

**REVIEWS**

Assessment of the clinical effectiveness and safety of immune-checkpoint inhibitors for glioblastoma: A systematic review

Alina-Cristina Cioba, Emilian Mărușter

ORIGINAL ARTICLES

The benefits of add-on therapy of vitamin D to quality of life in diabetic neuropathic patients: a randomized controlled trial

Emilia-Cristina Ștefănescu,
Rodica-Tatiana Popescu,
Lucia Anca Pătrușcă

CASE REPORTS

Congenital Myasthenic Syndrome: case study from a tertiary care institute of Bucharest, India

Popescu Alina-Cristina,
Rădulescu Ștefănescu Rodica,
Bădușcă Rodica,
Tănăsescu Tatiana-Emilia

Hydroxyprolinuria as etiological cause factor for Guillain-Barré Syndrome and chronic inflammatory demyelinating polyneuropathy – a case report and insights on pathophysiology

Trandafir-Cristina, Trandafir Gabriel, Scutaru Florina,
Sapota Sorinel, Cristea Sorinel,
Rădulescu Ștefănescu Rodica



11639084.000000



AMALTEA

Medical Publishing House



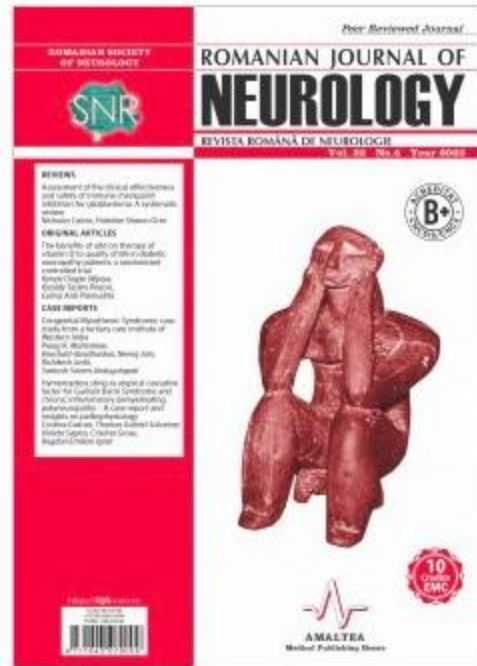
ROMANIAN JOURNAL OF NEUROLOGY



AIMS & SCOPE STANDARDS EDITORIAL COUNCIL PEER REVIEW COUNCIL EMC | CME HOW TO SUBSCRIBE

SELECT ISSUE

RJN Vol. 22, No. 4, Year 2023



ISSN 1843-8148 | e-ISSN 2069-6094
ISSN-L 1843-8148
DOI: 10.37897/RJN

CONTENTS

Volume 22, No. 4, 2023

Current Issue – online first

REVIEWS

Assessment of the clinical effectiveness and safety of immune checkpoint inhibitors for glioblastoma: A systematic review
Nicholas Calvin, Fridoline Sharon Octo
[full article] – Ref: Ro | Neurol. 2025;22(4). DOI: 10.37897/RJN.2025.4.2 – « cite »

ORIGINAL ARTICLES

The benefits of add on therapy of vitamin D to quality of life in diabetic neuropathy patients: a randomized controlled trial
Kenzie Ongko Wijaya, Rizaldy Taslim Pinzon, Esdras Ardi Pramudita
[full article] – Ref: Ro | Neurol. 2025;22(4). DOI: 10.37897/RJN.2025.4.3 – « cite »

CASE REPORTS

Congenital Myasthenic Syndrome: case study from a tertiary care institute of Western India
Parag R. Maheshkar, Koustubh Bavdhankar, Neeraj Jain, Rishikesh Joshi, Santosh Sriram Andugulapati
[full article] – Ref: Ro | Neurol. 2025;22(4). DOI: 10.37897/RJN.2025.4.1 – « cite »

Hymenoptera sting as atypical causative factor for Guillain Barré Syndrome and chronic inflammatory demyelinating polyneuropathy – A case report and insights on pathophysiology
Cristina Gatcan, Thomas Gabriel Schreiner, Violeta Sapira, Cristina Grosu, Bogdan Emilian Ignat
[full article] – Ref: Ro | Neurol. 2025;22(4). DOI: 10.37897/RJN.2025.4.4 – « cite »

