

SPECTRUM OF MOVEMENT DISORDER IN CHRONIC KIDNEY DISEASE WITH SPECIAL REFERENCE TO PARKINSONS DISEASE

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OBJECTIVES

1. To study the spectrum of movement disorder in chronic kidney disease patients.
2. To study the clinical and laboratory parameter of various movement disorder.
3. To correlate the severity of parkinsonism according to modified UPDRS score with estimated glomerular filtration rate.
4. To compare features of parkinsonism in CKD patients with those of idiopathic Parkinson disease

RESULTS

- Male (64%) to female (32%) percentage.
- Various movement disorder found : myoclonus(40%), parkinsonism (50%) , rest tremor(8%), bradykinesia (50%), restless leg syndrome(10%), postural tremor(8%).
- The severity of parkinsonism and eGFR showed negative correlation. P value 0.3 weak correlation.
- Clinical comparison between idiopathic Parkinson disease and CKD patients with parkinsonism showed rest tremor (p value <0.006) being less prevalent, with pyramidal features (p<0.001), gait abnormality(p<0.006) more prevalent.
- Comorbidity like diabetes (p<0.04) more common in CKD parkinsonism patients.
- Imaging study showed white matter hyperintensity (p<0.001) more common in CKD
- CKD patients were less responsive to levodopa(p<0.001).

METHODS

- **STUDY POPULATION**
 - Chronic Kidney Disease patients visiting Department of Nephrology, Department of Neurology, and Department of General Medicine were studied.
- **STUDY TYPE**
 - This was a prospective cross-sectional observation study.
- **STUDY TIME**
 - We conducted this study from December 2014-December 2016.
- **SAMPLE SIZE**
 - 50 patients with chronic kidney disease and movement disorder were included in this study. 15 patients of Parkinson disease were also taken for comparison.
- **ETHICAL APPROVAL**
 - This study was approved by the Ethics Committee of Nil Ratan Sircar Hospital and throughout the study medical confidentiality was kept.
- **CRITERIA OF STUDY**
 - **INCLUSION CRITERIA**
 - Chronic Kidney Disease patients having eGFR<60 ml/min/1.73m² for >3 months irrespective of aetiology and status of renal replacement therapy.
 - **EXCLUSION CRITERIA**
 - Subject having movement disorder before the diagnosis of chronic kidney disease.
 - Subjects on antipsychotic drugs were excluded from study.
- **STUDY DESIGN**
 - Patients fitting the inclusion criteria, were included in the study and informed written consent (Appendix 1) were obtained. CKD patients were sub classified based on their eGFR, which was estimated using MDRD equation²⁰. As per exclusion criteria we removed the patients. All patients were taking their routine medication prescribed for CKD which include calcium containing phosphate binders, vitamin B complex, oral or intravenous iron supplementation and erythropoietin alpha/beta.
 - Detailed history, general examination and neurological examination were performed in all patients before electrophysiological examinations. Special attention was given to extrapyramidal examination. Parkinsonism was diagnosed based on presence of 2 of the following 4 rest tremor, rigidity, bradykinesia, loss of postural reflex. Severity was assessed based on UPDRS score. Levodopa response was assessed after 3 month based on UPDRS score. RLS diagnosis was based on the International Restless Legs Syndrome Study Group (IRLSSG) criteria. Routine blood parameter of all patients including urea (mg/dl), creatinine (mg/dl), Hemoglobin (g/dl), serum calcium(mg/dl), serum phosphorus levels(mg/dl), serum sodium(meq/L), serum potassium(meq/L), and serum glucose(mg/dl) were measured.
 - Magnetic resonance imaging was performed on a 1.5- Tesla supra conducting magnet using T2-weighted (TR/TE 2000 to 2500/30 to 60 milliseconds) sequences in the transverse orientation. T1-weighted images (TR/TE 600/30 milliseconds) were generated in the sagittal plane. The scans were evaluated for white matter hyper intensity WMH ,atrophy, hydrocephalus. Punctate and confluent hyper intensity in periventricular and subcortical region were considered.
- **Statistical Analysis:**
 - For statistical analysis data were entered into a Microsoft excel spreadsheet and then analyzed by SPSS 20.0.1 and Graph Pad Prism version 5.

CONCLUSIONS

- The spectrum of movement disorder seen in patients with chronic kidney disease is quite varied. It spans from cortical disorder like myoclonus to basal ganglia disorder like parkinsonism.
- The severity of parkinsonism have no correlation with eGFR.
- Pyramidal sign and gait problem were more common in CKD patient with parkinsonism and rest tremor is less common.
- Comorbidity like hypertension and diabetes mellitus are more common in parkinsonism patients with CKD than those without.
- Imaging abnormality is more common in CKD patients. White matter hyper-intensity being most common.
- CKD patients are also less responsive to levodopa therapy.

