



UNVEILING THE CLINICAL PROFILE OF ANEMIA'S, A COMPREHENSIVE STUDY AT A TERTIARY CARE TEACHING HOSPITAL

Pandey A.^{1*}, Pant K.C.², Basera H.S.³, Bhandari V. S.⁴

^{1*}(Associate Professor, Department of Internal Medicine, G.D.M.C.)

²(Associate Professor, Department of Internal Medicine, G.D.M.C.)

³(Assistant Professor, Department of Internal Medicine, G.D.M.C.)

⁴(Associate Professor, Department of Internal Medicine, G.D.M.C.)

***Corresponding Author:** Dr. Ankur Pandey, M.D. INTERNAL MEDICINE

House No. 203, IInd floor, Type III, G.D.M.C. Campus, Patel Nagar, Dehradun, Uttarakhand. Pin Code: 248001, +919307654321, dr.ankurpandey@gmail.com

Abstract:

The WHO Global Database on Anaemia for 1993–2005, covering almost half the world's population, estimated the prevalence of anaemia worldwide at 25 per cent. Although the prevalence of anaemia is estimated at 9 per cent in countries with high development, in countries with low development the prevalence is 43 per cent. In absolute numbers anaemia affects 1.62 billion people globally with about 293 million children of preschool age, 56 million pregnant women, and 468 million non-pregnant women estimated to be anaemic. India is one of the countries with very high prevalence of anaemia in the world. Almost 58 percent of pregnant women in India are anaemic and it is estimated that anaemia is the underlying cause for 20–40 per cent of maternal deaths in India.

This study was undertaken to study clinical profile of anaemia patients in tertiary care hospital of Uttarakhand. To study the hematological profile. To establish probable etiological diagnosis wherever possible.

This study was conducted in the Department of Internal medicine with aim of studying clinical and haematological profile of anaemia. Further it was aimed to established probable etiological diagnosis in these patients where ever possible. There were 300 patients of anaemia diagnosed clinically and confirmed haematologically with additional ancillary studies as and when required. Maximum number of cases were seen in age group of 21-30 years (20.6%) followed closely by age group 51-60 years (20.3%). Over all the number of cases were more in females (53.4%) in contrast to males (46.6%). The most common clinical presentation of all 300 patients was generalized weakness (50%) followed by fever (49.3%). Clinically pallor was seen significantly among these patients (97.6%).

The present study highlighted that the common presentation of anaemia was found to be normocytic normochromic type. It further classified them morphologically and etiologically. This would help to further analyse and work up of such patients presenting with anaemia and deciding the rational approach.

Keywords: Anaemia, Hematological profile, General blood picture, Microcytic hypochromic anaemia, Megaloblastic anaemia, Mixed anaemia (dimorphic), Normocytic normochromic.

Introduction:

The WHO Global Database on Anaemia for 1993–2005, covering almost half the world's population, estimated the prevalence of anaemia worldwide at 25 per cent. Although the prevalence of anaemia is estimated at 9 per cent in countries with high development, in countries with low development the prevalence is 43 per cent. In absolute numbers anaemia affects 1.62 billion people globally with about 293 million children of preschool age, 56 million pregnant women, and 468 million non-pregnant women estimated to be anaemic [1,2].

India is one of the countries with very high prevalence of anaemia in the world. Almost 58 percent of pregnant women in India are anaemic and it is estimated that anaemia is the underlying cause for 20–40 per cent of maternal deaths in India [3].

Anaemia is the most commonly found condition in haematology and is defined as a decrease in red blood cell mass (RBC) or haemoglobin due to variable causes [4].

Varying degrees of anaemia can have a wide range of clinical consequences. According to haemoglobin (Hb) cut-off levels defined by the World Health Organization (WHO), Anaemia is Hb <12 g/dl for females, <13 g/dl for males [5].

The National Family Health Survey-3 (NFHS-3) data suggests that anaemia is widely prevalent among all age groups and is particularly high among the most vulnerable – nearly 58 per cent among pregnant women, 50 per cent among non-pregnant non-lactating women, 56 per cent among adolescent girls (15–19 years), 30 per cent among adolescent boys and around 80 per cent among children under 3 years of age [6].

