

A Young Person With Recurrent Severe Hypokalaemia - Familial, Iatrogenic Or Just Unknown?

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CASE REPORT

A 26-year-old female presented with 5-year history of episodic muscle weakness, abdominal cramps and facial paraesthesia. She had 2 hospital admissions elsewhere within 6 months with severe hypokalaemia (1.9mmol/L). She was started on Lamotrigine for epilepsy 7 years ago and changed to Levetiracetam in October 2010 following further seizures. She is now seizure-free for over 5 years. Her potassium levels before and after Levetiracetam are shown in Table 1.

She had an uneventful childhood. She had no osmotic or urinary symptoms, denied diuretic, laxative, excessive alcohol/liquorice ingestion. No relevant family history. Her body mass index is 22.3, blood pressure 103/55mmHg. Physical examination was unremarkable. Biochemical evaluation is as shown in Table 2. Her genetic screen is awaited.

Dates	Potassium (3.5-5.3mmol/L)
18/04/2008	3.9
04/10/2010	4.3
30/10/2010	3.5
30/07/2011	2.8

Table 1.

Serum	Results
Sodium	135mmol/L (133-146)
Potassium	2.8mmol/L (3.5-5.3)
Chloride	91mmol/L (95-108)
Bicarbonate	38mmol/L (22-30)
Magnesium	0.76mmol/L (0.70-1.0)
Aldosterone	130pmol/L
Renin	238mU/L (9.8-33.7)
Aldosterone/renin ratio	0.5pmol/mU (0-70)
Urine Analysis	Results
Sodium	170mmol/L
Potassium	82mmol/L
Chloride	21mmol/L
Diuretic & Laxative screen	Negative

Table 2.

DISCUSSION

In this case with normotensive hypokalemic alkalosis, differential diagnoses are Bartter syndrome (negative family history, normal aldosterone), Gitelman syndrome (no family history, normal magnesium), diuretic use (negative urine screen), laxative abuse (history), normotensive primary hyperaldosteronism (normal aldosterone).

Given the sequence of results, most likely cause of severe hypokalaemia is Levetiracetam. She declined temporary withdrawal of Levetiracetam due to risk of seizure recurrence affecting driving and job. She remains on spironolactone and potassium supplements.

Our literature search yielded only two case-reports [1, 2] of Levetiracetam-induced hypokalaemia involving 3 patients all of whom had additional hypomagnesaemia.

CONCLUSIONS

To our knowledge, this is the only report of Levetiracetam-induced severe life-threatening isolated hypokalaemia. Levetiracetam is increasingly used for epilepsy and further studies on the prevalence of life threatening electrolyte imbalance are required to guide biochemical surveillance.

REFERENCES

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2. Aksoy D, Cevik B, Kurt S, Pekdas E, Solmaz V. Hypokalemia and hypomagnesaemia related to levetiracetam use. *J Clin Neurosci.* 2014 Nov;21(11):1989-90.