



STUDY OF SERUM ELECTROLYTES IN ACUTE EXACERBATION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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ABSTRACT

Background: Acute exacerbation of chronic obstructive pulmonary disease (AECOPD) is a common cause of hospital admission and associated morbidity. Electrolyte imbalances, especially sodium and potassium disturbances, are frequently observed during exacerbations and may worsen patient outcomes. **Objectives:** To evaluate the serum electrolyte disturbances in patients with AECOPD and their association with clinical severity. **Methods:** A cross-sectional study was conducted on 68 AECOPD patients admitted to the Department of General Medicine at Kanachur Hospital, Mangalore. Demographic data, clinical features, and serum levels of sodium, potassium, and other biochemical parameters were assessed. **Results:** Out of 68 patients, 22.06% showed hyponatremia and 22.06% showed hypokalemia. Electrolyte abnormalities were more pronounced in severe cases. Males (76.5%) and urban residents (58.8%) were predominant. **Conclusion:** Electrolyte disturbances, particularly hyponatremia and hypokalemia, are common in AECOPD and may impact disease severity. Routine electrolyte monitoring and correction should be integrated into COPD management strategies.

KEYWORDS : AECOPD, Hyponatremia, Hypokalemia, Electrolyte disturbances, COPD Exacerbation

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a leading cause of chronic morbidity and mortality worldwide. AECOPD significantly contributes to hospitalizations and healthcare burden. Multiple systemic complications, including electrolyte imbalances, occur during exacerbations. Sodium and potassium are vital electrolytes that affect respiratory muscle function, nerve conduction, and acid-base balance. This study investigates the prevalence and clinical implications of serum electrolyte abnormalities in AECOPD.

MATERIALS AND METHODS

This observational cross-sectional study was conducted at Kanachur Hospital and Research Center, Mangalore, from May 2023 to June 2025. A total of 68 patients aged 18–70 years admitted with AECOPD were included. Patients with renal, liver, cardiac failure, DKA, GI disease, pregnancy, or active TB were excluded. Data including demographics, clinical history, radiological findings, and serum electrolyte levels (Na^+ , K^+ , Cl^-) were collected. Electrolytes were measured using ion-selective electrodes. Statistical analysis was performed using SPSS v28. Significance was set at $p < 0.05$.

RESULTS

Among 68 patients, 76.5% were male and 50% aged 61–70 years. 70.6% were smokers. The most common presenting complaint was breathlessness and cough (72%). Chest X-ray showed emphysematous changes in 57.35%. Hyponatremia and hypokalemia were observed in 22.06% each. Elevated urea and WBC were noted in 11.76% and 17.65%, respectively.

DISCUSSION

This study aligns with previous research showing high prevalence of dyselectrolytemia in AECOPD. Hyponatremia may be due to SIADH or diuretic therapy, while hypokalemia could result from beta-agonist therapy or poor intake. Electrolyte monitoring in AECOPD is essential, especially in severe cases or those on corticosteroids / diuretics / bronchodilators.

CONCLUSION

Serum electrolyte disturbances are common in AECOPD and are associated with worse clinical outcomes. Routine

electrolyte monitoring and timely correction may improve management and prognosis in these patients.

Ethical Clearance

Approved by Institutional Ethics Committee, Kanachur Institute of Medical Sciences (Approval date: April 25 2023)

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