SEARCH

Search Keyword
Search Authors

STANDARDS

Instructions for AUTHORS

Peer review process

Official Journal's protocols

Pending articles

Submit article

Use this form to submit your article to the editors:

[SUBMIT ARTICLE](#)

Subscriptions

To receive the journal, please click here:

[SUBSCRIBE](#)

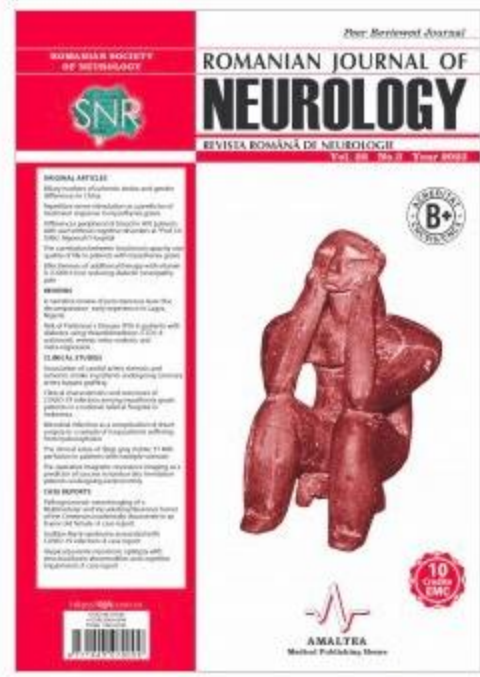


Contact



SELECT ISSUE

Select ▼



ISSN 1843-8148 | e-ISSN 2069-6094
ISSN-L 1843-8148
DOI: 10.37897/RJN

Indexed



Editorial Council

EDITORIAL BOARD

Honorary Founding Editor

† Ovidiu Alexandru BAJENARU – Bucharest, Romania

Editor-in-Chief

Bogdan Ovidiu POPESCU – Bucharest, Romania

Scientific Associate Editor

Dafin Fior MURESANU – Cluj-Napoca, Romania

President – Romanian Society of Neurology

Cristina TIU – Bucharest, Romania

EDITORIAL COUNCIL

Florina ANTOCHI – Bucharest, Romania

Natan BORNSTEIN – Tel-Aviv, Israel

Vivian DRORY – Tel-Aviv, Israel

Jelena DRULOVIC – Belgrade, Serbia

† Franz GERSTENBRAND – Vienna, Austria

Wolfgang GRISOLD – Vienna, Austria

Carolina IONETE – Worcester, USA

Pavel KALVACH – Prague, Czech Republic

Amos KORCZYN – Tel-Aviv, Israel

Vladimir KOSTIC – Belgrade, Serbia

Ioannis MILONAS – Thessaloniki, Greece

Ioana MINDRUTA – Bucharest, Romania

Cristina PANEA – Bucharest, Romania

Cristian FALUP-PECURARIU – Brasov, Romania

in extenso version

SEARCH

Search Keyword
Search Authors

STANDARDS

Instructions for AUTHORS

Peer review process

Official Journal's protocols

Pending articles

Submit article

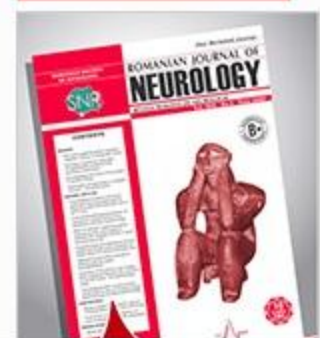
Use this form to submit your article to the editors:

[SUBMIT ARTICLE](#)

Subscriptions

To receive the journal, please click here:

[SUBSCRIBE](#)



HIGHLIGHTS

National Awards "Science and Research"

NEW! RJN has announced the annually National Award for "Science and Research" for the best scientific articles published throughout the year in the official journal.

ICMJE- Recommendations

Read the Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals.

Promoting Global Health

The published medical research literature is a global public good. Medical journal editors have a social responsibility to promote global health by publishing, whenever possible, research that furthers health worldwide.

