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# Level of Proteinuria Before and After Spironolactone in combination with Angiotensin-Converting Enzyme-Inhibitors or Angiotensin II Receptor Blockers in Filipinos with Chronic Kidney Disease: A Retrospective Cohort Study

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**Objectives :** In the Philippines, prevalence of chronic kidney disease (CKD) has been increasing due to comorbidities such as diabetes mellitus and hypertension. Proteinuria has been associated with progression of chronic kidney disease and its reduction shows benefit or renoprotective effects to CKD patients. Standard treatments to block the renin angiotensin aldosterone system (RAAS) such as angiotensin-converting enzyme inhibitors (ACE-i) or angiotensin II receptor blockers (ARBs) are not enough to halt or slow the progression due to the aldosterone breakthrough. Hence, the study was done to determine the effects of spironolactone, a mineralocorticoid receptor antagonist (MRA), in combination with angiotensin-converting enzyme inhibitors (ACE-i) or angiotensin II receptor blockers (ARBs), on the renal function profile of Filipino patients diagnosed with chronic kidney disease.
**Methods :** The study was a non-interventional, retrospective or historical cohort investigation using clinical data from chart review of patients from July 2020 to July 2023 in outpatient clinics. Laboratory results were obtained through electronic medical records (EMR) and were compared in patients who used spironolactone (n=49).
**Results :** In a population of 49 chronic kidney disease patients on spironolactone dosed at 12.5mg to 50mg per day, random urine protein creatinine ratio decreased from 2.53 ± 2.3 at baseline to 1.78 ± 1.6 with a p value of 0.005 (p= 0.005). The serum creatinine, estimated glomerular filtration rate, and serum sodium showed no statistical significance. Potassium showed statistical significance but has clinically insignificant results.
**Conclusions :** Reduction of proteinuria by blocking aldosterone breakthrough using mineralocorticoid receptor antagonists such as spironolactone, plays an important part in slowing the progression of CKD. In the Philippines, the use of spironolactone as well as monitoring of proteinuria by RUPCR has not been a common practice. Therefore, further studies are needed to transform the standard of care in treating blood pressure and cardiovascular disease in ESRD.

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| Characteristics | Frequency N = 49 n | Percentage |
|---|---|---|
| **Sex** | | |
| Male | 30 | 61.2% |
| Female | 19 | 38.8% |
| **Comorbidities** | | |
| Hypertension | 49 | 100% |
| Diabetes | 39 | 79.6% |
| HF/CAD | 7 | 14.3% |
| COPD | 2 | 4.1% |
| Cancer | 1 | 2.0% |
| SLE | 1 | 2.0% |
| Hep B | 1 | 2.0% |
| | **Median** | **Minimum-Maximum** |
| **Age** | 67 | 30 - 79 |

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| Clinical Variables | Median, Range (minimum, maximum) | | Z | P |
|---|---|---|---|---|
| | Baseline | Spironolactone | | |
| **RUPCr** (mg/mg) | 1.89 (0.33-12.70) | 1.29 (0.13-7.10) | -5.148 | <0.001 |
| **Creatinine** (μmol/L) | 1.79 (1.14-4.23) | 1.76 (1.05-4.84) | -0.344 | 0.731 |
| **eGFR** (mL/min/1.73m$^2$) | 36 (15-65) | 37 (15-77) | -0.728 | 0.467 |
| **Serum sodium** (mmol/L) | 140 (132-149) | 142 (134-148) | -1.452 | 0.146 |
| **Serum potassium** (mmol/L) | 4.2 (2.50-5.00) | 4.4 (3.60-6.10) | -3.290 | 0.001 |

| Adverse Effects | Frequency (N = 49) | Percentage |
|---|---|---|
| Hyperkalemia | 7 | 14.3 |
| Hypotension | 2 | 4.1 |
| Gynecomastia | 1 | 2.0 |
| None | 39 | 79.6 |