected (90%); however, the condition can affect all organs, including the kidneys. There is limited evidence describing the incidence and characteristics of renal involvement in sarcoidosis. Serum angiotensin-converting enzyme (ACE) is a recognised biomarker used in the diagnosis and monitoring of sarcoidosis. Methods: A single-centre, retrospective cohort study of patients presenting to Cork University Hospital (CUH) in 2015 with first-time elevations of serum ACE was performed. This included an initial database review of ACE and other biochemistry results, followed by a medical chart review to confirm the presence or absence of sarcoidosis and management thereof. Acute kidney injury (AKI) was staged using the AKIN criteria, and chronic kidney disease (CKD) was staged using the KDIGO criteria. Follow-up was assessed over five years tracking serum creatinine, serum calcium, and estimated glomerular filtration rates (eGFR). Results: 119 patients were identified as having a first raised serum ACE in 2015. Seventy-nine male patients and forty female patients were identified. The mean age of patients identified was 47 years old. 11% had CKD at baseline. 18% developed an AKI at least once within the next five years. A further 6% developed CKD during this time period. 13% developed hypercalcemia. The patients within the lowest quartile of serums ACE had an incidence of sarcoidosis of 5%. None of this group developed hypercalcemia, 23% developed AKI, and 7% developed CKD. Of the patients with a serum ACE in the highest quartile, almost all had documented diagnoses of sarcoidosis with an incidence of 96%. 3% of this group developed hypercalcemia, 13% AKI and 3% developed CKD. Conclusions: There was an unexpectedly high incidence of AKI in patients who had a raised serum ACE. Not all patients with a raised serum ACE had a confirmed diagnosis of sarcoidosis. There does not appear to be a relationship between increased serum ACE levels and increased incidence of hypercalcaemia, AKI, and CKD. Ideally, all patients should have biopsy-proven sarcoidosis. This is an initial study that should be replicated with larger numbers and including multiple centres.

Keywords : sarcoidosis, acute kidney injury, chronic kidney disease, hypercalcemia
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