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ORIGINAL ARTICLE

Frequency of Hyponatremia in Chronic Obstructive Pulmonary Disease Patients

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ABSTRACT

Aim: To determine the frequency of hyponatremia in chronic obstructive pulmonary disease patients.
Study Design: Cross-sectional-study
Place and duration of study: Medical "A" Unit, MTI Ayub Teaching Hospital Abbottabad from 23rd July 2019 to 22nd January 2020.
Methodology: Two hundred and one patients presenting with chronic obstructive pulmonary disease (COPD) were enrolled.
Results: One hundred and thirty five (67.2%) patients were male while 66 (32.8%) patients were females. In 30 (14.9%) patients have hyponatremia.
Conclusion: Hyponatremia is prevalent in COPD patients, and its frequency was quite higher in patients admitted with COPD. Thus, hyponatremia patient' should be monitored carefully.
Keywords: Chronic obstructive pulmonary disease, Hyponatremia, Sodium levels

INTRODUCTION

Disease in which air flow is limited is characterized as chronic obstructive pulmonary disease (COPD), also not fully reversible, progressive and abnormal inflammatory response. It is caused by long term exposure to toxic particles and gases. In developed countries smoking is major cause while in developing countries biomass fuel burning and cooking in poorly ventilated areas is a major cause. It is predicted that COPD will become the 3rd most common cause of death and 5th most common cause of disability in 2020 worldwide.[1]

Hyponatremia is defined as serum sodium level less than 135 mmol/L. Cause of hyponatremia depends upon body volume status. Hypovolumic hyponatremia is caused by diarrhea, vomiting, hemorrhage, burns, osmotic diuretics etc. In this condition salt loss is more than water loss. Euvolumic hyponatremia is due to excessive water intake than kidney water excretion ability. Its causes are abnormal antidiuretic hormone (ADH) release (severe potassium depletion, hypothyroidism), syndrome of inappropriate antidiuretic hormone (SIADH) and increased sensitivity to ADH. Hypervolumic hyponatremia is caused by heart failure, liver failure, oliguric kidney injury hypoalbuminemia and COPD.[2] Hyponatremia is a widely used electrolyte abnormality in patients and is found in 15% to 35% of patients. Hyponatremia presents with nausea, vomiting, headache, confusion and if more severe then can lead to seizure and coma.[3] In COPD patients with hyponatremia had worse clinical outcome than COPD patients with normal serum sodium level.[4] Hyponatremia in COPD can result from increased salt and water retention due to heart failure, effect of treatment drugs and syndrome of inappropriate antidiuretic hormone release.[5] Hyponatremia should be checked and corrected routinely in hospitalized patients to avoid fatal outcome.[4]

Hyponatremia in COPD admitted patients was found about 15.4%.[4]In other study hyponatremia was found 20% in patients admitted with acute COPD exacerbation.[5]

The purpose of the present study is to determine the frequency of hyponatremia in patients of COPD. As COPD is among the common disease in our country and its exacerbations are among common admission needing conditions and have a major part of hospital economic burden.

MATERIALS AND METHODS

This descriptive cross-sectional study was carried out in the Medical "A" Unit, MTI Ayub Teaching Hospital Abbottabad from 23rd July 2019 to 22nd January 2020 after permission from IRB. A total of 201 patients presenting with COPD were enrolled. After fulfilling the management protocol, the data regarding common risk factors were collected. Detailed history was taken regarding previous COPD history, its medication use, previous electrolytes test reports and 3cc fresh venous blood sample taken in disposable syringe to check serum sodium level in Ayub Teaching Hospital laboratory. Patients were entered as having hyponatremia if they meet the operational definition of hyponatremia. The data was entered and analyzed using statistical program SPSS version 23.

