Research Article

Prevalence of anemia in patients with chronic pulmonary diseases and its impact on their quality of life

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Abstract

Introduction: Anaemia has a significant public health burden in developing nations. Anaemia is never a diagnosis - it occurs secondary to an underlying disease process. Anemia is known to occur in many chronic conditions such as chronic pulmonary disease, chronic heart failure, rheumatoid arthritis, cancer, chronic infections, chronic kidney disease, and many other chronic inflammatory conditions. However, anemia has gained importance in COPD over the last one decade only. **Aim of work** Study the prevalence of anemia in patients with chronic pulmonary diseases and its impact on their quality of life. **Patients and methods** The present study is a prospective observational study that was conducted at chest department, Minia university hospital and chest hospital during the period from November 2015 to January 2017.A total of 258 patients with Chronic pulmonary diseases (97 COPD , 45 ILD ,80 Broncial asthma ,17 Bronciectasis and 19 TB) were included in our study. Results: In the present study Anemia occurs in 42.9 % of all patients, polycythemia occur in 6.9 % and the remaining 50.2% of patients had normal hemoglobin level. The highest prevalence of anemia in this study was reported in patients with pulmonary tuberculosis while the lowest prevalence was reported in patients with bronchial Asthma. **Conclusion:** In conclusion, anemia occurs frequently in patients with chronic pulmonary diseases and is associated with increased morbidity in the form of number of exacerbations and hospital admissions and also negatively affect quality of life.

Introduction

Anaemia has a significant public health burden in developing nations[(1)]. Anaemia is never a diagnosis - it occurs secondary to an underlying disease process. Various epidemiologic studies have highlighted the burden, distribution and risk factors of anaemia. According to WHO estimates, more than a third of the world population (2 billion) is affected by anaemia[(1)]. Anemia is known to occur in many chronic conditions such as chronic pulmonary disease, chronic heart failure, rheumatoid arthritis, cancer, chronic infections, chronic kidney disease, and many other chronic inflammatory conditions. However, anemia has gained importance in COPD over the last one decade only[(2)]. Anemia is definitely a common entity in COPD patients, unlike the traditional view of polycythemia, that is given more emphasis in almost all standard text books. The frequency of anemia in COPD patients is variable in literatures, reflecting various methods of studies, outpatient versus hospitalized patients, stable versus patients in acute exacerbation of COPD, local prevalence of anemia, the confounding factors, and different definitions of anemia adopted in these studies[(3)].

Aim of work

Study the prevalence of anemia in patients with chronic pulmonary diseases and its impact on their quality of life.

Patients and methods The present study is a prospective observational study that was conducted at chest department, Minia university hospital and chest hospital during the period from November 2015 to January 2017.A total of 258 patients with Chronic pulmonary diseases (97 COPD, 45 ILD, 80 Broncial asthma, 17 Bronciectasis

and 19 TB) were included in our study. The patients were enrolled from both the outpatient clinic, the inpatient department and some cases were taken from chest hospital.

Inclusion criteria

Patients with chronic chest problems who were managed in both the outpatient clinic and inpatients department during the period from November 2015 to january 2017.

Exclusion criteria

Patients who have concomitant disorders that can cause anaemia.

For all included patients the following were done:

1- Full history taking, general and local examination.

2- laboratory investigations:

- CBC, ESR, CRP, liver&renal function tests.
- Measurements of serum Erythropoietin, iron and Total iron binding Capacity.

3- Chest X ray and HRCT (when indicated)

4- ECG & Echocardiography (when indicated)

5- Pulmonary function tests.

Results:

Table (1): show demographic data of the studied groups

	Total N=258	COPD N=97	ILD N=45	Asthma N=80	Bronchiactesis N=17	TB N=19	P
Age (year) Range Mean±sd	10-90 47.7±17.7	40-90 62.4±9.2	26-70 52.7±9.5	10-50 32.1±10.8	21-65 42.1±18.3	20-55 32.3±10.3	0.001*
Sex Male Female	148(57.4%) 110(42.6%)	77(79.4%) 20(20.6 %)	13(28.9%) 32(71.1 %)	43(53.8%) 37(46.3 %)	7(41.2%) 10(58.8%)	8(42.1%) 11(57.9%)	0.001*
Education illiterate educated	140(54.3%) 118(45.7%)	67(69.1%) 30(30.9%)	28(62.2.0%) 17(37.8%)	30(37.5%) 50(62.5%)	7(41.2%) 10(58.8%)	8(42.1%) 11(57.9%)	0.001*
Marital state married single Widow Divorced	217(84.1%) 25(9.7%) 13(5.0%) 3(1.2%)	96(99.0%) 1(1.0%) 0 0	40(88.9%) 2(4.4%) 3(6.7%) 0	62(77.5%) 14(17.5%) 4(5.0%) 0	4(23.5%) 5(29.4%) 5(29.4%) 3(17.6%)	15(78.9%) 3(15.8%) 1(5.3%) 0	0.001*
BMI Range Mean±sd	15.3-40.8 24.5±3.5	15.3-40.8 23.9±4.7	21-31 25.3±2.3	18-30 24.8±2.7	22-27 24.6±1.4	20-26 23.8±1.6	0.1
Smoking smoker ex smoker non smoker	58(22.5%) 47(18.2%) 153(59.3%)	38(39.2%) 36(37.1%) 23(23.7%)	2(4.4%) 4(8.9%) 39(86.7%)	17(21.3%) 6(7.5%) 57(71.3%)	0 0 17(100.0%)	1(5.3%) 1(5.3%) 17(89.5%)	0.001*
Smoking index Range Mean±sd	1-80 37.2±19.1	20-80 46.04±13.5	5-45 22.5±24.7	3-21 11.7±4.8	-	1-45 23±31.1	0.001*

Table (2): Comparison between the anemic and polycythemic patients regarding EPO, serum iron and total iron binding capacity (total group 258 patients).

