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THE STUDY OF ANAEMIA IN COMORBID CONDITIONS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

AIM

The main aim of the study is to focus on the prevalence, prevention and management of anemia and anemia as a comorbidity.

Objective

To study the risk factors causing anemia. To educate the patients regarding the problems leading to anemia. To find out proper management of anemia. To examine signs and symptoms, correction of underlying etiology, and prevention of recurrence.

Methodology

This study is a retrospective observational study that has been conducted over a period of six months. The study was conducted at GLENEAGLES AWARE GLOBAL HOSPITAL, LB NAGAR. The patients who are admitted in the hospital during our study period i.e.; from October 2021 to March 2022 are enrolled. The patients with anemia in presence of many other comorbidities were evaluated, diagnosed, and are prescribed with suitable drug therapy. By using a desirable data collection form, the required details were collected from patient demographics, prescription chart, progress notes, laboratory data, doctor notes, nursing notes, medical records, discharge summary.

Results

One fifty patients were included in the project. The percentage of females with anemia was found to be slightly greater than males i.e. 50.7% females and 49.3% males. Majority of the people with anemia were found to be between the age group of 61-70years (28%). The most common diseases among the sample 150 patients were severe anemia 20% , chronic kidney disease 14.6%, iron deficiency 13.3% etc. The most commonly prescribed medicines are vitamins and minerals 15.01% followed by antibiotics 14.11% followed by antihypertensive agents 10.42%. Age wise distribution of female patients from the sample patients based upon the menstrual cycle where post menstruation women (63.2%) were having less amount of hemoglobin than the menstruating women(28.9%) and pre-menstruation females(7.9%).On comparison of all the comorbidities, severe anemia (20%) followed by chronic kidney disease (14.6%) and iron deficiency anemia (13.3%) were responsible for anemia in majority of population of the sample. Anti-anemic drugs were also prescribed for treatment of anemia. These include erythropoietin stimulation agents (42.8%), Nutraceutical agents (23.8%), and Hematinics (33.3%). Anti-parasitic drugs like metronidazole (83.3%), Ivermectin (8.3%) and Albendazole (8.3%) were prescribed for improving the anemic condition of the patient with parasitic infections. Percentage of patients who received blood transfusions is 28.6% the remaining 71.3% of patients did not receive any blood transfusions.

Conclusion

From our study it has been concluded that anemia is a considerable condition that can affect the therapy of other diseases and can also exaggerate other comorbid diseases equally.

Keywords: Anemia, hemoglobin, menstrual cycle, iron deficiency anemia

INTRODUCTION

Anemia is one of the foremost common dietary deficits that have an effect on individuals from all walks of life. It is more frequent in underdeveloped nations, with youngsters and teenagers having a so much higher likelihood of acquiring it [1]. Anemia is outlined as hemoprotein (Hb) levels of twelve.0 g/dL in ladies and 13.0 g/dL in males, in line with the planet Health Organization (WHO). Normal Hb distribution, on the opposite hand, differs not solely by sex but additionally by the quality and physiological health. Blood loss, a decrease in red blood corpuscle formation, and a rise in red blood corpuscle breakdown will all contribute to anemia. Trauma and duct harm are unit common causes of blood loss [2]. Tiredness, weakness, shortness of breath, headaches, and a reduced capacity to exercise are unit common symptoms of anemia that develop slowly. [2] once anemia strikes suddenly, symptoms like confusion, faintness, loss of consciousness, and exaggerated thirst could occur. human anemia should be severe before they seem prominently pale. Depending on the underlying cause, different symptoms could seem.[2] Anemia before surgery will increase the probability of requiring an intromission afterward [3].

METHODOLOGY

Study Site

The study is carried out in Aware Gleneagles Global Hospital, Saroornagar, Hyderabad, Telangana, India.

Study Design

- This is six-month observational research that will be completed retrospectively.
- The research was carried out in the medicine ward of Aware Global Hospital.
- All necessary patient data will be collected from wards on suitable patient data collection forms.

