|| ISSN(online): 2589-8698 || ISSN(print): 2589-868X ||
International Journal of Medical and Biomedical Studies
Available Online at www.ijmbs.info
NLM (National Library of Medicine ID: 101738825)
Index Copernicus Value 2019: 79.34
Original Research Article
Volume 5, Issue 1; January: 2021; Page No. 377-379

TO ANALYZE THE IMPORTANCE OF ROUTINE ELECTROLYTES AND CORRECTING HYPONATREMIA IN SEVERE PROBLEMS OF COPD

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Article Info: Received 13 December 2020; Accepted 24 January 2021
DOI: https://doi.org/10.32553/ijmbs.v5i1.1607
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Conflict of interest: No conflict of interest.

Abstract

Background & Method: Study will be conducted on sixty patients of acute exacerbation of COPD from the Department of Respiratory Medicine (TB and Chest) at Sapthagiri Institute of Medical Sciences & Research Center, Bangalore. All the tests were done with due permission from the Institutional Ethical Committee and informed consent from the subjects or their legal relatives. Subjects were included on the basis of their diagnosis of COPD as per GOLD guidelines.

Result: The association between Hyponatremia and Severity of COPD based on BODE class. Among 18 patients with Mild COPD, 1,15,2, and 0 subjects had Normal Serum Sodium, Mild, Moderate and Profound Hyponatremia respectively. Among 23 patients with Moderate COPD, 2,0,21, and 0 subjects had Normal Serum Sodium, Mild, Moderate and Profound Hyponatremia respectively. Among 25 patients with Severe COPD, 3,22,37, and 4 subjects had Normal Serum Sodium, Mild, Moderate and Profound Hyponatremia respectively. P-value of 0.000 showed statistically significant. The association between Hyponatremia and Exacerbations in the Following 1 year. The study showed a linear relation between Severity of Hyponatremia and Exacerbations with a statistically significant P-value of 0.0007

Conclusion: Hyponatremia along with other electrolyte imbalances are very common during an episode of acute exacerbation of COPD. Routine screening for electrolyte imbalances and correction are very necessary as it reduces the quality of life, increases exacerbations following one year and even may cause mortality.

Keywords: electrolytes, hyponatremia, COPD & respiratory.

Introduction

The vast majority of the data accessible on COPD prevalence, morbidity and mortality comes from created nations. Indeed, even in these nations, precise epidemiological information on COPD are troublesome and costly to collect[1]. Predominance & bleakness information extraordinarily think little of the all out weight of COPD on the grounds that the sickness is normally not analyzed until it is clinically clear and tolerably progressed.

In the Global Burden of Disease study led under the support of the WHO & the World Bank, the overall predominance of COPD in 1990 was assessed to be 9.34/1000 in men & 7.33/1000 in women[2]. In any case, these estimates incorporate all ages & disparage the genuine commonness of COPD in more established grown-ups.

Generally speaking, the pervasiveness is more noteworthy in guys, which is because of higher predominance of smoking in this gender[3]. The illness is generally found in the moderately aged or old subjects, and is uncommon before the age of 35 years.

It has been accounted for from the investigations in Northern India that the pervasiveness of constant bronchitis might be pretty much as high as 15% in subjects over the age of 40 years in provincial territories. Further the predominance of infection is to some degree more noteworthy in Northern India when contrasted with South India. The commonness rates in male subjects of 2.12% to 9.4% in investigations revealed from the North are by and large higher than 1.4% to 4.08% announced from South India. The territorial distinction has been credited to climatic conditions, especially the extreme winter in North Indian states[4].

Material & Method

Study will be conducted on sixty patients of acute exacerbation of COPD from the Department of Respiratory Medicine (TB and Chest) at Sapthagiri Institute of Medical Sciences & Research Center, Bangalore Karnataka from duration of July 2018 to June 2019. All the tests were done with due permission from the Institutional Ethical Committee and informed consent from the subjects or their legal relatives. Subjects were included on the basis of their diagnosis of COPD as per GOLD guidelines.

Inclusion criteria:

1. Patients more than 45years of age with clinical diagnosis of COPD since at least last 1 year

2. As per GOLD guidelines, any patient who has symptoms of chronic cough, sputum production or dyspnea, the values of FEV1< 80% of the expected value and FEV1/ FVC < 070% after post bronchodilator inhalation.

