

# Severe hyperkalemia and unmasking of renal disease following adrenalectomy for aldosteronoma.



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## Background

Severe hyperkalemia post adrenalectomy is documented in the literature but not actively sought after in high risk post operative patients.

## Case Report

51 year old woman with a 12 year history of hypertension and hypokalemia. Her BP was controlled with amlodipine 10 mg OD. Serum aldosterone was 2832 pmol/l with undetectable renin activity leading to aldosterone to renin ratio (ARR) greater than 28000 pmol/l/ng/ml/h. Creatinine was 75 umol/l with eGFR of 85ml/min. CT showed a 3.5 cm low density left adrenal mass and adrenal vein sampling confirmed left lateralization. She underwent left adrenalectomy. At the time of discharge serum creatinine was 71umol/l, with potassium of 3.8 and eGFR of 85 mL/min. Her serum aldosterone was less than 70 pmol/l and renin activity of 0.36 ng/ml/h yielding ARR less than 194. She was readmitted after 3 months with potassium of 6.7 and serum creatinine of 154. She was started on fludrocortisone and her creatinine dropped to 123 with improvement in potassium of 5.2. At the higher fludrocortisone dose she became normokalemic and her serum creatinine decreased to 134 umol/l. One month later, her serum potassium continued to be 4.8 mmol/l and serum creatinine 112 umol/l and so a dose reduction in fludrocortisone was attempted but at 0.1 mg per day, her potassium promptly rose to 5.6 mmol/l with creatinine 140 umol/l. The fludrocortisone dose was increased again with similar normalization of potassium and drop in serum creatinine but her resultant blood pressures rose to 160/100. Another attempt was made to decrease the fludrocortisone to 0.1 mg daily her serum potassium was again found to be 6.4 mmol/l with creatinine 152 umol/l. This was transiently treated with higher dose fludrocortisone but the patient felt unwell on the medication, complaining of abdominal pain and so the drug was stopped in favour of furosemide 20 mg daily. Off of the fludrocortisone, her blood pressures were 135/88 but there was resultant hyponatremia, mild hyperkalemia and a sharp rise in serum creatinine to 188 umol/l and so the furosemide was stopped in favour of a return to fludrocortisone once more. Again, her potassium normalized to 4.5 mmol/l with drop in serum creatinine to 127 umol/l. The patient started on sodium bicarbonate 650 mg tid with cessation of fludrocortisone. During the last eight months of such therapy, her blood pressures have been normal (122/88), potassium levels have been near-normal (5.2 mmol/l) with stable renal function (creatinine 160 umol/l, eGFR 31 ml/min)

## Risk Factors predicting post-op hyperkalemia.

### 1. Older age

### 2. Longer duration of Hypertension

### 3. Impaired pre op GFR

### 4. Impaired post op GFR

### 5. Higher Pre op Aldosterone level

## Discussion

While overt pre-existing renal impairment may be a strong factor in predicting post-operative hyperkalemia. Evidence suggests that PA itself may induce a hyperfiltration injury that may mask renal impairment until the operative reversal of the phenomenon.

## Conclusion

Hyperkalemia screening should be actively considered in high risk patients. Older age (>53), longer duration of hypertension (> 10 years), impaired pre-op (< 58ml/min) and post-op GFR and higher levels of pre-op aldosterone and are all known risk factors. The long term cure of primary hyperaldosteronism and hypertension is expected to yield renal benefits but development of irreversible post adrenalectomy renal impairment after a long duration of hypertension may argue for earlier consideration of a PA diagnosis in hypertensive populations.

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