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Tirupati, AP, INDIA.

A CASE REPORT ON LUDWIG'S ANGINA

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Abstract:

A fast spread of soft tissue cellulitis in the neck and mouth floor is known as Ludwig's Angina. Ludwig's angina typically begins with infection from the second and third lower teeth in the submandibular region and then extends to the sublingual region on the same side. It then moves to the contralateral submandibular region after crossing the lingual space to the opposing side. This case report is about 73 years old was admitted in nephrology ward with chief complaints of swelling over both sides of neck, below the jaw and tooth ache gradually progressing. US-NECK: k/c/o- Ludwig's angina, left few level-1B lymph node noted largest measuring 6.6*5.1mm. A second drainage tube was inserted, and regular saline was used to irrigate the wound. Cefotaxime 1 g Bd, gentamycin 80 mg BD, and metronidazole 500 mg TID were administered intravenously for 7 days, with tapering doses of Inj. Dexamethasone 8-4 mg Bd administered during the first two postoperative days, and ZYTEE GEL L/A administered to relieve pain close to the surgical site. Through the incision and drainage, postoperative irrigation was carried out, and the infected tooth and drainage were removed after 36 hours.

Key Words:

Ludwig's Angina, Cellulitis, Sublingual, Submandibular, Respiratory obstruction, Dexamethasone, Edema.

Introduction:

Ludwig's Angina was first described by German doctor William Frederick von Ludwig in 1836. (1) Ludwig's Angina is a rapidly spreading cellulitis of the soft tissues in the floor of the mouth and neck (2) . Ludwig's Angina is a severe, extensive cellulitis that affects the second and third submandibular, sublingual, and submental areas bilaterally. It has an early onset and quick development, and it puts the patient in an emergency situation since it obstructs the airway (2) . Infection from the second and third lower molars in the submandibular region is the typical starting point for Ludwig's angina, which then spreads to the sublingual region on the same side. From there, it travels across the lingual space to the opposite side before going to the contralateral submandibular region. The submental space is affected by lymphatic spread. Moreover, it could begin in the sublingual space and move on to the submandibular zone. The epiglottis becomes infected from the sublingual area, and the edema of the glottis and respiratory obstruction result. The infection spreads posteriorly in the tongue's substance in the gap between the hypoglossus and genioglossus muscles. Many bacteria, primarily aerobes and anaerobes such haemolytic streptococci, staphylococci, and Bacteroides, are responsible for Ludwig's angina. Gram-negative organisms such Neisseria catarrhalis, Escherichia coli, Pseudomonas aeruginosa, and Haemophilus influenzae have also been mentioned in studies. A few of the symptoms include a painful neck swelling, tooth discomfort, dysphagia, dyspnea, fever, and malaise. Other symptoms include tachypnoea, trismus, and drooling, as well as sensitive, firm swelling in the submental area and anterior neck without fluctuation (as determined by physical examination)

Vision

To emerge as one of the premier pharmacy colleges in the country and produce pharmacy professionals of global standards.

Mission

1. To deliver quality academic programs in Pharmacy and empower the students to meet Industrial Standards.

2. To build student community with high ethical standards to undertake R&D in thrust areas of national and international needs.

3. To extend viable outreach programs for the health care needs of the society

4. To develop industry institute interaction and foster entrepreneurial spirit among graduates.

Standard Practice

Drug Information Center Drug Formulary Management ADR Reporting Patient Counseling Drug Information Resources Prescription Audit Medication Error Reporting Antimicrobial Stewardship Journal Club Activities

There will be a high white blood cell count. The main therapeutic approach is airway control. It is required to maintain an airway with endotracheal intubation. (6) Predisposing variables include trauma, recent dental work like dental extractions, any tooth aches, systemic diseases including diabetes mellitus (DM), malnutrition, alcoholism, a weakened immune system like AIDS, and malnutrition. Children will experience it de novo, or without any apparent cause. (2) Case Report: A male patient of 73 years old was admitted in nephrology ward with chief complaints of swelling over both sides of neck, below the jaw and tooth ache gradually progressing (for 4 days), breathlessness (for 1 day), swelling of both limbs, tenderness, fever (2 days), H/0 throat pain. He had a past history of CAD, HTN, DM and CKD (PTCA) (for 6 months). This patient had Ludwig's angina due to Staphylococcus aureus. Upon physical examination, There was palpable bilateral submandibular and submental edoema as well as sublingual space elevation. Erythema was present on both sides of the submandibular and submental areas, as well as on the anterior neck side down to the sternal notch. CT SCAN examination it was found that f/s/o cellulitis of right parotid and submandibular spaces with extension into parapharyngeal and retro pharyngeal, Decayed teeth present in the upper right back teeth. Laboratory investigations were found to be Hb-10.2g/dl, WBC-11,200cells/cu mm,sr.cr-5.5mg/dl, HbA1C – 7.1%. US-NECK: k/c/o- Ludwig's angina, left few level1B lymph node noted largest measuring 6.6*5.1mm. Patient had undergone for Tracheostomy, a surgical procedure by inserting breathing tube into the windpipe. Edematous fluid was drained through multiple incisions over neck region which will help to breathes easier. Normal saline was used to irrigate the incision, and a separate drainage tube was inserted and stitched to the skin using silk sutures. Cefotaxime 1 g Bd, gentamycin 80 mg BD, and metronidazole 500 mg TID were administered intravenously for 7 days, with tapering doses of Inj. Dexamethasone 8-4 mg Bd administered during the first two postoperative days, and ZYTEE GEL L/A administered to relieve pain close to the surgical site. Through the incision and drainage, postoperative irrigation was carried out, and the infected tooth and drainage were removed after 36 hours. After the tracheostomy tube was removed, the skin was strapped on the fifth postoperative day. Tracheostomy tube care was also provided during this time. The patient was healed.