Role of perfusion weighted imaging in the differential diagnosis of intracranial space occupying lesions

Bruce Jeban, Rubben Prabhu Ajay Lucas, Kumar Arun

[full article] — Ref: Ro J Neurol. 2025;22(4). DOI: 10.57897/RJN.2025.4.12 — « cite »

Comparison of clinical efficacy of open and single channel carpal tunnel release in the treatment of carpal tunnel syndrome

Zhe-ming Cao, Fioni, Yolanda Eliza Putri Lubis

[full article] — Ref: Ro J Neurol. 2025;22(4). DOI: 10.57897/RJN.2025.4.14 — « cite »

CASE REPORTS

Congenital Myasthenic Syndrome: case study from a tertiary care institute of Western India

Parag R. Maheshkar, Koustubh Bavdhankar, Neeraj Jain, Rishikesh Joshi, Santosh Sriram Andugulapati

[full article] — Ref: Ro J Neurol. 2025;22(4). DOI: 10.57897/RJN.2025.4.1 — « cite »

Hymenoptera sting as atypical causative factor for Guillain Barré Syndrome and chronic inflammatory demyelinating polyneuropathy – A case report and insights on pathophysiology

Cristina Gatcan, Thomas Gabriel Schreiner, Violeta Sapira, Cristina Grosu, Bogdan Emilian Ignat

[full article] — Ref: Ro J Neurol. 2025;22(4). DOI: 10.57897/RJN.2025.4.4 — « cite »

Valproate induced hyperammonemic encephalopathy: a rare adverse effect of a common drug

Sanauallah Mudassir, Deepa N.A., Prashant Kumar Thakur

[full article] — Ref: Ro J Neurol. 2025;22(4). DOI: 10.57897/RJN.2025.4.7 — « cite »

Electromyography reveals the etiology of floppy infant in developing country

Petrina Theda Philothra, Sri Mardjiati Mei Wulan, Ratna Darjanti Haryadi

[full article] — Ref: Ro J Neurol. 2025;22(4). DOI: 10.57897/RJN.2025.4.9 — « cite »

Primary central nervous system lymphoma with initial presentation of cerebral salt-wasting syndrome shifting to syndrome of inappropriate antidiuretic hormone secretion: A case report

Kezia Christy Gunawan, Andreas Soejitno

[full article] — Ref: Ro J Neurol. 2025;22(4). DOI: 10.57897/RJN.2025.4.10 — « cite »

Improving stroke care in Indonesia: Integrating CT perfusion for enhanced prognostication and treatment guidance - A case report

Rakhmad Hidayat, Aruni Cahya Irfannadhira, Ramadhanti Salma Ulwanda, David Pangeran, Reyhan Eddy Yunus, Taufik Mesiano, Mohammad Kurniawan, Al Rasyid, Salim Harris

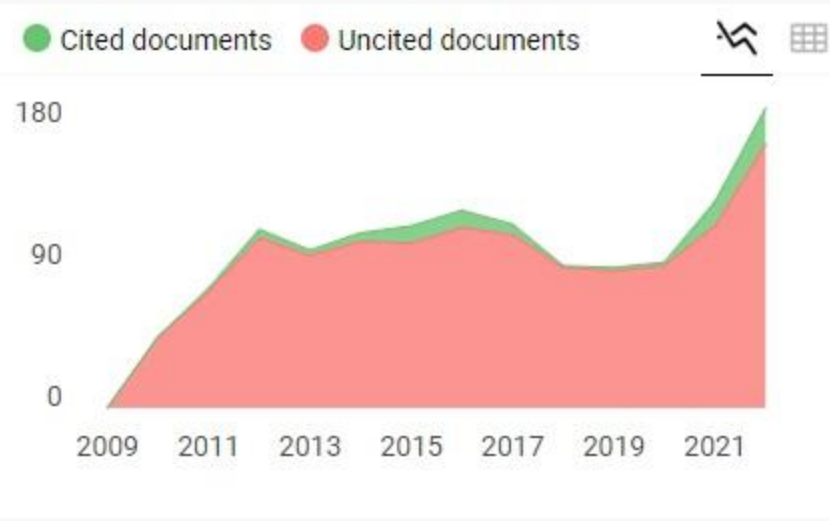
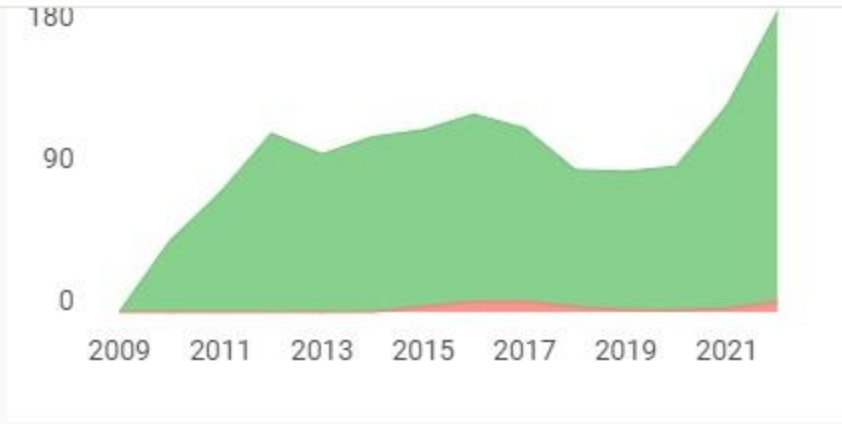
[full article] — Ref: Ro J Neurol. 2025;22(4). DOI: 10.57897/RJN.2025.4.15 — « cite »