Data Collection

Following data is collected on suitable data collection forms

- Patient demographics.
- Lab investigations.
- Medication form.
- Patient case notes.

Inclusion Criteria

- Patients of both genders.
- Patients of all age groups (both pediatrics and geriatrics)
- Patients whose hemoglobin is less than 10gm%.
- Patients with or without comorbidities (for example CKD, AKI, CAD etc.)
- Patients with all social habits (smoking, alcohol, etc.)

Exclusion Criteria

- Outpatient department patients,
- Pregnant and lactating women,
- LAMA cases,
- Physically handicapped patients,
- Psychiatric patients,
- Ambulatory patients.

Method and Collection and Data

Retrospective, observational study.

Duration of Study

The study will be conducted for a period of six months (I.e. October 2021 to March 2022

Place of Study

Aware gleneagles global hospital.

Study of Protocol

Medical records are used to create a data input form with all of the patient's information, prescriptions, and diagnostic procedures, as well as to collect case histories from medical records, analyze and categorize the data, and finish with a prescription analysis.

RESULTS AND DISCUSSIONS

Table 1: Prevalence of anemia in study population

Sl. no.	Number of patients visited the hospital during study period	Number of anemic patients	Percentage (%)
1.	1558	150	10.38%

Table 2: Gender wise distribution of anemia patients

Sl. no.	Sex	Number of patients (n=150)	Percentage (%)
1.	Male	74	49.3%
2.	Female	76	50.7%

Table 3: Age wise distribution among anemia patients

Sl. No	Age (years)	Number of patients (n=150)	Percentage (%)
1.	0-10	4	2.67%
2.	11-20	8	5.33%
3.	21-30	4	2.67%
4.	31-40	10	6.66%
5.	41-50	20	13.33%
6.	51-60	28	18.67%
7.	61-70	42	28.01%

8.	71-80	26	17.33%
9.	81-90	4	2.67%
10.	91<	4	2.67%

Table 4: Age wise distribution of anemia in female patients based on menstrual cycle

Sl. no	Different phases of menstruation	Number of females (n=76)	Percentage (%)
1.	Pre-menstrual phase. (age 0-13years)	6	7.9%
2.	Menstrual phase. (14-50years)	22	28.9%
3.	Post-menstrual phase. (>50years)	48	63.2%

Table 5: Types of anemia and anemia as co-morbid diseases

Sl.no.	Medical Condition	Number of patients(n=150)	Percentage (%)
1.	Urinary tract infection	10	6.6
2.	Acute Kidney Injury	8	5.3
3.	Ischemia	10	6.6
4.	Severe anemia	30	20
5.	Diabetes	4	2.6
6.	Cellulitis	4	2.6
7.	Gastroenteritis	8	5.3
8.	Cardiac disease	8	5.3
9.	Hepatic diseases	6	4
10.	Lower respiratory tract infections	8	5.3
11.	Pneumonia	4	2.6
12.	Iron deficiency anemia	20	13.3
13.	Chronic kidney disease	22	14.6
14.	Coronary artery disease	8	5.3

