To Study the Prevalence and Type of Anaemia in Patients of Chronic Obstructive Pulmonary Disease

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I. Introduction

Chronic obstructive pulmonary disease (COPD) is a common preventable and treatable lifestyle-related disease with high global prevalence. COPD is associated with significant morbidity and mortality worldwide. Comorbidities are important events in the natural history of the disease and have a negative effect on the morbidity and mortality of COPD patients. Cardiac diseases, lung cancer, osteoporosis, and depression are common comorbidities reported for COPD. Recently, anaemia has been recognized as a frequent comorbidity in COPD patients. The prevalence of anaemia in patients with COPD varies from 7.5% to 33%. Anaemia of chronic disease (ACD) is probably the most common type of anaemia associated with COPD. ACD is driven by COPD-mediated systemic inflammation. Anaemia in COPD is associated with greater healthcare resource utilization, impaired quality of life, decreased survival, and a greater likelihood of hospitalization.[i]Comorbidity is a disease process coexisting with COPD and has common risk factor. When direct consequence of patient underlying COPD, is coexisting illness, it is called systemic effect[ii,iii]. Anaemia in COPD is probably multifactorial and may be caused by others factors, such as concealedchronic renal failure, decreased androgenic levels, iron depletion, angiotensin-converting enzyme inhibitor treatment and exacerbations. Low levels of haemoglobin and haematocrit in COPD patients have been associated with poor clinical and functional outcomes as well as with mortality and increased healthcare costs.[iv]

In recent years, anaemia has gained importance in patients with COPD. Traditional teaching in clinical medicine considers polycythemia to be a common adverse event of hypoxemia in COPD. However, now-a-days this occurs less frequently due to more rigorous correction of hypoxemia by domiciliary long-term oxygen therapy.[v] Conversely, anaemia has been reported more frequently in association with COPD in recent years with an impact on the quality of life (QOL), healthcare utilization, and survival.[vi]

Anaemia in COPD is understudied. There are no previous reports on anaemia frequency and pathophysiology in COPD. More detailed investigations on hematologic and clinical parameters (i.e. prevalence of anaemia in COPD and its gender relatedness, exercise capacity, 6-min walk test) and prognosis are required to provide indications whether anaemia is merely a marker or a mediator of pathophysiologic processes that may impair physical functioning in COPD.[vii]

II. Materials And Methods

Type of Study : Prospective Observational study
Sample Size: 100 cases
Patients qualifying by fulfilling all inclusion criteria and will be enlisted in the study after informed consent.

INCLUSION CRITERIA:

* Patients aged more than 18 years, irrespective of sex, admitted in Chattrapati Shivaji Subharti Hospital, Meerut, and fulfilling the diagnostic criteria of COPD.

EXCLUSION CRITERIA:

* Patients with other chronic diseases namely cancer, renal or hepatic failure
* Acute blood loss, history of folic acid or vitamin B-12 deficiency
* Received blood products during previous three last month

INVESTIGATIONS
1. COMPLETE BLOOD COUNT WITH ESR
2. GBP
3. RETICULOCYTE COUNT
4. PFT
5. VIT B12 LEVELS
6. IRON PROFILE

III. Results
Table: Distribution of studied patients on the basis of haemoglobin level

Haemoglobin Status	No. of Patients (n=100)	Percentage
Anaemic (<12 g/dl)	22	22.0
Non-Anaemic (>12 g/dl)	78	78.0

Table: Distribution of patients on the basis of Vitamin B12 level in anaemic patients in our study

Vitamin B12 level	Normal	Increased	Decreased
22 (Anaemic patients)	20	1	1

Table: Distribution of patients on the basis of serum iron level in aneamic patients

Iron Profile		Male (n=18)	Female (n=4)	p-value
Serum Iron level (mg/dl)	Decreased (<59)	14 (77.8)	3 (75.0)	0.906
	Normal/Increased (59-158)	4 (22.2)	1 (25.0)	
Saturation (%)	Decreased (<16)	10 (55.56)	2 (50.0)	0.841
	Normal/Increased (16-50)	8 (44.44)	2 (50.0)	
TIBC (mg/dl)	Decreased (<259)	15 (83.3)	3 (75.0)	0.696
	Normal/Increased (259-388)	3 (16.67)	1 (25.0)	

One hundred patients (63 males and 37 females) with a mean (SD) age of 59.81±7.83 years having COPD, A total of 22 cases of anaemia were detected giving a frequency of 22.0% out of which serum iron level was low in 17 patients out of 22 and serum folic acid level was low in 2 patients and increase 1 patient, serum vitamin B12 level was high in 1 patient and low in 1 patient.

IV. Discussion
The prevalence of anaemia in COPD remains unclear and varies widely. This variability depends on the population under study (stable COPD or patients hospitalized for acute exacerbation), the tools to identify anaemic subjects, and the definitions used for anaemia. Contrary to common thinking, recent studies have shown that anaemia is a frequent comorbid associated disease in COPD, ranging from nearly 10 to 30% of patients, particularly in patients with severe disease, whereas polycythemia (erythrocytosis) is relatively rare.[viii] The World Health Organization defines anaemia in the general population as haemoglobin concentration of less than 13.0 g/dL in men and less than 12.0 g/dL in women (WHO 1968). However, when determining anaemia using haemoglobin, it is important to account for the following aspects: firstly, the prevalence of anaemia in the general population increases with age and COPD is a chronic disease that affects an aging population; secondly, appropriate haemoglobin threshold for anaemia definition in older postmenopausal females remains controversial (Cote et al, 2007)[ix] and finally, COPD patients could have a "relative anaemia"—a term used to describe cases in which apparently normal haemoglobin values do not correlate with level of hypoxemia.

Total 100 patients were included suffering from COPD whose mean age was 59.81 years also the number of male and female were 63 and 37 respectively. The prevalence of anaemia in 100 patients was found in 22 (22.0%) patients majority of patients were males (63.0%) followed by females (37.0%).

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