Discussion:

Ludwig's angina and deep neck infections can result from improper airway treatment and are deadly due to their propensity to primarily induce edema, distortion, and obstruction of the airway.

Patients may be treated with monitoring and intravenous antibiotics in the early stages of the illness. Advanced infections will necessitate surgical drainage to secure the airway. This is made more challenging by the restricted airway caused by the discomfort, trismus, airway edema, and tongue displacement. One of the suspected causal agents was described as -haemolytic streptococcus, which is typically associated with anaerobic germs like Pepto streptococcus and pigmented Bacteroides. From the deep neck infections, Streptococcus viridians (40.9%), Staphylococcus aureus (27.3%), and Staphylococcus epidermis (22.7%) were isolated (1). To avoid an airway obstruction, our patient received a surgical debridement, antibiotics, and endotracheal intubation. Due to the swelling's incomplete clearance, debridement was required. The teeth implicated in cases where the illness originated in the mouth should be extracted in order to eliminate the infection's cause. However, in our case report, the potential of a life-threatening airway compromise made surgical incision and drainage more important than tooth extraction because of the substantial involvement of the neck regions with the fluid collection on imaging. As a result, the neck and airway results of each patient determine the best course of airway care in Ludwig's angina. (2) In the pre-antibiotic age, Ludwig's angina had a relatively high mortality rate of over 50%; currently, that rate is closer to 8–10%. The most often isolated bacteria are Staphylococcus aureus, Staphylococcus epidermidis, and Streptococci viridian. Group A -haemolytic streptococcus is only responsible for 7% of instances of Ludwig's angina. The first round of antibiotic therapy should cover both gram-positive and gramnegative bacteria as well as anaerobes. In this case study, frequent antibiotic choices were ciprofloxacin (Fluroquinolones), clindamycin, metronidazole, Dexamethasone, and penicillin. (2)

By maintaining good oral hygiene,

we can reduce your risk of acquiring Ludwig's angina,

having routine dental examinations

Planning on obtaining a tongue piercing should be done if you need urgent treatment for your mouth and tooth infections.

If you experience any excessive bleeding or swelling, see a doctor right once. should use mouthwash with antiseptic liquid once day and brush their teeth two times daily.

Never disregard any gum or tooth pain. When bleeding occurs from the tongue, gums, or teeth, see a doctor.

The signs include breathing issues, neck pain, and tongue swelling. Ludwig's angina frequently occurs after a tooth infection, another oral infection, or a mouth injury. (5)

The symptoms include:

Having discomfort or tenderness in the area of your mouth that is directly below your tongue, having

trouble swallowing, drooling, neck pains, neck swelling, feeling weak or exhausted, having an earache, having a fever, or having the chills.

The patient in this journal also complained of edema, pain, elevation of tongue, fever, neck swelling, dysphagia, and induration in the submandibular region. saliva cannot be swallowed due to an impending airway impairment. The most dangerous side effect was airway blockage brought on by tongue's elevation and also posterior displacement. The use of needle drainage procedures can lower the likelihood of infection spread. (1)

Conclusion:

This case study highlights very typical but severe case of Ludwig's angina in a demographically unusual age range. When mostly systems are implicated, this is one of the life-threatening illnesses that calls for initial intervention and also a multidisciplinary team. Dentists should be aware of the condition and recognise the need for prompt treatment when it does manifest in children, despite the fact that it is quite rare in the paediatric population.

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Advances in Cardiovascular Pharmacology

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Introduction

Cardiovascular diseases (CVDs) are among the leading causes of morbidity and mortality worldwide, accounting for approximately 32% of global deaths according to the World Health Organization (WHO). These conditions include hypertension, coronary artery disease, heart failure, stroke, and arrhythmias. Over the past few decades, cardiovascular pharmacology has made remarkable progress, leading to innovative therapeutic approaches that improve patient outcomes and quality of life. Traditional drugs like beta-blockers, ACE inhibitors, and diuretics have been the backbone of cardiovascular therapy. However, advances in molecular biology, pharmacogenomics, and biotechnology have opened new frontiers for targeted therapies, novel drug delivery systems, and personalized medicine. This article discusses recent developments in cardiovascular pharmacology, emphasizing novel drug classes, their mechanisms, and their clinical significance.

Aim

To explore recent advancements in cardiovascular pharmacology and evaluate their role in improving treatment strategies for cardiovascular diseases.

Objectives

- To understand the latest trends in cardiovascular drug development.
- To evaluate novel mechanisms of action of advanced cardiovascular drugs.
- To discuss the impact of these advancements on patient outcomes and healthcare systems.
- To identify future challenges and potential areas of research in cardiovascular pharmacology.

Methodology

This article is based on a comprehensive literature review of recent publications,
including clinical trials, systematic reviews, and meta-analyses.Data was collected from:
- Scientific journals such as Circulation, Journal of the American College of
Cardiology (JACC), and European Heart Journal.
- Clinical trial databases like ClinicalTrials.gov.
- Guidelines published by the American Heart Association (AHA) and European
Society of Cardiology (ESC).
Keywords such as cardiovascular drugs, advances in pharmacology, novel
therapies, and heart disease treatment were used to identify relevant studies.

