A Newsletter on

CLINICAL PHARMA PRACTICE

An Update on Clinical Research and Drug Information

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PHYSICIAN DESK

Case Discussion on N – Acetylcysteine Induced Iron Deficiency Anemia

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(General Medicine)

A 50-years-old female with a 2-years history of Type 2 Diabetes Mellitus (T2DM) presented to the EMR with vomiting and decreased appetite for 3 days, along with fever and a chronic ulcer on the sole of her right foot following trauma. Upon admission, she was conscious, oriented, and febrile. Initial lab reports showed anemia, leukocytosis, elevated blood urea, creatinine, and Gamma-Glutamyl Transferase, as well as positive urine albumin and blood. Abdominal ultrasound revealed hepatomegaly and a right renal calculus. Over the next three days, her condition progressed with worsening anemia and persistent leukocytosis. Based on her clinical presentation and lab results, she was diagnosed with right leg cellulitis, Acute Kidney Injury, anemia, right renal calculus, and T2DM. The patient received an 11 days treatment regimen, including intravenous antibiotics (Piperacillin + Tazobactam, Linezolid, Metronidazole), N-Acetylcysteine and other supportive therapies. Her condition improved, and she was discharged in stable condition after normalization of her renal function.

DISCUSSION

The patient reported that N-Acetylcysteine caused iron deficiency anemia, with proposed mechanisms rooted in the chemistry of NAC, a cysteine derivative with thiol groups (RSH). These thiol groups can bind to free iron ions, forming chelates that reduce the availability of free iron in the bloodstream, potentially inhibiting iron absorption in the gut and disrupting iron metabolism. Elevated ferritin levels suggest an acute phase response or chronic disease, both of which can already affect iron metabolism. While high ferritin typically indicates substantial iron stores, it does not always reflect bioavailable iron. NAC's chelation might further reduce the availability of stored iron for hematopoiesis, contributing to functional iron deficiency. The lab reports indicate high ferritin levels and low total iron binding capacity, consistent with significant free metal iron in the body, leading to the formation

of chelation complexes. This reduces the free iron available for hemoglobin production, potentially leading to iron deficiency anemia. The event was assessed using the Naranjo Adverse Drug Reaction Probability Scale, which classified it as "PROBABLE." Hence, NAC-induced iron deficiency anemia is likely the cause in this case.

Reference: Yang EY, Campbell A, Bondy SC. Configuration of thiols dictatestheir ability to promote iron-induced reactive oxygen species generation. Redox Report, 2000Dec 1; 5(6):371-375.

DRUG MONOGRAPH

GEPIRONE

CATEGORY : Parathyroid Hormone Analogue

INDICATION :

YORVIPATH is a parathyroid hormone analog (PTH(1-34)) indicated for the treatment of hypoparathyroidism in adults.

MECHANISM OF ACTION :

At physiological conditions, palopegteriparatide releases PTH(1-34) to maintain a continuous systemic exposure. Endogenous PTH maintains extracellular calcium and phosphate homeostasis by increasing serum calcium and decreasing serum phosphate. promoting renal calcium reabsorption and phosphate excretion, and facilitating active vitamin D synthesis, in turn increasing intestinal absorption of calcium and phosphate. Similar to endogenous PTH, PTH(1-34) released from palopegteriparatide exerts these effects through its main receptor, parathyroid hormone 1receptor (PTH1R), which is highly expressed on osteoblasts, osteocytes, renal tubular cells, and in several other tissues.

DOSAGE AND ADMINISTRATION :

- Use only one injection to achieve the once daily recommended dosage.
- Maximum recommended YORVIPATH dosage is 30 mcg subcutaneously once daily.

CONTRAINDICATION:

Severe hypersensitivity to palopegteriparatide or any components of YORVIPATH

CAUTION :

- Unintended Changes in Serum Calcium Levels Related to Number of Daily Injections: Use only one daily YORVIPATH injection.
- Serious Hypercalcemia and Hypocalcemia.
- Potential Risk of Osteosarcoma: YORVIPATH is not recommended in patients at increased risk of osteosarcoma.
- Digoxin Toxicity: Concomitant use with digoxin may predispose to digitalis toxicity if hypercalcemia develops. With concomitant use, frequently measure serum calcium and digoxin levels, and monitor for signs and symptoms of digoxin toxicity.

ADVERSE EFFECTS:

Adverse reactions occurring in ≥5% of patients: injection site reactions, vasodilatory signs and symptoms, headache, diarrhea, back pain, hypercalcemia, and oropharyngeal pain.