Table 6: Average percentage of hemoglobin in studied patients

Sl no.	Gender	Average hemoglobin value (gm %)
1.	Male	8.7
2.	Female	8.0

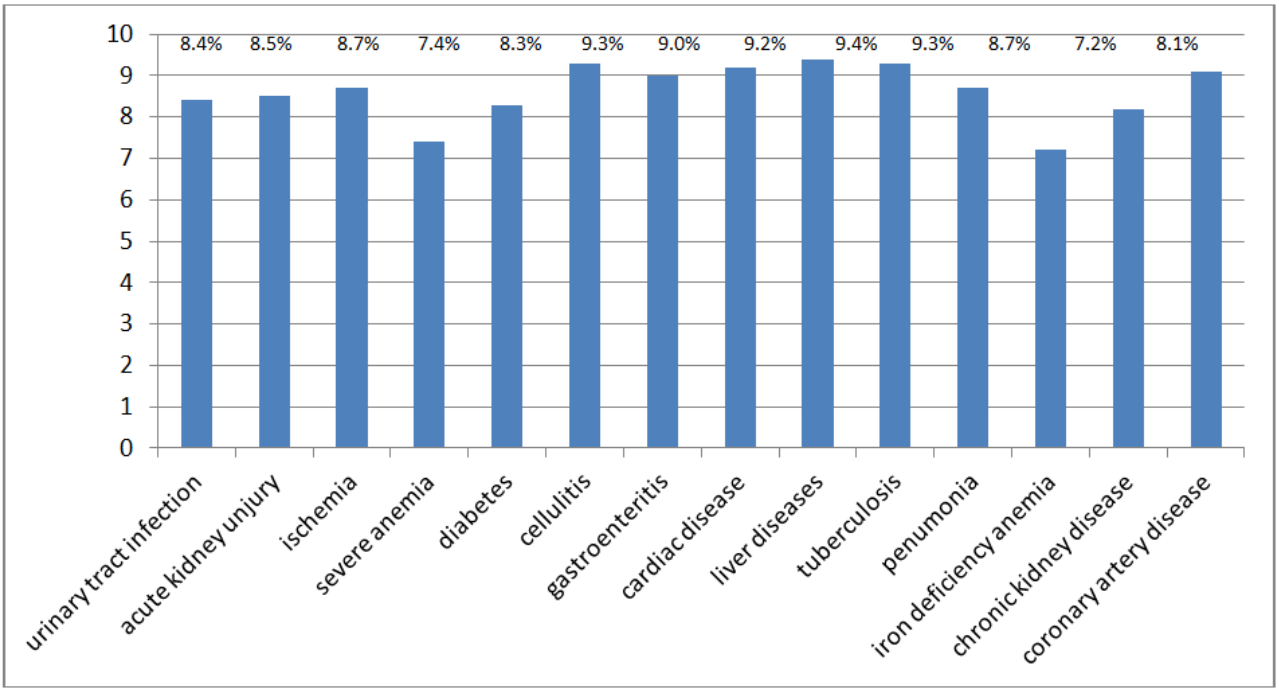

Fig 1: Average hemoglobin levels in different anemic and comorbid conditions

Table 7: Frequency and distribution of various drugs used by studied patients

Sl. no.	Category of drugs	Number of drugs (n=1516)	Percentage (%)
1.	Antibiotics	214	14.11%
2.	Anti-hypertensive drugs	158	10.42%
3.	Antacids	150	9.89%
4.	NSAIDS	128	8.44%
5.	Vitamins and minerals	228	15.03%
6.	Anti-anemic agents	42	2.77%
7.	Anti-protozoal	24	1.58%
8.	Anti-diabetic	60	3.95%
9.	Anti-emetics	50	3.23%
10.	Anti-platelets	52	3.43%
11.	Statins	34	2.24%
12.	Laxatives	32	2.11%
13.	Anti-coagulants	16	1.05%
14.	Anti-diarrheal	24	1.56%
15.	Bronchodilators	30	1.97%
16.	Mucolytic agents	22	1.45%
17.	Hypothyroid drugs	16	1.05%
18.	corticosteroids	22	1.45%
19.	Anti-histamines	22	1.45%
20.	Digestives enzymes	4	0.26%
21.	Opiods	6	0.41%
22.	CNS agents	2	0.13%
23.	Skeletal ccmuscle relaxants	4	0.26%
24.	Anti-anginals	14	0.92%
25.	Leukoterine antagonists	6	0.41%
26.	Benzodiazepems	14	0.92%
27.	Expectorants	4	0.26%
28.	Anti-convulsants	10	0.65%
29.	Anti-psychotics	4	0.26%
30.	Anti-spasmodics	8	0.52%
31.	Anti-depressants	6	0.41%
32.	Anti-epileptics	14	0.92%
33.	Anti-cholinergics	4	0.26%
34.	Anti-tuberculosis drugs	6	0.41%
35.	Anti-arrhythmic drugs	4	0.26%
36.	Local anaesthetics	12	0.79%
37.	Amino acids	12	0.79%
38.	Anti-ulcer	10	0.65%
39.	Anti-virals	4	0.26%
40.	Anti-fungal	10	0.65%
41.	Anti-gout agents	6	0.41%
42.	Anti-fibrinolytics	6	0.41%
43.	Gastro prokinetics	4	0.26%
44.	Others	18	1.18%

