Previous study included 66 patients of acute exacerbation of COPD admitted in the department of pulmonary medicine and 60 age-sex matched healthy controls. Blood samples from all the subjects are estimated for serum electrolytes like sodium and potassium in auto analyzer.

**MATERIALS & METHODS:** This prospective study included 66 patients of acute exacerbation of COPD admitted in the department of pulmonary medicine and 60 age-sex matched healthy controls. Blood samples from all the subjects are estimated for serum electrolytes like sodium and potassium in auto analyzer.

**OBSERVATION AND CONCLUSION:** In our study, the prevalence of hyponatremia and hypokalemia among patients with acute exacerbation are 30.3% and 12.12% respectively. We also observed that, there is a decrease in the mean serum levels of sodium and potassium among cases (133.9±2.83 and 3.42±0.35) when compared to controls (140.25±1.58 and 4.06±0.09) which is statistically significant (p value <0.05).

Electrolytes may get deranged in COPD exacerbation and can be taken as a predictive marker for bad clinical course, warranting prompt identification and correction.

Hence, routine screening of serum electrolyte abnormalities and correction of hyponatremia and hypokalemia may actually improve the outcomes in exacerbations.

**RESULTS:**

Out of 66 COPD cases, 56 were males and 10 were females. Out of 60 age sex matched healthy controls, 50 were males and 10 were females.

Subjects of COPD were in the age range of 47-85 years & mean age is 57.82 ± 10.81 yrs. Controls were in the age range of 47-85 years & average age is 55.53 ± 9.78 years.

Among patients with acute exacerbation, the prevalence of Hyponatremia is 30.3% and Hypokalemia is 12.12%.

The mean serum sodium(mEq/L) in cases and controls is 133.9±2.83 and 140.25±1.58 respectively.

The mean serum potassium(mEq/L) in cases and control is 3.42±0.35 and 4.06±0.09 respectively.

The patients with acute exacerbation of COPD had significantly low serum sodium and potassium levels (p value : 0.005 and p value : 0.014 respectively).
Patients of acute exacerbation of COPD should be screened for electrolyte imbalance.

Hyponatremia and hypokalemia may further worsen the clinical course causing mortality and morbidity.

Hence, routine screening of serum electrolyte abnormalities and correction of hyponatremia and hypokalemia should be done at the earliest so that it might actually improve the outcomes in exacerbations.

REFERENCES:

DISCUSSION:
Exacerbations are the most common cause of hospitalization among COPD patients.1

In a case of acute exacerbation of COPD, it has been observed that besides the signs of acute infection, there may be number of co-morbid conditions like type II respiratory failure and carbon dioxide narcosis, metabolic abnormalities such as dyselectrolytemia, uremia and liver function abnormalities. Though most of the abnormalities are correctable, attempt is not made to correct either due to overlapping or due to lack of lab facility for 24 hrs monitoring.

Estimation of serum electrolytes showed hyponatremia (S.Na+ < 135) & hypokalemia (S.K+ <3.5) in COPD cases with mean serum sodium and potassium levels (mEq/L) 133.9±2.83 and 3.42±0.35 respectively. In controls, mean serum sodium and potassium levels (mEq/L) 140.25±1.58 and 4.06±0.09 respectively.

There is a statistically significant decrease in the mean sodium and potassium levels in COPD cases when compared with controls (P < 0.05).

These results are similar to the observation of several other studies.

In the study by Das et al, who measured the serum K+ and Na+ in 64 patients with acute exacerbation of COPD and compared the results with 20 healthy volunteers. They reported a significant decrease in serum Na+ and K+ in COPD patients (133±6.56 mEq/lit, 3.39±0.96 mEq/lit respectively) than in normal controls (142±2.28 mEq/lit, 4.52±0.02 mEq/lit respectively, p<0.05).

In a study by Goli et al., among 62 patients who were admitted with acute exacerbation of COPD exacerbation and 20 healthy age and sex matched controls, found a significantly low level of serum sodium and potassium in the COPD patients (132±5.65 mEq/L and 3.29±0.96 mEq/L respectively) than that of the healthy controls (140.25±1.58 and 4.06±0.09 mEq/L respectively) (p value <0.05 in each case).

Patients with COPD are susceptible to hyponatremia due to development or worsening of hypoxia, hypercapnia and respiratory acidosis and right side heart failure, renal insufficiency, use of diuretics, Activation of the renin angiotensin aldosterone system and inappropriately elevated plasma arginine vasopressin (AVP) in COPD may aggravate the electrolyte imbalance during acute exacerbation of COPD (Bauer et al)

Hypokalemia may be present independently or concomitantly with hyponatremia. Hypokalemia in COPD may be attributed to respiratory acidosis and metabolic alkalosis or long standing steroid therapy (Saini et al, 2008). It may lead to central nervous system dysfunction; confusion, convulsions, coma, reversible cardiac conduction defect, secondary renal insufficiency even death (Suri et al, 2009; Porcel et al, 2002).

Acute respiratory failure associated with hypokalemia was found to have a high mortality rate among the COPD patients (Hussain et al, 2008).