

The prevalence and potential aetiological factors associated with restless legs syndrome in patients with chronic kidney disease

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Background and Aims

Restless leg syndrome (RLS) is strongly associated with chronic kidney disease (CKD). It is defined as abnormal movement of limbs, associated with periods of inactivity and occurring in circadian fashion. RLS affects nearly a quarter of the CKD population negatively impacting quality of life and sleep quality. Despite being common there remains a poor understanding of both causative factors in RLS and treatment options. Low iron levels, high body mass index, calcium levels, serum phosphate, C-reactive protein, low haemoglobin levels and vitamin D have been found to be of significance in RLS. Other predictors include duration of dialysis, smoking, presence of diabetes mellitus and hypertension.

This study aimed to estimate the prevalence of RLS in a local population of CKD patients and identify possible factors that may contribute to RLS.

Methods

Patients who met study criteria were recruited from the local dialysis units and renal clinics. The International RLS Study Group rating scale and criteria were used to diagnose and assess if patients suffered from RLS and its severity. Laboratory data, demographic data and co-morbidities were recorded, and potential associations examined. Data was analysed using independent sample t-testing, Mann-Whitney U test and Chi-squared test. P value for significance was set as 0.05.

Results

A total of 212 patients with CKD 4 (92); CKD 5 (14) or on dialysis (106) were examined. Prevalence of RLS was lowest in CKD4 (27.2%) followed by CKD5 (28.6%) and highest in dialysis patients (33.6%).

In those with CKD non dialysis female gender was a significant predictor of RLS ($p < 0.005$). The presence of CVD was protective against RLS ($p = 0.044$). RLS correlated with high ferritin concentrations and low eosinophil counts. Mean eosinophil count was 0.240 (95% CI 0.198-0.282) in non-RLS and 0.095 (95% CI 0.054-0.136) in RLS group with $p < 0.01$. Mean Ferritin was 177.45 (95%CI 129.19-225.72) in non-RLS and 323.89 (95%CI 155.78-492.00) in RLS group with $p = 0.015$.

In the dialysis group prevalence of RLS was again higher in females with 23 (47.9%) being affected compared to 18 (28.6%) of males but failed to reach statistical significance ($p = 0.056$). In the dialysis population mean neutrophil count was 4.65 (95%CI 4.23-5.07) in non-RLS population and 6.35 (95% CI 5.06-7.65) in RLS population ($p = 0.03$).

Discussion

Rates of RLS in the studied population were 3-8% higher compared to results in a previous systematic review. The difference may be due to bias in taking part in the study. Female gender and paradoxically raised ferritin (potentially related to inflammation) were significantly associated with RLS. Eosinophil counts were also lower in the CKD population with RLS while neutrophils were elevated in the Dialysis population. This may perhaps reflect an underlying inflammatory process rather than allergic process.

Conclusion

The study has demonstrated that RLS remains a significant patient reported outcome in patients with CKD and may be related to underlying inflammation. Targeting this pathway may be useful.