Body / Discussion

1. Evolution of Cardiovascular Drugs

Traditionally, cardiovascular pharmacology relied on:
- Beta-blockers (e.g., Metoprolol, Atenolol)
- ACE inhibitors (e.g., Enalapril, Lisinopril)
- Statins (e.g., Atorvastatin, Rosuvastatin)
- Diuretics (e.g., Furosemide, Hydrochlorothiazide)
- Calcium channel blockers (e.g., Amlodipine, Verapamil)

While these drugs remain essential, their limitations, such as side effects and reduced efficacy in some patients, have driven the need for newer therapies.

2. Recent Breakthroughs in Cardiovascular Pharmacology

A. PCSK9 Inhibitors for Cholesterol Management

Examples: Alirocumab, Evolocumab

Mechanism: These monoclonal antibodies inhibit the PCSK9 enzyme, enhancing

LDL receptor recycling and significantly reducing LDL cholesterol levels.Significance: Provide additional benefit for patients not responding to statins.

B. SGLT2 Inhibitors for Heart Failure

Examples: Dapagliflozin, Empagliflozin

Mechanism: Initially used for diabetes, these drugs reduce glucose reabsorption in the kidneys and have proven benefits in reducing hospitalization and mortality in heart failure patients.

Impact: Revolutionized treatment for both diabetic and non-diabetic heart failure patients.

C. Angiotensin Receptor-Neprilysin Inhibitors (ARNIs)

Example: Sacubitril/Valsartan (Entresto)

Mechanism: Combines angiotensin receptor blockade with neprilysin inhibition to improve cardiac output and reduce mortality.

Clinical Use: Recommended in chronic heart failure with reduced ejection fraction (HFrEF).

D. Antithrombotic and Anticoagulant Advances

Examples: Rivaroxaban, Apixaban, Dabigatran

Advancement: Direct oral anticoagulants (DOACs) have replaced warfarin for many indications due to fewer dietary restrictions and no need for frequent INR monitoring.

E. Gene Therapy and Stem Cell Therapy

Emerging area focused on regenerating damaged heart tissue and preventing disease progression. Still in early stages but showing promising clinical trial results.

F. Nanotechnology-Based Drug Delivery

Nanoparticles improve the targeted delivery of cardiovascular drugs, enhancing efficacy and minimizing side effects.

Results

Recent clinical studies have demonstrated the following outcomes from these

advanced therapies:

1. PCSK9 inhibitors reduce LDL cholesterol by up to 60%, significantly lowering

cardiovascular event rates.

2. SGLT2 inhibitors reduce heart failure-related hospitalizations by 30% and improve survival.

3. ARNIs show a 20% reduction in cardiovascular death compared to ACE inhibitors.

4. DOACs are associated with a lower risk of bleeding and stroke compared to warfarin.

5. Gene therapy has shown potential to restore cardiac function in experimental models.

These results indicate a paradigm shift in cardiovascular pharmacology, moving from traditional symptom management to disease modification and prevention.

Conclusion

Advances in cardiovascular pharmacology have significantly transformed the way cardiovascular diseases are treated. From traditional drugs to cutting-edge biologics, gene therapy, and nanomedicine, these innovations have improved patient outcomes and quality of life. However, challenges remain, including high drug costs, accessibility, and the need for long-term safety studies. Future research should focus on personalized medicine, where therapies are tailored to individual genetic profiles, ensuring maximum efficacy and minimal side effects.

Applications

- Clinical Practice: Improved guidelines and therapeutic options for managing cardiovascular conditions.
- Pharmacogenomics: Personalized treatment plans based on genetic profiling.
- Public Health: Reduced disease burden through preventive strategies.
- Drug Development: Inspiration for new classes of drugs targeting specific mechanisms.
- Education and Training: Enhancing knowledge among healthcare professionals about modern pharmacological approaches.

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Chronic Kidney Disease Progression in a Hypertensive and Diabetic Patient: A Case Report

D. Lalini
Pharm D IV year

Abstract

Chronic Kidney Disease (CKD) is a progressive condition characterized by irreversible structural and functional damage to the kidneys, often resulting from long-standing diabetes mellitus and hypertension. CKD has emerged as a global public health concern, affecting approximately 10-15% of the adult population, with a higher prevalence in individuals with comorbidities. This case report presents a 58-year-old male with a history of type 2 diabetes mellitus and hypertension who progressed to stage 4 CKD despite optimized therapy. Despite pharmacological interventions, lifestyle modifications, and regular follow-up, the patient's renal function deteriorated, necessitating the initiation of dialysis. The case underscores the importance of early detection, meticulous control of comorbidities, and the role of novel therapies such as sodium-glucose cotransporter-2 (SGLT2) inhibitors in mitigating CKD progression. Additionally, patient education, adherence to therapeutic regimens, and individualized management plans play pivotal roles in slowing disease progression and improving outcomes.

Introduction

Chronic Kidney Disease (CKD) is a leading cause of morbidity and mortality worldwide, characterized by a progressive decline in kidney function over time. Defined by an estimated glomerular filtration rate (eGFR) of less than 60 mL/min/1.73m^2 or evidence of structural abnormalities such as albuminuria persisting for more than three months, CKD progresses through five stages, culminating in end-stage renal disease (ESRD) that requires dialysis or kidney transplantation. Diabetes mellitus and hypertension account for nearly 70% of CKD cases globally, with diabetic nephropathy contributing to 30-40% of all ESRD cases. Prolonged hyperglycemia in diabetes leads to glomerular hyperfiltration, oxidative stress, and podocyte injury, resulting in progressive glomerular damage. Similarly, uncontrolled hypertension accelerates glomerular injury by promoting endothelial dysfunction, arterial stiffness, and glomerulosclerosis, ultimately leading to nephron loss.