Studied parameters	Anemic group	polycythemic group	P value
EPO	42.1±10.3	24.04±3.8	0.001*
Serum iron	66.7±36.1	170.9±9.6	0.001*
Total iron binding capacity	246.9±47.2	377.1±14.8	0.001*

Table (3): Prevalence of anemia, serum EPO, Iron and TIBC in moderate and severe COPD patients.

	Moderate COPD	Severe COPD	P value
Prevalence of anemia	33.3% (5)	40% (20)	0.06
EPO level (mU/mL)	15.24±2.6	17.09±3.3	0.2
Iron level(µg/dL)	65±2.7	40±1.3	0.02*
Total iron binding capacity(µg/dL)	125±5.7	103±6	0.04*

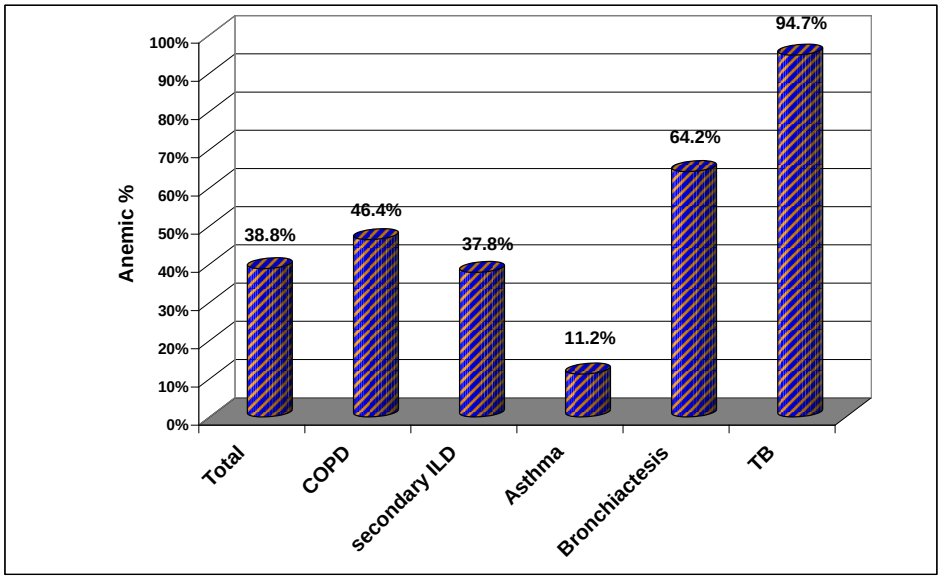
Table (4): HRQL SCORES between Patients with normal Hb, anemic, and polycythemic patients.

	patient with normal HB N=142	Anemic N=100	Ploycythemic N=16	P
Symptoms score Mean±sd	68.3±16.2	75.6±15.3	74.6±19.8	0.04*
Activity score Mean±sd	64.2±16.8	74.2±17.2	73.1±25.1	0.01*
Impacts score Mean±sd	59.3±21.02	72.2±18.9	62.3±19.1	0.01*
Total score Mean±sd	60.1±17.6	71.9±17.7	69.4±19.5	0.00*

Table (5): mMRC and number of exacerbation among Patients with normal HB, anemic, and polycythemic patients.

	Patients with normal HB N=142	Anemic N=100	Ploycythemic N=16	P
MMRC Mean±sd	3.1±0.6	3.8±1.4	3.2±1.3	0.02*
Number of exacerbation Mean±sd	1.9±1.8	3.7±2.9	3.2±2.8	0.001*

Figure (1): Prevelance of anemia in studied groups.



Discussion

In the present study Anemia occurs in 42.9% of all patients, polycythemia occur in 6.9% and the remaining 50.2% of patients had normal hemoglobin level.

In our studied patients anemia was present in 46.4 % of COPD patients which is in agree the results reported by El-Korashy et al., study in which prevelance of anemia was 46%[4]. In patients with ILD Prevalence of anemia was 37.8%. Mosburg et al., 2009 reported higher prevalence anemia in their study (44.9%)[5]. In patients with bronchiectasis anemia was present in 64.7% of patients .This is markedly higher than the prevalence of anemia in patients with bronchiectasis reported in the study done by McDonnel JM et al., 2016 which was 1.7% of studied subjects[6]. This could be explained by, the small number of patients in our study, the more severe condition of our group of patients since all patients had advanced diseases. In patients with tuberculosis anemia occurred in 94.7% of patients. This is in agree with the results of the study done by Roberts et al., 1966 which showed prevelance of anemia of 94%[7]. In the present study anemia was present in 11.2% of patients with bronchial asthma. This is in agreeing with what is reported by John et al., study 2005 in which prevelance of anemia was 10% [8].

Conclusion

In conclusion, anemia occurs frequently in patients with chronic pulmonary diseases and is associated with increased morbidity in the form of number of exacerbations and hospital admissions and also negatively affect quality of life.

Recommendations

Correcting anemia in these patients may improve their clinical outcome.

More studies are needed to study anemia and its types in patients with chronic pulmonary diseases and its impact on quality of life

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