Dexamethasone induced severe paralysis hypokalemia: A case report

Rizaldy Taslim Pinzon, Nathania Fadjarsugeng

[full article] — Ref: Ro J Neurol. 2025;22(4). DOI: 10.57897/RJN.2025.4.15 — « cite »





Romanian Journal of Neurology/ Revista Romana...

← Show this widget in your own website

Q4 Neurology best quartile

SJR 2022 0.12

powered by scimagojr.com

Just copy the code below and paste within your html code:

```
<a href="https://www.scimaç
```

SCImago Graphica

Explore, visually communicate and make sense of data with our

The SCImago Graphica logo is a stylized 'G' inside a circle. Below the logo is a small image of a computer monitor displaying a network graph with green and purple nodes.

Dexamethasone induced severe paralysis hypokalemia: A case report

Rizaldy Taslim Pinzon, Nathania Fadjarsugeng

Neurology Department, Duta Wacana Christian University School of Medicine, Yogyakarta, Indonesia

ABSTRACT

Acute weakness related with hypokalemia periodic paralysis (HPP) is a rare clinical condition. The one common etiology of hypokalemia is the shifting of potassium into the cells. The common provoke factors are high-carbohydrate diet, heavy exercise, stress, extreme cold weather, alcohol consumption, and certain medications. We present the case of a 32-year-old Javanese male with an acute onset of bilateral lower and upper limb weakness with severe hypokalemia following dexamethasone injection. He was diagnosed with HPP. Our systematic review found similar cases, with possible pathophysiology explanation. Steroids should be considered as an unusual precipitating factor while managing patients with HPP.

Keywords: acute limb weakness, dexamethasone, hypokalemia periodic paralysis

INTRODUCTION

Acute muscle weakness from hypokalemia periodic paralysis (HPP) is a rare neuromuscular pathology because of ion-channel disease [1]. The weakness is marked by acute onset of muscle flaccidity related with low serum potassium levels. The typical feature is weakness in proximal muscles are more prominent than distal muscles [2]. The low potassium level will lead to the decrease of muscle tone and deep tendon [3].

Previous review showed that trigger factors of HPP are high carbohydrate intake, heavy exercise, and stress that related with excessive release of insulin or epinephrine [2,3]. Some medications have been reported can induce hypokalemia [4].

Glucocorticoids are the very effective anti-inflammatory medication either for chronic and acute condition. One of the adverse drug reactions after high dose glucocorticoid administration is electrolyte disturbance. Electrolyte imbalance like hypokalemia has been reported in patients treated with steroid [5,6]. Further studies showed that steroid should be carefully considered as triggering factor of HPP attacks [7]. This is a case report of a 32-year-old Javanese male with acute limb weakness related with HPP after Dexamethasone injection.