DRUG APPROVED ON : 19th AUGUST 2024

REFERENCE :www.micromedexsolution.com

PHARMACIST DESK

AXATILIMAB-CSFR Injection for chronic graft-versus-host disease (cGVHD)

Axatilimab-csfr (NIKTIMVO) is a CSF-1R blocking antibody indicated for the treatment of chronic Graft-Versus-Host Disease (cGVHD) in adult and paediatric patients weighing at least 40 kg, following the failure of at least two prior lines of systemic therapy. The drug functions as a monoclonal antibody that binds to colony- stimulating factor-1 receptors (CSF-1R) found on monocytes and macrophages. By blocking CSF-1R, Axatilimab-csfr reduces the levels of circulating proinflammatory and profibrotic monocytes and monocyte-derived macrophages, which has been demonstrated through the reduction of nonclassical monocyte counts in nonclinical studies. This action also inhibits the activity of pathogenic macrophages within tissues. The recommended dose is 0.3 mg/kg up to a maximum of 35 mg administered as an intravenous infusion over 30 minutes every two weeks. Common adverse effects (≥ 15%) include increased AST, unspecified infections, increased ALT, decreased phosphate, decreased haemoglobin, viral infections, increased GGT, musculoskeletal pain, increased lipase, fatigue, increased amylase, ncreased calcium, increased CPK, increased ALP, nausea, headache, diarrhoea, cough, bacterial infections, pyrexia, and dyspnea. Additionally, Axatilimab-csfr may cause fetal harm, so females of reproductive potential should be advised of the risks and the need for effective contraception. The drug was approved by U.S. Food and Drug Administration on August 14, 2024.

Collected by : Prof. Dr. SUBASHINI. R., M.Pharm., Ph.D.,
Professor and Head,
Department of Pharmacy Practice.

DRUG SAFTEY ALERTS IDENTIFIED AND ISSUED BY PvPI

ISSUING DATE	SUSPECTED DRUGS	INDICATION(S)	ADVERSE DRUG REACTION
21st MAY 2024	Meropenem	For treatment of pneumonia, nosocomial pneumonia, UTI, intra-abdominal infection, gynaecological infection, skin & soft tissue infection, meningitis, septicaemia & empiric treatment of presumed infection in adult patients with febrile neutropenia.	Acute Generalized Exanthematous pustulosis (AGEP)
28st JUNE 2024	Acetazolamide	As an adjunct in the treatment of chronic open angle glaucoma; secondary glaucoma; as part of pre-operative treatment of acute-angle closure glaucoma.	Choroidal effusion or Choroidal detachment.
	Amlodipine	To reduce fatal coronary heart disease, non-fatal myocardial infarction, risk of stroke and treatment of hypertension.	Lichenoid Keratosis
18st JULY 2024	Vancomycin	Treatment of serious infection due to Gram- positive cocci including methicillin-resistant staphylococcal infections, brain abscess, staphylococcal meningitis and septicaemia.	Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) Syndrome.
28st AUGUST 2024	Metronidazole	For the treatment of amoebiasis, urogenital trichomoniasis & giardiasis.	Fixed Drug Eruption (FED)

VIVEKANANDHA MEDICAL CARE HOSPITAL – ADR MONITORING CENTER

DEPARTMENT ACTIVITIES

CONFERENCE ORGANISED

8th National level seminar on Clinical Pharma Practice Indian & Global CPP – IGS -2024 with theme of "Pharmacoeconomic Research and its impact on quality of life" on 29th JUNE 2024.

The programme was sponsored by The Tamilnadu Dr. M.G.R Medical university with 10 Credit Points. A total of 370 delegates from various institutions were participated and 70 oral prsentations were presented The winners were awared with cash prizes.

WORKSHOP ORGANISED

Department of pharmacy practice organized preconference workshop (Hands on training) entitled "Meta Analysis and Systemic Review" for Vth and VIth Pharm.D on 28th JUNE 2024 by Mr. Richard Kirubhakaran, CMC, Vellore.

Department of pharmacy practice organized the workshop with theme of "Role of technology driven pharmacy practice in improving patient care and out comes", for III, IV & V Pharm.D students on 31st JULY 2024 at SVCP Seminar hall by Dr. A. Palanisamy, Associate Professor, University of Tabuk, Saudi Arabia.

STUDENTS ACHIEVEMENT

04 No's from V-Pharm.D and 04 No's from IV-Pharm. D students were participated in the Workshop cum Hands- on Training entitled "Mastering Hypothesis Testing and Design of Experiments" at K K College of Pharmacy, Chennai on 26th & 27th JULY 2024.

28 No's of V-Pharm.D and 20 No's of IV B-Phram students were attended and presented both research and review article as poster and oral presentation at 73rd IPC, Hyderabad held from 05th to 07th JULY 2024.

EDUCATIONAL TOUR

IV B.Pharm & V-Pharm.D students went Educational tour to Hyderabad from 5th to 7th JULY 2024.

OUTREACH ACTIVITIES

WORLD HEPATITIS DAY

IIIrd Pharm.D students observed the World Hepatitis Day with the theme of "It's time for action" on 6th AUGUST 2024 at Vriksha Global School, Tiruchengode.

Book Post

To

Please send your suggestions toThe Chief Editor
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