Recent advances in the understanding of CKD pathophysiology have highlighted the role of the renin-angiotensin-aldosterone system (RAAS), inflammation, and oxidative stress in disease progression. Despite the availability of RAAS inhibitors, mineralocorticoid receptor antagonists (MRAs), and SGLT2 inhibitors, CKD continues to progress in high-risk individuals, underscoring the need for early diagnosis and personalized management strategies.

Case Presentation

Patient History

A 58-year-old male presented to the nephrology outpatient department with complaints of progressive fatigue, pedal edema, and reduced urinary output over three months. He had a 12-year history of type 2 diabetes mellitus and 10 years of poorly controlled hypertension, complicated by intermittent non-adherence to prescribed medications. The patient had a history of smoking for 15 years but had quit five years ago. No family history of chronic kidney disease or hereditary nephropathies was reported.

Clinical Examination

- Blood Pressure: 158/92 mmHg (despite being on antihypertensive medication)
- Heart Rate: 88 beats/min
- Respiratory Rate: 18 breaths/min
- Pedal Edema: Bilateral pitting edema extending to the mid-shin
- Weight: 82 kg with a BMI of 29.4 kg/m^2 (overweight category)

Laboratory Investigations

- Serum Creatinine: 3.8 mg/dL (reference range: 0.6–1.2 mg/dL)
- eGFR: 28 mL/min/1.73m^2, indicating stage 4 CKD
- Urinalysis: Presence of proteinuria (+2), microscopic hematuria
- HbA1c: 8.9% (indicating poor glycemic control)
- Lipid Profile: Elevated total cholesterol and LDL levels
- Serum Potassium: 4.8 mmol/L (within normal limits)
- Ultrasound Abdomen: Bilateral small kidneys with increased echogenicity, suggestive of chronic renal parenchymal disease

Management and Follow-up

Blood Pressure Control

The patient was prescribed an angiotensin-converting enzyme (ACE) inhibitor, enalapril (5 mg daily), to control blood pressure and reduce proteinuria. RAAS blockade has been shown to provide renoprotective effects by reducing intraglomerular pressure and minimizing proteinuria. Blood pressure targets were set at <130/80 mmHg, consistent with KDIGO guidelines.

Glycemic Control

Given the patient's poor glycemic control (HbA1c: 8.9%), his antidiabetic regimen was optimized by adding a sodium-glucose cotransporter-2 (SGLT2) inhibitor, empagliflozin (10 mg once daily), along with metformin (500 mg twice daily). SGLT2 inhibitors have demonstrated nephroprotective benefits by reducing intraglomerular pressure, inflammation, and oxidative stress while improving cardiovascular outcomes in diabetic patients with CKD.

Lipid Management

Atorvastatin (20 mg daily) was initiated to achieve optimal lipid control and reduce cardiovascular risk, as dyslipidemia is a major contributor to CKD progression.

Dietary Modifications

The patient was counseled on dietary modifications, including a low-protein diet (0.8 g/kg/day) with sodium and potassium restriction. Dietary sodium restriction (<2 g/day) was emphasized to control blood pressure and reduce fluid retention.

Anemia and Electrolyte Management

Given the declining hemoglobin levels (10.1 g/dL), erythropoiesis-stimulating agents and intravenous iron therapy were initiated to manage anemia. Potassium levels were closely monitored to prevent hyperkalemia, a common complication of RAAS inhibitors.

Disease Progression and Outcome

Follow-up and Monitoring

The patient was followed up every three months with routine monitoring of serum creatinine, eGFR, electrolytes, and urinary protein levels. Despite adherence to pharmacological interventions and lifestyle modifications, the patient's renal function progressively deteriorated over 18 months, with serum creatinine rising to 5.8 mg/dL and eGFR declining to 12 mL/min/1.73m^2.

Dialysis Initiation

The patient eventually developed symptoms of uremia, including nausea, vomiting, and pruritus, prompting the initiation of hemodialysis through a temporary vascular access. Dialysis significantly

improved the patient's quality of life, with resolution of fluid overload and uremic symptoms

Discussion

This case highlights the multifactorial nature of CKD progression in patients with poorly controlled diabetes mellitus and hypertension. The pathophysiology of CKD involves complex interactions between hyperglycemia, oxidative stress, RAAS activation, and inflammation, resulting in irreversible damage to the glomeruli and tubules. Despite optimized medical management, the progression of CKD in high-risk individuals remains a significant challenge

Role of SGLT2 Inhibitors and RAAS Inhibitors

Recent clinical trials, including the EMPA-REG OUTCOME and DAPA-CKD trials, have demonstrated the efficacy of SGLT2 inhibitors in reducing CKD progression, cardiovascular events, and mortality in patients with type 2 diabetes mellitus and CKD. Additionally, RAAS inhibitors remain the cornerstone of CKD management, offering renoprotective effects through modulation of intraglomerular pressure and reduction of proteinuria.

Challenges in CKD Management

Adherence to prescribed medications and lifestyle modifications plays a pivotal role in delaying CKD progression. However, challenges such as medication non-adherence, socioeconomic factors, and limited healthcare access contribute to suboptimal outcomes. Furthermore, anemia management, electrolyte imbalances, and cardiovascular complications add complexity to CKD management.