Table 8: Vitamins and minerals

Sl no.	Vitamins and minerals	Number of drugs (n=228)	Percentage (%)
1	Vitamin B	82	35.9
2	Vitamin C	22	9.6
3	Vitamin K	10	4.3
4	Iron supplements	16	7.01
5	Calcium supplements	10	4.3
6	Multivitamin	74	32.4
7	Vitamin D	10	4.3
8	Magnesium	4	1.75

Table 9: Antibiotics

Sl no.	Antibiotics	Number of drugs (n=214)	Percentage
1.	Cefoperazone + Sulbactam	46	21.49%
2.	Ceftriaxone	34	15.85%
3.	Cefpodoxime	20	9.3%
4.	Meropenem	16	7.47%
5.	Piperacillin + Tazobactam	16	7.47%
6.	Doxycycline	16	7.47%
7.	Amoxicillin + Potassium clavulanate	14	6.5%
8.	Linezolid	10	4.6%
9.	Azithromycin	10	4.6%
10.	Rifaximin	8	3.7%
11.	Amikacin	6	2.8%
12.	Colistin	2	0.9%
13.	Faropenem	2	0.9%
14.	Enrofloxacin	2	0.9%
15.	Clindamycin	2	0.9%
16.	Fusidic acid	2	0.9%
17.	Teicoplanin	2	0.9%
18.	Tigecycline	2	0.9%
19.	Vancomycin	2	0.9%
20.	Clarithromycin	2	0.9%

Table 10: Anti-Anemic agents

Sl. No.	Anti-anemic agents	Number of drugs (n=42)	Percentage%
1.	Erythropoietin stimulating agents	18	42.8%
2.	Nutraceutical agents	10	23.8%
3.	Hematinics	14	33.3%