3. Patients with acute episodes.

Exclusion criteria:

1. Recent myocardial infarction < 4months.

2. Unstable angina.

3. Congestive heart failure (NYHA class III or IV).

4. Liver disease.

5. Patients with acute exacerbation.

6. Female sex.

Results

Table 1: Association between Hyponatremia and Severity of COPD based on BODE Class

Serum Sodium Level					
COPD	Normal	Mild	Moderate	Profound	ALL
Mild	1 (33.33%)	15 (68.18%)	2 (5.41%)	0 (0%)	18 (27.27%)
Moderate	2 (66.67%)	0 (0%)	21 (56.76%)	0 (0%)	23 (34.85%)
Severe	0 (0%)	7 (31.82%)	14 (37.84%)	4 (100%)	25 (37.88%)
ALL	3 (100%)	22 (100%)	37 (100%)	4 (100%)	66 (100%)

The association between Hyponatremia and Severity of COPD based on BODE class. Among 18 patients with Mild COPD, 1,15,2, and 0 subjects had Normal Serum Sodium, Mild, Moderate and Profound Hyponatremia respectively. Among 23 patients with Moderate COPD, 2,0,21, and 0 subjects had Normal Serum Sodium, Mild, Moderate and Profound Hyponatremia respectively. Among 25 patients with Severe COPD, 3,22,37, and 4 subjects had Normal Serum Sodium, Mild, Moderate and Profound Hyponatremia respectively. P-value of 0.000 showed statistically significant.

Table 2: Association between Hyponatremia and Exacerbations in 1 Year

Serum Sodium Level					
Group	Normal	Mild	Moderate	Profound	All
0	00 (0%)	11 (50%))	04 (10.81%)	00 (0%)	15
1	02 (66.67%)	07 (31.82%)	18 (48.65%)	00 (0%)	27
2	01 (33.33%)	01 (4.55%))	11 (29.73%)	02 (50%)	15
3	00 (0%)	02 (9.09%)	03 (8.11%)	00 (0%)	05
4	00 (0%)	01 (4.55%)	01 (2.70%)	02 (50%)	04
All	03 (100%)	22 (100%)	37 (100%)	04 (100%)	66 (100%)

The association between Hyponatremia and Exacerbations in the Following 1 year. The study showed a linear relation between Severity of Hyponatremia and Exacerbations with a statistically significant P-value of 0.0007

Discussion

Around the same time a comparative report was distributed by L Harshavardhan et al (2016) [5]. They studied the Serum Electrolyte Profile in Subjects Admitted with Acute Exacerbation of Chronic Obstructive Pulmonary Disease. The investigation included 100 COPD patients & 100 solid controls[6]. They found that there was a measurably huge distinction ($P < 0.001$) between serum levels of sodium in patients with intense compounding of COPD (131.7 ± 5.07 mEq/L) when contrasted with sound controls (138.66 ± 3.83 mEq/L). Moreover, serum potassium levels in COPD exacerbation cases (3.31 ± 0.33 mEq/L) was fundamentally low ($P < 0.001$) when contrasted with that of controls (3.87 ± 0.36 mEq/L). They inferred that Serum electrolyte levels were significantly low among patients of intense fuel of COPD. Subsequently evaluating for these anomalies may improve outcome[7].

Comparative outcomes was seen in this investigation. The mean Serum Sodium of Patients in the Case Group was 128.85 ± 3.17 and that of the benchmark group was 138.81 ± 1.69. The contrast between the two gathering returned genuinely critical with a P-estimation of 0.000. After isolating Study Group dependent on seriousness of Hyponatremia 22, 37 and 4 out of 66 subjects were in Mild, Moderate and Profound individually in the Case Group and All the 20 subjects in the benchmark group had an ordinary Serum sodium level[8]. There was genuinely huge distinction between the two groups with a P-value of 0.000. Indeed, even we saw a straight connection among Hyponatremia & COPD seriousness dependent on BODE class. The mean Serum Sodium in Mild COPD was 131.661 ± 2.016 ,in Moderate COPD was 128.061 ± 2.635 & in Severe COPD was 127.541 ± 3.114 showing an immediate connection between the Severity of COPD dependent on BODE class and Serum Sodium values with statistically significant[9].

Conclusion

Hyponatremia along with other electrolyte imbalances are very common during an episode of acute exacerbation of COPD. Routine screening for electrolyte imbalances and correction are very necessary as it reduces the quality of life, increases exacerbations following one year and even may cause mortality.

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