Conclusion

This case underscores the importance of early diagnosis, meticulous control of comorbidities, and adherence to evidence-based guidelines to delay CKD progression. SGLT2 inhibitors and RAAS inhibitors offer significant nephroprotective benefits, while patient education and regular follow-up remain critical in optimizing outcomes. Timely preparation for dialysis and individualized management plans ensure a smoother transition to renal replacement therapy, ultimately improving the quality of life in patients with advanced CKD.

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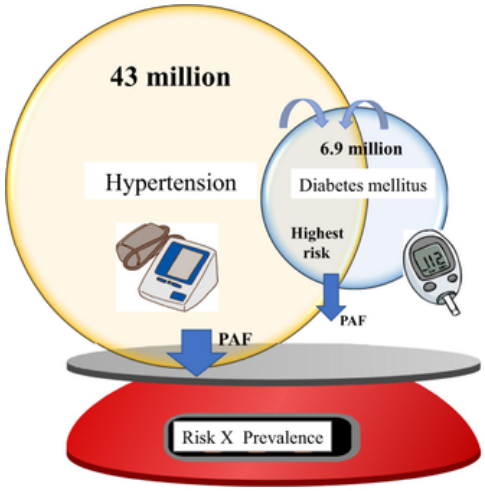

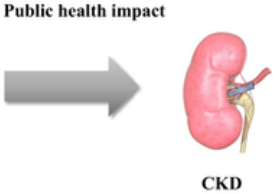

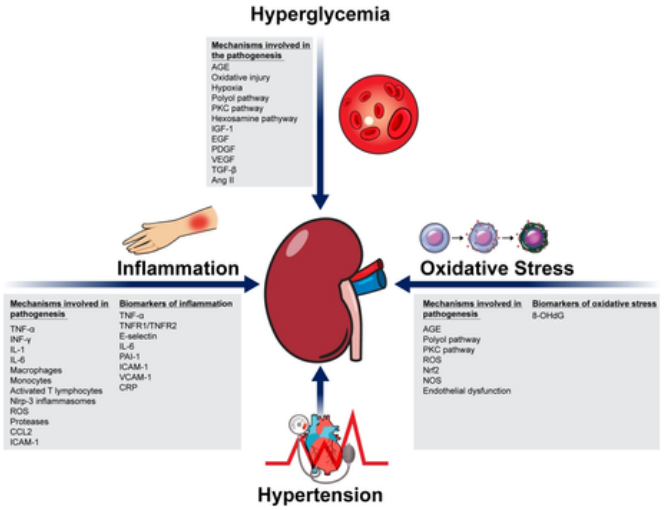

MERILOG (INSULIN ASPART) DRUG PROFILE

Sathya Prasana
Pharm D IV Year

Generic Name: Insulin Aspart
Brand Name: Merilog
Drug Class: Fast-acting insulin (Rapid-acting insulin analog)
Formulation: Injectable solution
Available Forms: Vial, Pen, Prefilled Pen
Route of Administration: Subcutaneous injection
Storage: Store unopened vials and pens in the refrigerator (2°C to 8°C / 36°F to 46°F). Once opened, insulin can be kept at room temperature (up to 25°C / 77°F) for up to 4 weeks.

CHEMISTRY:

Merilog (insulin aspart) is a rapid-acting insulin analog, chemically modified from human insulin. The key modification involves the substitution of proline with aspartic acid at position B28 of the insulin molecule. This change prevents the formation of insulin hexamers, allowing for faster absorption and quicker onset of action. It is produced via recombinant DNA technology, typically in E. coli or yeast. The resulting insulin has a molecular weight of approximately 5,808 Daltons and is highly soluble, leading to a 10-20 minute onset, 1-3 hour peak, and a 3-5 hour duration of action.

INDICATIONS:

TYPE 1 DIABETES: Used for glycemic control in adults and pediatric patients with Type 1 diabetes.
TYPE 2 DIABETES: Used for glycemic control in adults with Type 2 diabetes when diet, exercise, and oral medications alone do not achieve adequate control.

MECHANISM OF ACTION:

Insulin aspart is a rapid-acting insulin analog that works by promoting the uptake of glucose into cells and tissues, reducing blood sugar levels. It mimics the action of natural insulin in the body but has a faster onset and shorter duration of action than regular human insulin.
ONSET: 10–20 minutes after subcutaneous injection.
PEAK ACTION: 1–3 hours.
DURATION: 3–5 hours.
It is often used in conjunction with longer-acting insulins or other antidiabetic medications to provide comprehensive blood glucose control.

DOSING AND ADMINISTRATION:

INITIAL DOSE: The dosing of insulin aspart is individualized based on blood glucose levels and insulin requirements.
ADMINISTRATION: Administered by subcutaneous injection, typically before meals to control postprandial (after-meal) blood glucose spikes.
DOSAGE ADJUSTMENTS: Doses may need to be adjusted based on blood glucose monitoring, exercise, diet, and concurrent medications. It's important to monitor blood glucose levels frequently.

CONTRAINDICATIONS:

HYPERSENSITIVITY: Known hypersensitivity to insulin aspart or any of the components in the formulation.
HYPOGLYCEMIA: Insulin aspart should not be used during episodes of low blood sugar (hypoglycemia).