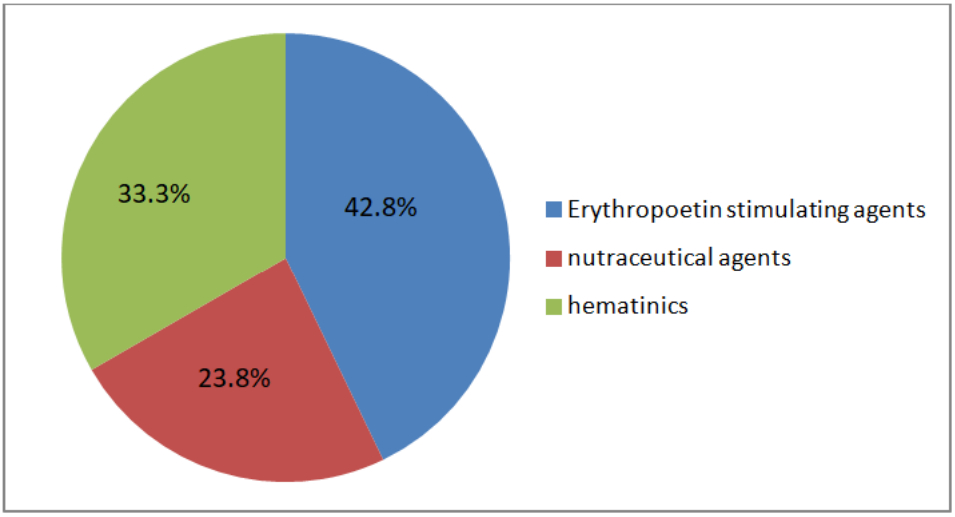

Fig 2: Anti-Anemic agents

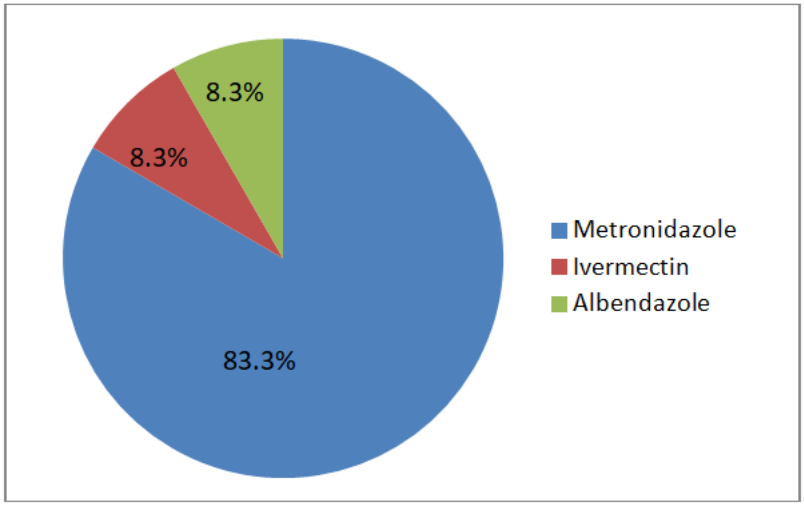

Fig 3: Anti-protozoal drugs

Table 11: Blood transfusion based on hemoglobin levels

Sl no.	Hemoglobin levels (gm %)	Number of patients (n=150)	Blood transfusion done or not	Percentage (%)
1.	Below 5	43	Done	28.6%
2.	5 to 10	107	Not done	71.3%

RESULTS

Demographic information

One fifty patients were enclosed within the project. The share of females with anemia was found to be slightly bigger than males i.e. 50.7% females and forty nine. 3% males. Majority of the folks with anemia were found to be between the cohort of 61-70years (28%).

Comorbidities

The patients during this project had multiple comorbidities. the typical numbers of comorbidities were 3-4 per patient. The foremost common diseases among the sample one hundred fifty patients were severe anemia two hundredth, chronic renal disorder fourteen. 6%, iron deficiency thirteen 3% etc.

Medications

A total of 1516 medicine were reviewed. Patients during this study were prescribed multiple medications. The mean range of medicines prescribed area unit 5- eight per head. The foremost usually prescribed medicines area unit vitamins and minerals fifteen.01% followed by antibiotics fourteen.11% followed by anti-hypertensive agents ten.42%. additional details area unit given.

DISCUSSION

In case of gender wise distribution of anemic patients, females were found to possess anemia than males as females tend to possess flow wherever there's a blood loss however not men. This makes men to possess higher amounts of Hb than men. The other results were considering age wise distribution of feminine patients from the sample patients primarily based upon the cycle wherever post flow girls (63.2%) were having less quantity of Hb than the unwell women(28.9%) and pre-menstruation females(7.9%). sometimes unwell girls area unit doubtless to possess anemia than the opposite 2 classes {girls or older ladies} mentioned within the results because of flow however here during this sample additional range of comorbidities semiconductor diode to anemic condition within the older women (i.e.; post flow women). On comparison of all the comorbidities, severe anemia (20%) followed by chronic renal disorder (14.6%) and iron deficiency anemia (13.3%) were accountable for anemia in majority of population of the sample. Severe anemia was caused because of nutritionary deficiency and as a facet result of in progress treatment of comorbidities. In CKD, anemia was caused because of weakened production of glycoprotein that is accountable for the assembly of RBCs that obliquely will increase the Hb levels within the body. Iron deficiency anemia happens to be additional common all told age teams in spite of prevalence of the other malady. It's because of lack of iron intake or because of poor absorption of iron within the body because of underlying reasons. Average HB levels were compared between the each genders. The results obtained were analyzed and over that ladies thought of within the sample were having less average of Hb when put next to men. This is often same because the traditional individual Hb levels comparison between genders that's girls tend to lose additional blood than men because of cycle.