The majority of subjects presenting in various medical outdoor & indoor departments presents with vague medical symptoms which may be an overlapping syndrome of various medical conditions. This possesses a diagnostic dilemma and it may be difficult to attribute these manifestations to a particular disease process.

It is equally important to appreciate that irrespective of the cause, various forms of anaemia's have vague medical symptoms and presents a diagnostic dilemma. The review of profile of anaemia's would assist the clinician to work them up in a technically logical way.

Aims and Objectives:

1. To study clinical profile of anaemia patients in tertiary care hospital of Uttarakhand.
2. To study the hematological profile.
3. To establish probable etiological diagnosis wherever possible.

Materials and Methods:

This study was carried out in the tertiary care teaching hospital and was a cross sectional study that include subjects suffering from anaemia. The subjects would be first screened for anaemia based on Haemoglobin examination and those with Haemoglobin level of 10gm/dl would be taken as cut off point.

Inclusion and Exclusion Criteria:

Inclusion Criteria:

- 1) Age more than 18years.
- 2) Haemoglobin less than 10 gm/dl.

Exclusion Criteria:

- 1) Age less than 18years.
 - 2) Anaemia due to acute blood loss.
- They would be grouped based on general blood picture.
- a) Microcytic hypochromic anaemia.
 - b) Megaloblastic anaemia
 - c) Mixed anaemia(dimorphic).
 - d) Normocytic normochromic.

Results:

This study was conducted in the Department of Internal medicine with aim of studying clinical and haematological profile of anaemia. Further it was aimed to established probable etiological diagnosis in these patients where ever possible.

- There were 300 patients of anaemia diagnosed clinically and confirmed haematologically with additional ancillary studies as and when required.
- Maximum number of cases were seen in age group of 21-30 years (20.6%) followed closely by age group 51-60 years (20.3%).
- Over all the number of cases were more in females (53.4%) in contrast to males (46.6%).
- The most common clinical presentation of all 300 patients was generalized weakness (50%) followed by fever (49.3%). Clinically pallor was seen significantly among these patients (97.6%)

Table 1 Base line characteristics of study population. (n=300)

Parameter		Mean±SD
Sex	Male	140(46.6%)
	Female	160(53.3%)
Age(in years)		43.65±17.25
Haemoglobin (g/dl)		7.52±2.18
MCV (fl)		88.75±14.00
MCH (pg)		28.60±5.50
MCHC (g/dl)		31.56±2.68
RDW (%)		18.49±5.00

Table 2 Distribution of anaemia cases according to General blood picture (GBP). (n=300)

GBP	Number of cases	Percentage %
Microcytic hypochromic	50	16.6 %
Macrocytic	75	25 %
Normocytic normochromic	102	34 %
Dimorphic	73	24.4 %
Total	300	100 %

Table 3: Diagnostic profile of Macrocytic anaemia. (n=75)

Diagnosis	Number	Percentage %
Primary Bone Marrow Disorder	16	21.3 %
Liver Disease	17	22.6 %
Vitamin B ₁₂ deficiency anaemia	21	28 %
Combined Vitamin B ₁₂ and folate deficiency anaemia	4	5.3 %
Anticonvulsant therapy	3	4 %
Haemolytic anaemia	2	2.6 %
Pulmonary Koch's	1	1.3 %
SLE/LN	1	1.3 %
Acute Gastroenteritis	1	1.3 %
BPH	1	1.3 %
Coronary artery disease	1	1.3 %
CKD	1	1.3 %
Diagnosis not established	6	8 %

- Of all patients diagnosed with macrocytic anaemia (n=75) maximum number of patients were of vitamin B₁₂ deficiency (28%) followed by liver disease (22.6%). A significant number of cases of macrocytic anaemia due to bone marrow disorders (21.3%) were seen in our study.

• **Table 4: Diagnostic profile of microcytic anaemia. (n=50)**

Diagnosis	Number	Percentage %
Iron deficiency anaemia	27	54 %
Thalassemia trait	2	4 %
Rheumatic heart disease	2	4 %
Rheumatoid arthritis	1	2 %
Chronic kidney disease	4	8 %
Hypothyroidism	3	6 %
Malarial fever	2	4 %
Sepsis	1	2 %
Gastritis	5	10 %
Acute leukaemia	1	2 %
Liver abscess	1	2 %
Diagnosis not established	1	2 %

- Of all the patient diagnosed with microcytic anaemia (n=50) maximum number of patient were of iron deficiency anaemia (54%).