CASE REPORT

A 32-year-old Javanese was visited neurology clinic due to acute bilateral lower limb and upper limb weakness since 1 day ago. He had been treated for retinal detachment procedure in neighboring eye hospital and been injected dexamethasone before the procedure 2 days ago. However, acute limb weakness occurred after the patient woke up in the morning. He had difficulty standing and lifting both arm and legs. No breathing difficulty and sensory abnormality. He had been referred by the ophthalmologist to our neurology clinic.

Upon arrival at our neurology clinic, the blood pressure, respiratory rate, tympanic membrane temperature normal. Our neurological history taking and examination showed no loss of consciousness, limb or trunk pain, respiratory symptoms, vomiting, diarrhea, or heavy sweating. The patient denied having much carbohydrate-rich food intake or strenuous exercise before the attack. He had no regular consumption of alcohol or smoking habits. The patient was oriented well and have a good mental health status, and well nourished. Neurological examination showed decreased muscle power of the bilateral lower limbs and upper limbs, mainly proximal, and either upper or lower scored 2/5 (MRC scale). The deep

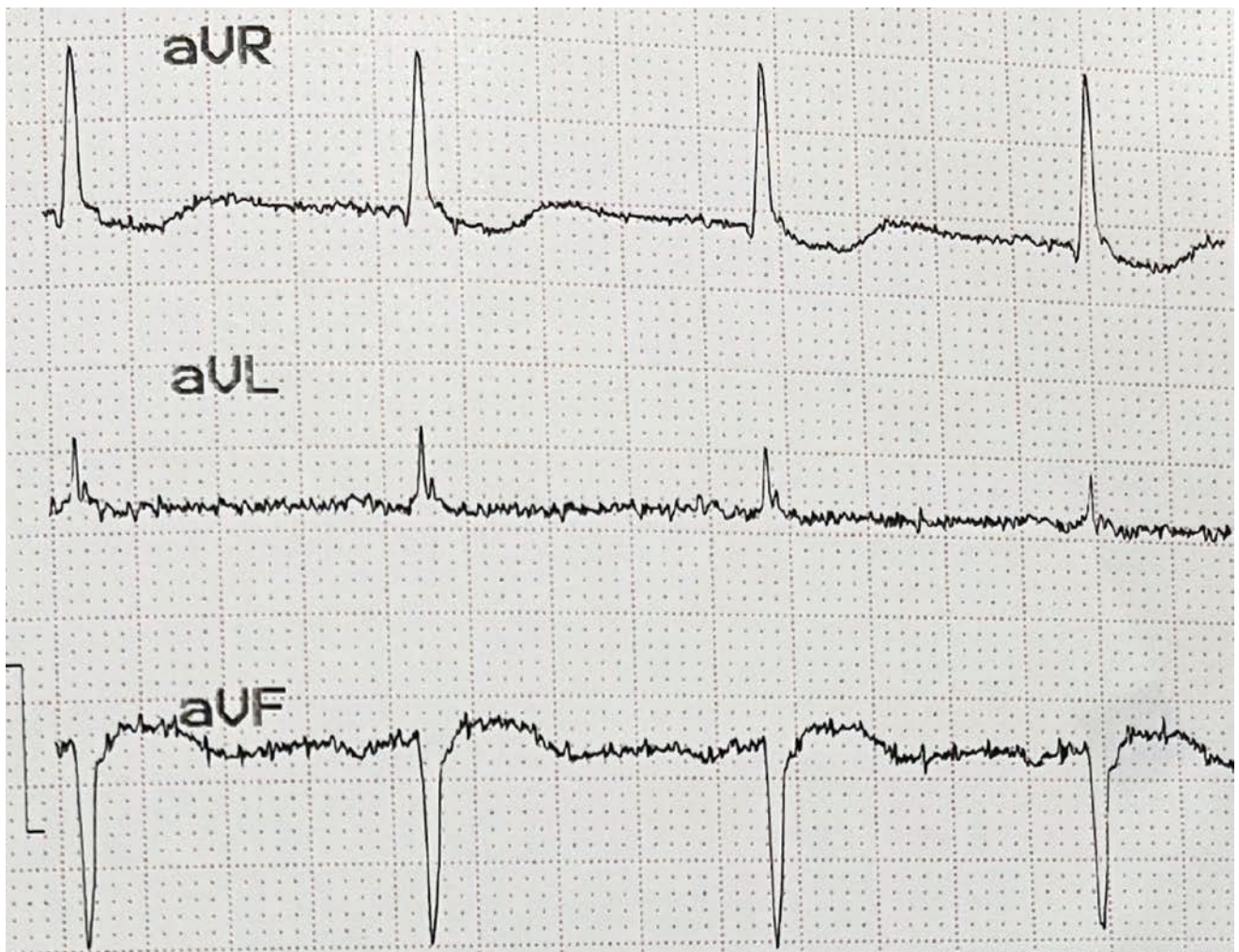


FIGURE 1. ECG abnormality in the patient with HPP

tendon reflex of the bilateral knees and ankle reflex were normal. The sensation of the lower limbs and upper limbs were intact. There was also no Babinski sign elicited on either side. Blood tests, including complete cell count, blood sugar, and a biochemical panel, were normal. Urinalysis was normal. However, the potassium level was very low (2.38 mmol/L). The electrocardiogram showed a flattened T wave and exhibited U waves in the precordial leads V1–V3.

Oral and intravenous potassium supplements with 25 mEq IV was administered slowly in 500 cc isotonic solution for 6 hours. The serum potassium level result was still 2.47 mmol/L in the following morning. Further 50 mEq of potassium for 12 hours infusion and spironolactone were given. In the follow-up assessment, the muscle power of the patient's bilateral lower limbs and upper limbs improved in the afternoon (4/5). Further additional 25 mEq of intravenous potassium were given in the next day. The hypokalemia resolved (serum potassium 3.52 mmol/L), and the patient could walk steadily.

The urinary potassium excretion of the patient was low (urine potassium was 21.27 mmol/ 24 hours; normal level: 40-80 mmol/ 24 hours), and there was no evidence of potassium loss from gastrointestinal