In our study, a complete of 1516 medicine were reviewed. Patients during this study were prescribed multiple medications. The foremost usually prescribed medicines area unit vitamins and minerals fifteen.01% followed by antibiotics fourteen.11% followed by anti-hypertensive agents ten.42%. additional details area unit given. Vitamins and minerals got on the bigger quantity than the opposite medications as nutritionary supplements to compensate the loss of Hb and to boost the anemic condition. In vitamins and minerals supplements, B-complex vitamin (35.9%), multivitamins (32.4%), vitamin C (9.6%) and iron supplements (7.01%) got in additional amount when put next to alternative supplements. largely folate, vitamin b1, vitamin b6, B were prescribed as B-complex vitamin

supplements. In multivitamins, largely vitamin pill tablets like rudimin, health ok etc. were used beside vitamin pill injections to supply the nutrients on whole. In antibiotics, majority of the prescribed medications were antibiotic drug antibiotics. These embrace cephalosporins example: Cefoperazone + Sulbactam (21.49%), ceftriaxone (15.85%) and Cefpodoxime (9.3%). These antibiotics were prescribed for the treatment of the comorbid, diseases that obliquely improve the Hb share within the body by treating the diseases inflicting the deprival of Hb levels.

In our study, anti-anemic medicine were additionally prescribed for treatment of anemia. These embrace glycoprotein stimulation agents (42.8%), Nutraceutical agents (23.8%), and Hematinics (33.3%). ESAs (erythropoiesis -stimulating agents) area unit medicine that stimulate the assembly of red blood cells within the bone marrow. they're accustomed treat anaemia caused by end-stage renal disorder, therapy, severe surgery, or specific HIV/AIDS medicines. They cut back the necessity for blood transfusions in sure cases. Nutraceutical agents is accustomed promote health, weigh down the ageing method, stop chronic diseases, extend life, and maintain the body's structure and performance. Nutraceutical agents have recently attracted loads of attention because of its potential nutritionary, safety, and therapeutic edges. This drug is Associate in Nursing iron supplement that's accustomed treat or stop iron deficiency within the blood (such as those caused by anaemia or pregnancy). Iron is a necessary mineral for the body's production of red blood cells and overall health. In our project, anti-protozoal agents were additionally prescribed. Worm infections area unit the foremost prevailing parasites that cause blood loss in humans and cause direct iron deficiency anaemia. Hookworm (Necator americanus and Ancylostoma duodenale), whipworm (Trichuris trichiura), and schistosomiasis a area unit among them. For this reason anti-parasitic medicine like antiprotozoal drug (83.3%), Ivermectin (8.3%) and Albendazole (8.3%) were prescribed for up the anemic condition of the patient with parasitic infections. Blood transfusions were additionally done to the patients for increasing the Hb levels that area unit outstandingly low, share of patients UN agency received blood transfusions is twenty eight.6% the remaining seventy one.3% of patients failed to receive any blood transfusions. This was primarily based upon their Hb levels. Patients with Hb levels of below 5gm% received the blood transfusions for higher treatment. The patients with Hb levels between 5gm% to 10gm% failed to receive any blood transfusions tho' they were anemic instead alternative medications were used.

CONCLUSION

Anemia is a clinical symptom observed in general practice, not a separate disease. The most frequent way to make a diagnosis is to take a thorough history and perform a thorough examination. Before moving on to a high-end examination, one should try to understand simple studies (such as a full blood count with a general blood picture and other indices). The cause of anemia should be addressed first, followed by the replenishment of any iron or vitamin deficiencies. The pattern of anaemia must be recognized, whether it is acute or insidious in onset, and it must be addressed appropriately. From our study it has been concluded that anemia is a considerable condition that can affect the therapy of other diseases and can also exaggerate other comorbid diseases equally. Treatment of anemia as early as possible can improve the chances of better therapeutic outcomes in any diseased conditions. Providing the proper medications at proper doses that are required to improve the levels of hemoglobin in the body either by increasing the erythropoietin productions or by stimulating the bone marrow for better RBCs production should be done.

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