WARNINGS AND PRECAUTIONS:

HYPOGLYCEMIA: Insulin aspart can cause low blood sugar, especially if not properly matched with food intake, physical activity, or dose adjustments. Symptoms include shaking, sweating, confusion, dizziness, and hunger.
HYPOKALEMIA: Insulin can cause low potassium levels, so it's important to monitor potassium levels in patients at risk.
ALLERGIC REACTIONS: Some individuals may experience allergic reactions such as itching, redness, or swelling at the injection site, or more severe reactions like anaphylaxis.
INSULIN RESISTANCE: Over time, some individuals may develop insulin resistance, requiring adjustments in their treatment regimen.
DOSAGE ADJUSTMENTS: If switching from other insulin types or therapies, careful monitoring and potential dosage adjustments are required to avoid hypoglycemia or hyperglycemia.

SIDE EFFECTS:

COMMON: Hypoglycemia (low blood sugar), injection site reactions (pain, redness, or swelling), weight gain, and edema (fluid retention).
LESS COMMON: Allergic reactions, lipodystrophy (changes in fat distribution), and injection site infections.

DRUG INTERACTIONS:

DRUGS THAT MAY INCREASE THE RISK OF HYPOGLYCEMIA: Oral antidiabetic agents (e.g., sulfonylureas), beta-blockers, alcohol, and other medications that affect blood sugar levels.
DRUGS THAT MAY INCREASE BLOOD GLUCOSE: Corticosteroids, diuretics, and certain other drugs may counteract the effects of insulin, leading to higher blood glucose levels.
Always inform your healthcare provider about all medications you are taking to avoid potential interactions.

PREGNANCY CATEGORY:

CATEGORY C (Risk cannot be ruled out): Insulin aspart should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. Close monitoring of blood glucose is recommended during pregnancy.

SPECIAL POPULATIONS:

PEDIATRIC USE: Insulin aspart is approved for use in children with Type 1 diabetes but should be dosed cautiously under the guidance of a healthcare provider.
GERIATRIC USE: Older adults may be more sensitive to insulin, and their dose may need to be adjusted based on individual response.
RENAL AND HEPATIC IMPAIRMENT: Close monitoring and dose adjustments may be necessary for individuals with impaired kidney or liver function.

PATIENT COUNSELING INFORMATION:

HYPOGLYCEMIA: Patients should be educated on the symptoms of hypoglycemia and how to treat it (e.g., consuming quick sources of sugar like glucose tablets or juice).

INJECTION TECHNIQUE: Proper techniques for insulin injection and rotating injection sites should be reviewed to prevent complications such as lipodystrophy.

Monitoring: Regular blood glucose testing is important for dose adjustments. Monitoring for signs of high or low blood sugar is essential, especially during exercise or changes in diet.

CONCLUSION:

Merilog (insulin aspart) is a rapid-acting insulin that plays a crucial role in managing blood sugar levels for individuals with diabetes. It should be used under the supervision of a healthcare provider, with careful attention to dosing, timing of administration, and monitoring for potential side effects like hypoglycemia.

EVALUATION OF ANTIDIABETIC DRUG USAGE IN ELDERLY PATIENTS AT A TERTIARY CARE HOSPITAL

Vishwa
Pharm D V Year

Introduction :

Diabetes mellitus (DM) is a growing public health challenge, especially in developing countries like India, where the prevalence has surged significantly. The rising number of individuals with Type 2 diabetes, particularly among the elderly, necessitates careful monitoring and evaluation of the medications being used. Drug Utilization Research (DUR) plays a crucial role in identifying patterns in the prescription and use of anti-diabetic drugs, which can guide improvements in healthcare policies and clinical practices.

The current study aims to address a gap in the literature, focusing specifically on the geriatric population, where the disease burden is escalating due to an aging population. By assessing the drug utilization patterns among elderly diabetic patients, this study aims to promote rational drug usage, improve medication adherence, and reduce the risk of adverse outcomes such as hypoglycemia and drug interactions. Past studies, like the one by Sultana et al. in 2010, have highlighted that multiple drug therapies are commonly prescribed to Type 2 diabetes patients, with biguanides, particularly metformin, being the most frequently prescribed drug class. However, the geriatric demographic has not been extensively studied, and this gap in research underscores the importance of this study.

By analyzing the utilization patterns of anti-diabetic medications in the elderly, this study hopes to offer valuable feedback to healthcare professionals, ultimately improving diabetes management for this vulnerable group and helping alleviate the strain on India's healthcare system. Furthermore, the results can guide further large-scale studies across different regions of India to refine diabetes treatment protocols and enhance the quality of care.

Methods :

The data of 600 patients visiting the geriatric outpatient department from January 1, 2016 to September 30, 2017 were collected from the electronic medical record (EMR) database. The protocol was designed using Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. Subjects were grouped according to gender, age, drug combination use, and underlying co-morbidities. Indicators of drug usage and the total number of drugs prescribed and prescription patterns were analyzed. Then, the recorded data were classified according to the anatomical therapeutic chemical (ATC) - daily defined dose (DDD) classification. Prescribed daily dose (PDD) values and PDD/DDD ratio of antidiabetic drugs prescribed to a sample of patients (n=600) were calculated. Cost analysis of the prescribed drugs was analyzed and the cost index for each drug is described.

Data collection and analysis :

Data were collected relating to participant demographics and clinical characteristics. The demographic data collected included: medical records department number, gender, age, smoking status, marital status, education level, employment status, income, and occupation. The clinical characteristics data obtained were: length of time since diagnosis with DM, body mass index (BMI), and any relevant medical history or co-morbidities in the records, of any diabetes complications. Prescription details like date, number of drugs, names of individual drugs (generic/brand), any fixed-dose combination (FDC) prescribed, and whether the prescribed drugs were available from the hospital pharmacy, dose, dosage form, dosing schedule, and duration of treatment were all recorded. The medicines that were dispensed by the hospital pharmacy were documented. Those who were not distributed from hospital pharmacies were considered to be purchased from outside pharmacy outlets.

