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THYROTOXIC PERIODIC PARALYSIS AS A RARE CAUSE OF ACUTE PARAPLEGIA: A CASE REPORT

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BACKGROUND

•**Thyrotoxic periodic paralysis** (TPP) is a **rare** condition characterized by recurrent episodes of **acute flaccid paralysis** and **hypokalaemia** in a clinical context of **hyperthyroidism**.
•Although most commonly found in **Asian males**, it has been anecdotally observed in other ethnic groups such as Hispanics, African-americans or Caucasians.

CASE REPORT

▪A 40-year-old **Hispanic man** came to our attention for **sudden onset of lower limbs weakness**.
▪His past medical history was uneventful, except for **diarrhoea** in the previous two weeks.
▪Neurological examination disclosed **lower limbs hypostenia** (strenght 1/5) and **hypotonia**, global **areflexia** and very subtle **tremors** in both hands.
▪General examination revealed a **nodular goiter**.

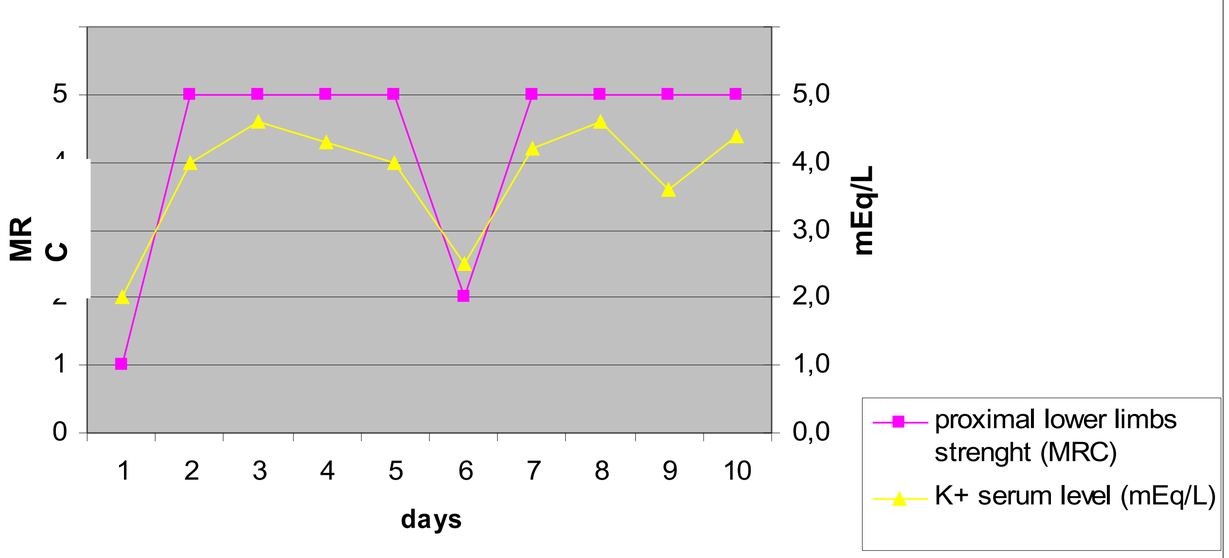

Fig.1 – Relationship between serum K+ levels and lower limbs strenght

DIAGNOSTIC TESTS

▪As Guillain-Barré syndrome was firstly suspected, a **CSF examination** was performed, resulting within normal limits.
▪Laboratory data revealed **severe hypokalaemia** (potassium level 2.0 mEq/L).
▪Further investigations showed **raised fT4** (4.56 ng/dL, reference range 0.60-1.50) **and fT3** (24.5 pg/mL, reference range 2.0-4.0).
▪**TSH was suppressed** (0.01 mcU/mL, normal range 0.35-4.90) and search for **TSH-receptor and thyroperoxidase antibody** resulted frankly positive

TREATMENT

▪The patient was started on **intravenous potassium** supplementation and **recovered** his muscle strength within a few hours.
▪The patient was also started on Metimazole and Propranolol

CLINICAL EVOLUTION

▪Nine days after the first attack the patient **abruptly** experienced **similar complaints**.
▪Blood examination revealed **again severe hypokalaemia** (potassium level 2.4 mEq/L) which was corrected with new clinical improvement.
▪He was later followed as an outpatient and at 5 months follow-up never had any episodes of paraplegia.

TSH	0.01 mcU/mL
fT3	24.5 pg/mL
fT4	4.56 ng/dL
anti-thyroid Ab	>1000 IU/mL
anti-TG Ab	119 UI/mL
Anti-TSH receptor Ab	>40 UI/L
K+	2.0 mEq/L
Na+	139 mEq/L
Mg++	1.8 mg/dL
CPK	60 U/L

Fig.2 – Blood chemistry results

CONCLUSIONS

▪TPP is a condition characterized by **episodic self-limiting paralyses** triggered by exercise, carbohydrate meals, emotional stress or cold exposure.
▪**Lower limbs proximal** muscles are usually firstly involved; later, muscle weakness **spreads** to the whole body leading to **flaccid tetraplegia**; respiratory muscles involvement is a rare but harmful complication.
▪High thyroxine level promotes **Na+/K+ ATPase** activity, directly leading to **increased potassium cellular uptake** and consequent hypokalaemia.
▪Although generally related to **Graves' disease**, the relationship between TPP and aetiology, severity and duration of thyroid disease is **not straightforward**.
▪This case strengthens the importance of considering TPP in the **differential diagnosis of acute flaccid paralysis** even if overt clinical stigmata of hyperthyroidism are absent, since it can be promptly managed in the acute phase and later prevented with specific treatment.

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