tract. There are no history of potassium-shifting or potassium-wasting medication use, such as insulin, beta-agonists, thyroxine, or diuretics. The level of free T4 and TSHS were normal. Arterial blood gas analysis was normal. Hypokalemia periodic paralysis was considered. Rapid normalization of potassium levels and improvement of weakness highly suggested of shifting mechanism. The normal thyroid function exclude the possible thyrotoxicosis hypokalemia. The final diagnosis was HPP of the non-familial type, suspected to be induced by dexamethasone injection. Finally, he was discharged without any disability.

DISCUSSION

We present the case of a 32-year-old Javanese male with acute onset of bilateral symmetrical either lower limb and upper limb weakness related with hypokalemia. HPP was diagnosed due to the symptoms, short duration, and rapid improvement with potassium supplementation. The triggering factor of HPP was likely iatrogenic dexamethasone injection. The similar case reports and plausible biological explanation support the diagnosis [6-8]. HPP is consid-

ered to be a channelopathy. Triggers are important for inducing a paralysis attack [7,8].

After initial exposure to triggers, the activity and number of Na-K-ATPases on the cell membrane changes. This condition result potassium influx into cells. The next condition is paradoxical depolarization of the skeletal membrane potential. It will exaggerating extracellular hypokalemia with a smaller efflux of potassium, inactive sodium channels, loss of excitability, and end with muscle weakness [7,8]. Therefore, the identification of trigger factors are very important for effective prevention.

Several medications such as beta-adrenergic agonists, insulin, or steroid had been reported as trigger factors that can induce hypokalemia. Heavy carbohydrate diet, high-impact exercise followed by rest, and stress (or excitement/fear/cold) exposure might directly increase sympathetic tone by releasing more catecholamines. This condition will lead to hyperinsulinemia, and then stimulate the activity of skeletal muscle Na-K-ATPase, resulting in hypokalemia [6-8].

Hypokalemia has been reported in patients treated with steroid. There were very few cases reporting the risk of hypokalemia related with steroid therapy [8,9]. Naranjo adverse drug reaction probability scale was applied to quantify the degree of association between Dexamethasone injection and Hypokalemia in our patient and it was found to be 8 (Probable).