Data analysis :

Prescription patterns were assessed as defined by the World Health Organization-International Network of Rational Use of Drugs (WHO-INRUD) drug usage indicators [11]. The prescription medications were categorized using the anatomical therapeutic chemical (ATC) - defined daily dose (DDD) system [12]. The Prescribed Daily Dose (PDD) was derived by averaging the daily dosage of the antidiabetic medicines [13]. The PDD/DDD ratio was then computed by using appropriate values.

Cost analysis:

The cost of medications prescribed from the hospital schedule was calculated based on the rate contract available in the hospital drug store. The cost of the drugs prescribed from pharmacies outside the hospital was obtained from the Drug Index (DI): February 2017 [14].

The cost parameters calculated were average total cost per prescription, percentage of average cost due to antidiabetic drugs average cost borne by the hospital, average cost borne by the patient. We estimated the price per 10 tablets/capsules (minimum and maximum, as per DI), average monthly cost (minimum and maximum), which was equal to (PDD/dose per tablet) × price per 10 tablets × 3 and cost index (CI) (maximum price/minimum price) for pharmaceuticals prescribed from outside pharmacies. The cost of each drug was modeled in the USD.

Statistical analysis :

The descriptive data were reported in percentages for categorical variables and mean(\pm\)SD for continuous variables. All statistical calculations were done using IBM Statistical Package for the Social Sciences (SPSS) version 24 (IBM Corp., Armonk, NY).

Discussion:

This study provides an important analysis of the anti-diabetic drug utilization patterns in the geriatric population in India, highlighting both the rational and irrational use of medications. The results show that medications like metformin and glibenclamide were commonly prescribed, aligning with clinical guidelines, but certain trends, such as the underutilization of premixed insulin and the overuse of expensive newer drugs, warrant attention. The findings suggest that there is a need for more consistent and rational prescribing practices, particularly in the context of primary care settings, where clinical inertia is common.

The study also underscores the significant impact of medication costs on patient adherence, with the high cost of newer medications and insulin preparations contributing substantially to overall prescription costs. These factors not only increase the financial burden on patients but also affect their quality of life, making it essential for healthcare providers to consider more affordable alternatives.

Furthermore, the study calls for enhanced education and training for healthcare professionals to improve awareness about drug costs and promote more rational prescribing. It also stresses the importance of continued research in this field to refine treatment strategies, optimize medication usage, and enhance overall care for the geriatric population with diabetes.

Strengths and limitations:

Because the study was conducted in a government hospital, there may be a sampling bias since the patients who arrived here are usually from a low socioeconomic class. The population in our study was the elderly age group, hence the actual drug usage by the entire population could not be identified, and these data cannot be extrapolated for the entire population. Additionally, we were unable to evaluate patient compliance since patients were not interviewed in person. A more comprehensive study is warranted. Because of the present study design, we faced certain limitations which could be avoided with another well-designed prospective study.The study's sample size was adequate. Since we used the EMR, Hawthorne bias was obviated. EMR is a component of the national surveillance system making the gathered data more reliable and accurate

onclusion:

On the whole, the principles of rational prescription were followed in accordance with the different WHO drug usage indicators.

Many of the drugs prescribed by generic name were supplied from hospital pharmacy thus reducing the financial urden of the patient to some extent. The incidence of poly-pharmacy is relatively high, suggestive of irrational prescribing;but polypharmacy is quite relevant in geriatric diabetic patients because diabetes is associated with various concurrent diseases and their complications. Apart from this, drugs prescribed by generic names were also high, therefore drug use in this setup is quite rational.

We would like to make the following suggestions: (i) the use of premixed insulin was found to be good but further need to increase premixed insulin in hospital drug schedules; (ii) continue the use of metformin adhering to the ADA guidelines; (iii) need to increase newer expensive antidiabetic drugs in the hospital drug schedule and pharmacy in order to relieve the financial recommendation on the patients; (iv) the practice of prescribing glibenclamide and pioglitazone should be continued.

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Adverse Drug Reaction Reported From January To March- 2025

SNO	DEPARTMENT	ADVERSE DRUG REACTION	REPORTED BY
1.	Psychiatry	Lithium carbonate induced acne vulgarise	Sreevidhya
2.	Psychiatry	Resperidone induced dyspenia	K. Harini
3.	General Surgery	Dexa induced Leukocytosis	Sai harshitha
4.	General surgery	Furosemide induced hypochloremia	Sai harshitha
5.	Psychiatry	Mirtazapine induced akathesia	G.Sonia
6.	Psychiatry	Resperidone induced tardive dyskinesia	G.Sonia
7.	Psychiatry	Benzodiazepine induced slurred speech	K. Preethi
8.	Medical Oncology	Paclitaxel + carboplatin induced anaemia	S.V Hemavarshini
9.	Psychiatry	Fluoxetine induced chronic eczema	G.Sonia
10.	Psychiatry	Sertraline induced peptic ulcer	K. Harini
11.	Psychiatry	Diazepam induced drowsiness	Sreevidhya
12.	Psychiatry	Resperidone induced excessive salivation and body pain	G.Sonia
13.	Psychiatry	Paroxetine induced suicidal thoughts and restlessness	K. Harini
14.	Psychiatry	Olantapine induced weight gain and weakness	G.Sonia
15.	Psychiatry	Escitaloprm induced tremors	G.Sonia
16.	Psychiatry	Amitriptyline induced restless leg syndrome	G.Sonia
17.	Psychiatry	Melocet induced constipation	S.V Hemavarshini
18.	Psychiatry	Amisulpride induced tremor	S.V Hemavarshini
19.	Psychiatry	Diralproe sodium induced decreased creatinine levels	K. Harini
20.	Dermatology	Tenegliptin induced skin itching and lesions	Suresh
21.	Neurology	Methyle prednisolone induced altered thyroid levels	Suresh
22.	Psychiatry	Olanzapine induced akathesia	J. Pravallika
23	Medical Oncology	Methotrexate induced psoriatic erythoderma	Suresh
24.	General medicine	Naproxene D induced rash	Suresh
25.	Rheumatology	Methotrexate induced leucopenia	J. Pravallika
26.	Psychiatry	Mirtazeline induced weight gain	K. Harini
27.	Psychiatry	Domperidone induced diarrhoea	K. Preethi
28.	Psychiatry	Quetiapine induced anaemia	K.Harini
29.	Psychiatry	Olanzepine induced EPS	G. Likitha
30.	Psychiatry	Duroxerine induced decreased RBC count	K. Harini