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RESULTS

The mean age was 61.18±8.35 years, mean serum sodium level was 133.40±4.82, mean for COPD duration was 5.09±1.971 (Table 1). 157(78.1%) patients were below 65 years age, and 44(21.9%) patients were above 65 years of age (Fig 1). 135(67.2%) patients were male while 66(32.8%) patients were females (Fig 2). In 30 (14.9%) patients, hyponatremia was recorded (Table 2). Hyponatremia was stratified with age groups in Table 3.

Table 1: Descriptive Statistics of Study (n=201)

Variable	Mean±SD
Age	61.18±8.35
Serum sodium level	133.40±4.82
COPD duration (Years)	5.09±1.97

Table 2: Frequency of hyponatremia (n=201)

Hyponatremia	No.	%
Present	30	14.9
Absent	171	85.1

Table 3: Comparison of age according to hyponatremia (n=201)

Hyponatremia	Age (years)		P value
	≤ 65	> 65	
Present	22 (10.9%)	8 (3.9%)	0.493

Fig. 1: Distribution of age

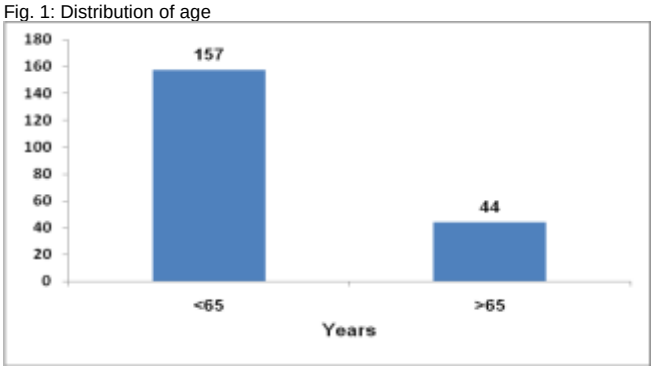
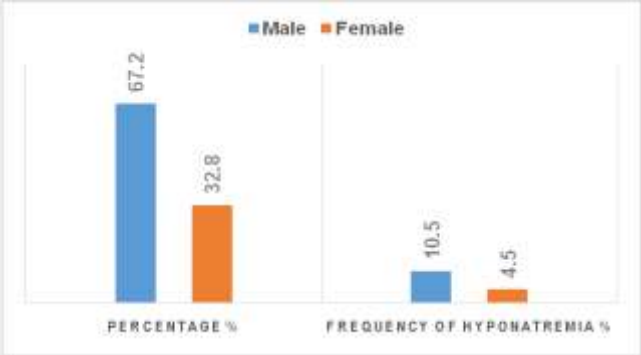


Fig 2: Gender distribution percentage of hyponatremia



DISCUSSION

Hyponatremia is the most frequent electrolyte disorder in patients attending the hospitals. It is not a disease but alteration in normal water hemostasis.[6-9] Uses of certain drugs, corticosteroid withdrawal, gastrointestinal loss and inappropriate secretion of antidiuretic hormone often leads to hyponatremia.[10] Hyponatremia presents with nausea, vomiting, headache, confusion and if more severe then can lead to seizure and coma. Most of the patients of hyponatremia are asymptomatic but sometimes it also present gastrointestinal and neurological symptoms.[11,12]

Prevalence of hyponatremia is 14.9% and its frequency was higher among males that are upto 10.5%. Similar study from Netherland reports 7.7% of prevalence. This difference might be because of tropical weather, nutritional pattern and better solute intake. [13,14] Risk of hyponatremia also rises many folds with advancement in age. In present study, almost 11% of the patients had age <65yr and 4.5% of the patients had age even greater than 65 years. These findings are also similar with reported literature.[15,16]

Results of the present study highlighted that, incidence of hyponatremia was very high in higher age group people and men appeared to be more affected as compared to the females. Physicians should take this fact into consideration while examination of elderly people as they are more susceptible to hyponatremia and its associated morbidities.[17-20]

CONCLUSION

Hyponatremia is prevalent in COPD patients, and its specifically prevalent in admitted patients of COPD. Hence, these patients need to be carefully monitored.

Conflict of interest: Nil

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