Direct Healthcare Professional Communication

Sep. 2025

Hydrocortisone-Risk of Thyrotoxic Periodic Paralysis (TPP)

Dear Healthcare Professional,

MAH, in agreement with the General Administration for Pharmaceutical Vigilance of the Central Administration for Pharmaceutical Care at The Egyptian Drug Authority, would like to inform you of the following:

Summary:

- There is a critical interaction between **hyperthyroidism** and **hydrocortisone**, which can precipitate a **Thyrotoxic Periodic Paralysis (TPP)** attack.
- TPP must be suspected in patients treated with hydrocortisone presenting signs or symptoms of muscle weakness, especially in patients with hyperthyroidism.
- If TPP is suspected, levels of blood potassium must be immediately monitored and adequately managed to ensure the restoration of normal levels of blood potassium.
- This risk is particularly relevant in patients with undiagnosed hyperthyroidism who receive hydrocortisone for a different medical condition.

Background

Thyrotoxic Periodic Paralysis (TPP) is a serious complication of hyperthyroidism, characterized by acute, reversible episodes of muscle weakness caused by severe **hypokalemia**. The primary pathology lies in the excessive activity of the Na+/K+-ATPase pump, which, under the influence of high thyroid hormone levels and sympathetic stimulation, pumps potassium from the extracellular space into the intracellular compartment. This causes a sudden drop in serum potassium, which is the direct cause of the paralysis.

While TPP is typically triggered by factors like a high-carbohydrate meal or vigorous exercise, it can also be precipitated by certain medications. Hydrocortisone, a commonly used glucocorticoid, possesses significant mineralocorticoid activity, especially at higher doses. These mineralocorticoid effects promote sodium reabsorption and, importantly, potassium excretion in the kidneys.

When a patient with underlying hyperthyroidism receives hydrocortisone, the drug's potassium-wasting effect synergizes with the pre-existing intracellular potassium shift. This dual mechanism—renal potassium excretion and intracellular potassium sequestration—can cause a precipitous drop in serum potassium levels, pushing the patient from a state of latent hypokalemia into a full-blown TPP attack.

It is crucial for healthcare professionals to consider this potential drug-disease interaction. In any patient with suspected hyperthyroidism presenting with sudden muscle weakness, recent hydrocortisone administration should be considered a potential precipitating factor.

Thyrotoxic periodic paralysis (TPP) attacks are a result of a sudden, intracellular shift of potassium, which leads to hypokalemia. This shift can be directly triggered by dietary and medicinal factors.

There will be label update to all systemic formulations of Hydrocortisone except:

• Products indicated in adrenal insufficiency in a modified release tablet formulation.

• Products indicated for adrenal insufficiency, pediatric use only.

Reference

Aemps-Spain:

https://www.aemps.gob.es/informa/boletin-sobre-seguridad-de-medicamentos-de-uso-humano-abril-de-2025/

EMA:

https://www.ema.europa.eu/en/documents/minutes/minutes-prac-meeting-07-10-april-2025_en.pdf

Pubmed:

https://pmc.ncbi.nlm.nih.gov/articles/PMC3358768/#:~:text=Muscle%20weakness%20progressing%20to%20paralysis,1

Call for reporting

Healthcare professionals are asked to report any suspected adverse reactions via the Egyptian reporting system:

Name: General Administration for Pharmaceutical Vigilance

Email: pv.followup@edaegypt.gov.eg

Online reporting: : https://vigiflow-eforms.who-umc.org/eg/med

QR Code:

Hotline: 15301