NATIONAL PHARMACY EDUCATION DAY

National Pharmacy Education Day 2025, held on March 6th, celebrates the impact of pharmaceutical education on healthcare. The event highlights innovation in teaching, research advancements, and the evolving role of pharmacists in patient care. It features expert lectures, panel discussions, and workshops on curriculum development, digital transformation, and emerging pharmacy trends. Special recognitions will honor educators and researchers for their contributions. The day emphasizes the importance of continuous professional development and fosters collaboration between academia and industry to enhance global healthcare outcomes.

CAREER GUIDANCE FOR HEALTHCARE PROFESSIONALS

The National Workshop on Career Guidance for Healthcare Professionals was held at Seven Hills College of Pharmacy, Tirupati, on January 23, 2025. The event began with a symbolic lamp lighting ceremony. Keynote speaker Mr. Argha Nandi provided valuable insights into career paths in pharmacy, research, clinical practice, and healthcare management, highlighting higher education, job opportunities, and essential skills for career growth. He also discussed the growing role of pharmacists in healthcare teams and the impact of technology. The workshop was a success, offering students essential knowledge and motivation for their career decisions in healthcare.

PHARMACOVIGILANCE CASE PROCESSING WORKSHOP

The Pharmacovigilance Case Processing Workshop (Feb 5-8, 2025) began with a lamp-lighting ceremony and an address by Dr. M. Niranjan Babu, highlighting the importance of pharmacovigilance. Dr. Yogendra Srestha delivered a keynote on AI integration, automation in case processing, and regulatory challenges in drug safety.

The workshop featured interactive sessions, practical demonstrations, and hands-on training on case processing, signal detection, and regulatory compliance. Attended by enthusiastic pharmacists, it focused on enhancing skills in adverse event reporting using advanced software and AI tools, improving medication safety

INDO-CARIBBEAN INTERNATIONAL CONFERENCE

The Indo-Caribbean International Conference on Global Trends in Drug Design, Discovery, Development, and Pharmaceutical Sciences (GTD4PS – 2025) was held by Seven Hills College of Pharmacy on March 7-8, 2025.

The conference opened with a lamp-lighting ceremony and a welcome address by Dr. M. Niranjan Babu. Keynote speakers included:

- Prof. Rajiv Dahiya*, who discussed AI-driven computational drug design.
- Prof. Gaurav Gupta*, who covered advancements in pharmaceutical nanotechnology for targeted drug delivery.
- Prof. K. Padmalatha*, who highlighted the role of translational research in drug development.

The event offered a platform for researchers and industry professionals to explore the latest advancements, foster collaborations, and discuss emerging drug development strategies, technologies, and therapeutic approaches. Participants actively contributed to knowledge exchange, making GTD4PS – 2025 a significant event in pharmaceutical education and innovation

TWO-DAY NATIONAL CONFERENCE ON "EVOLVING LANDSCAPE OF GLOBAL CLINICAL TRIALS

The Two-Day National Conference on "Evolving Landscape of Global Clinical Trials: Challenges, Prospects, and Emerging Trends" brought together academicians, researchers, industry professionals, and students to discuss key challenges and opportunities in global clinical trials.

The conference began with a lamp-lighting ceremony, followed by sessions on regulatory frameworks, ethical considerations, decentralized trials, AI in research, and personalized medicine. Key contributions included:

- Dr. Alluri Ramesh* on regulatory challenges and ethics in clinical trials.
- Dr. B. Prem Kumar* on AI integration for patient recruitment and data management.
- Dr. J. Kavitha* on decentralized trials and digital health technologies.

The event provided valuable insights into evolving trial methodologies, technological advancements, and opportunities for collaboration, enhancing the future of clinical research.

BRIDGING PHARMA CAREERS

"Bridging Pharma Careers: Mastering Soft Skills and Medical Coding for Success" was a career-oriented event aimed at equipping pharmacy students and professionals with key industry skills.
The event began with a lamp-lighting ceremony and focused on two main areas:

- Soft skills* (communication, teamwork, problem-solving), led by *Mr. P. Sreedhar*, to boost confidence and adaptability.
- Medical coding*, introduced by industry experts, highlighting coding standards and career opportunities in healthcare documentation and insurance.

Through expert talks and discussions, the event bridged the gap between academic knowledge and industry expectations, preparing attendees for success in the pharmaceutical and healthcare sectors.

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