Glucocorticoids should be considered as possible triggers of HPP. Several possible biological plausibility of steroid induced HPP attack are: First, steroid

cause insulin resistance which results in hyperglycaemia and hyperinsulinemia that makes the intracellular shift of serum potassium [10]. Second, steroid can upregulate beta-2 receptors on the cell membrane, and the interaction between beta-2 receptors and catecholamines can enhance the effect on the Na-K-ATPase [11]. Third, steroid directly regulate transcription of the Na-K-ATPase that increase the excitement potential of skeletal cell membranes [12]. Every physicians should be aware of this rare adverse drug reaction in patients treated with steroid.

CONCLUSION

We report an unusual case of HPP severe limbs weakness after the administration of high doses Dexamethasone. Our case should be a reminder for physicians that HPP should be considered as trigger factors in HPP.

Ethics approval and consent to participate:

The patient provided verbal agreement for publication of the data. No data of the patients that can be identified.

Conflict of interest:

The authors declare no conflicts of interest in the information contained in the manuscript.

Financial support:

none declared

REFERENCES

- Phuyal P, Nagalli S. Hypokalemic Periodic Paralysis. *StatPearls* [Internet]. 2023 Feb 7 [cited 2023 May 25]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK559178/>.
- Statland JM, Fontaine B, Hanna MG, Johnson NE, Kissel JT, Sansone VA, et al. Review of the Diagnosis and Treatment of Periodic Paralysis. *Muscle Nerve*. 2018 Apr;57(4):522-530. doi: 10.1002/mus.26009. PMID: 29125635.
- Venance SL, Cannon SC, Fialho D, Fontaine B, Hanna MG, Ptacek LJ, et al. The primary periodic paralyses: diagnosis, pathogenesis and treatment. *Brain*. 2006 Jan;129(Pt 1):8-17. doi: 10.1093/brain/awh639. PMID: 16195244.
- Unwin RJ, Luft FC, Shirley DG. Pathophysiology and management of hypokalemia: a clinical perspective. *Nat Rev Nephrol*. 2011 Feb;7(2):75-84. doi: 10.1038/nrneph.2010.175. PMID: 21278718.
- Levitt JO. Practical aspects in the management of hypokalemic periodic paralysis. *J Transl Med*. 2008 Apr 21;6:18. doi: 10.1186/1479-5876-6-18. PMID: 18426576.
- Ganie HA, Dar WR, Bhattacharya AP, Yaqoob A. Clinical and biochemical features of hypokalemic paralysis: a study from rural Eastern India. *Egypt J Neurol Psychiatry Neurosurg*. 2023; 59(17):1-7. doi: 10.1186/s41983-023-00622-w.
- Veltri KT, Mason C. Medication-induced hypokalemia. *P T*. 2015 Mar; 40(3):185-90. PMID: 25798039.
- Arzel-Hézode M, McGoeys S, Sternberg D, Vicart S, Eymard B, Fontaine B. Glucocorticoids may trigger attacks in several types of periodic paralysis. *Neuromuscul Disord*. 2009 Mar;19(3):217-9. doi: 10.1016/j.nmd.2008.12.008. PMID: 19201608.
- Elkins JC. Hypokalemic Periodic Paralysis Secondary to Dexamethasone Injection. *J Emerg Nurs*. 2019 Jan;45(1):79-81. doi: 10.1016/j.jen.2018.09.012. PMID: 30616767.
- Tai HT, Lee PT, Ou SH. Steroid-induced hypokalemic periodic paralysis: a case report and literature review. *BMC Nephrol*. 2023 Mar 24;24(1):70. doi: 10.1186/s12882-023-03131-3. PMID: 36964512.
- Genek DG, Huddam B, Karakuş V, Yıldırım B, Gazezoğlu OU. Glucocorticoid induced hypokalemic periodic paralysis in subclinical hyperthyroidism: case report. *Medical Journal of Mugla Sıtkı Kocman University*. 2016;3(3):32-34.
- Cheng CJ, Kuo E, Huang CL. Extracellular potassium homeostasis: insights from hypokalemic periodic paralysis. *Semin Nephrol*. 2013 May;33(3):237-47. doi: 10.1016/j.semnephrol.2013.04.004. PMID: 23953801.