Table 5: Diagnostic profile of normocytic normochromic anaemia. (n=102)

Diagnosis	Number	Percentage %
Bone marrow disorders	26	25.4 %
Infectious disease	26	25.4 %
Neoplasm	5	6 %
Chronic illness	42	41.1 %
Diagnosis not established	3	2.9 %

- Of all the patient diagnosed with normocytic anaemia (n=102) maximum number of patient were of chronic illness (41.1%) followed by primary bone marrow disorders and infectious disease (25.4%).
- Among 42 patients (41.1%) of chronic illness presented with normocytic normochromic anaemia majority of cases presented with chronic kidney disease (38%), followed by diabetes mellitus (21.4%).
- Among the primary bone marrow disorders (n=26) presenting with normocytic normochromic anaemia the commonest finding was plasma cell dyscrasias followed by hypoplastic marrow.
- Among 26 patients (25.4%) of infectious disease presented with normocytic normochromic anaemia majority of cases were of dengue (26.9%) followed by tuberculosis and pneumonia (19.2%).

Table 6: Diagnostic profile of dimorphic anaemia. (n=73)

Diagnosis	Number	Percentage %
Primary bone marrow disorder	18	24.6 %
Vitamin B ₁₂ deficiency	17	23.2 %
Iron deficiency	12	16.4 %
Chronic kidney disease	5	6.8 %
Diabetes Mellitus	3	4.1 %
Hypertension	1	1.3 %
Amyloidosis	1	1.3 %
Hypothyroidism	3	4.1 %
Hepatitis	2	2.7 %
Encephalitis	1	1.3 %
Seizure disorder	2	2.7 %
Dengue fever	4	5.4 %
Peptic ulcer disease	2	2.7 %
Pulmonary Koch's	2	2.7 %

Of 73 patients diagnosed as dimorphic anaemia maximum number of cases were of primary bone marrow disorders (24.6%) among these patients majority were of hypoplastic marrow (33.3%) followed by acute leukaemia (27.7%)

Discussion:

Of total 300 patients, included in our study 160 cases (53.4%) were females and 140 cases (46.6%) were males. The prevalence was found to be high in females. Almost similar results have been seen in other studies conducted in India and other countries. Pasha AA et al (2016) carried a study on 100 patients and found that 38 were male and 62 were females [7].

On the basis of General blood picture, the most common type of anaemia in our study was normocytic anaemia in 102 cases (34%) followed by macrocytic anaemia in 75 cases (25%) then dimorphic anaemia in 73 cases (24.3%) and least were the cases of microcytic anaemia with 50 cases(16.6%). Since our hospital is a tertiary care centre and most of the cases are referral cases of chronic illness, this might be a possible reason regarding less number of cases of microcytic anaemia as compared to other studies which are generally population based studies not hospital based. Elsayid et al in their study showed similar results i.e. maximum number (113 cases, 75.3%) were diagnosed as normocytic normochromic [8].

Of 300 patients in our study, 75 were diagnosed as Macrocytic anaemia. The most common cause of macrocytic anaemia was Vitamin B12 deficiency followed by liver diseases and primary bone marrow disorder which was in consonance with the study done by Khanduri et al who also found the commonest cause of megaloblastic anaemia as cobalamine deficiency [9]. The commonest cause of all the patients presenting with microcytic hypochromic blood picture is Iron deficiency anaemia (54%) followed by gastritis (10%) and CKD (8%). Thalassemia trait comprised 4% of all cases in this group. This is in concordance with the study done by El Sayid et al that shows most common cause is IDA followed by thalassemia [8]. Most common etiology behind normocytic normochromic anaemia in our study was chronic illness 42 cases (41.1%) followed by infectious diseases (25.4%), bone marrow disorders (25.4%) and Neoplasm (6%).Kolarovic et al in their study showed that normocytic anaemia is most often found in chronic disease, chronic inflammation and malignancies.Primary bone marrow disorders were seen in 24.6% of cases as the most common cause of dimorphic anaemia [8, 9, 10].

Conclusion:

The present study highlighted that the common presentation of anaemia was found to be normocytic normochromic type. It further classified them morphologically and etiologically. This would help to further analyse and work up of such patients presenting with anaemia and deciding the rational approach.

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