ANAEMIA IN ELDERLY PATIENTS AT KENYATTA NATIONAL HOSPITAL

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M.B. CH.B (NBI)

A dissertation submitted in part-fulfilment for the degree of Master of Medicine (Medicine) of the University of Nairobi.

1988

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This dissertation is my original work and has not been presented for a degree to any other University.

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To my Mother and Father

ACKNOWLEDGEMENTS

I would like to express my sincere appreciation:

To my supervisors, Dr. J.R. Aluoch and Prof. E.G. Kasili for their invaluable guidance throughout the production of this work.

To my Chairman of department, Prof. G.B.A. Okello, in whose person I found a constant source of inspiration and encouragement.

To members of staff department of pathology haematology section, with special mention of Dr. Mwanda and Mr. Kimani for their cooperation, help and encouragement.

To the department of Obstetrics and Gynaecology for use of gamma geiger counter and assistance in interpretation of data, with special thanks to Mr. A.K. Njoroge and Mr. Mbugua.

To academic and laboratory staff in the department of medicine, with special mention of Mr. Mwai for assistance in radioimmunassay techniques.

To my brothers and sister, Nicholas and Rose Simani, Peter, Ruth, Linda and baby Makenna all of whom in their own special way encouraged me in this difficult task.

Last but not least, to all my professional colleagues, special mention of Dr. Sennoga and Dr. C. Mwangi, friends and well wishers who in some way or other contributed to the success of this undertaking.

Special thanks to Miss Mary Mbarani for her excellent secretarial services.

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ABSTRACT

The main objective of this work was to study anaemia in elderly patients and hence contribute some baseline data for future possible work in this area.

This prospective study covered 63 elderly patients of all types of anaemia diagnosed at Kenyatta National Hospital between September 1987 and January 1988. Those cases admitted to this hospital were further fully investigated and treated if they did not die immediately. Then several clinicopathological variables and biodata were analysed in all the cases.

Anaemia was found to occur in about 11% of elderly patients admitted and reviewed. The single most common cause was iron deficiency, (34.9%) while the majority of patients had anaemia which was multifactorial in origin, with hookworm, systemic disease and diet playing contributory roles.

Gastrointestinal diseases played an important role while other systemic illnesses were not prominent.

Effective management is beset with problems of diagnosis, availability of blood and often drugs.

This study shows that anaemia is common in elderly patients admitted to Kenyatta National Hospital and contributes significantly to their morbidity. There is an urgent need to do further work into the contributions of different factors such as hookworm and diet to anaemia in geriatric patients, if ideal management specifically directed towards this age group is to be achieved.

ANAEMIA IN ELDERLY PATIENTS AT KENYATTA NATIONAL HOSPITAL

INTRODUCTION

Anaemia has for long been known to be a common problem within the tropics. In a scientific paper read to the Berlin Medical Society on May 31st 1899, Plehn (1) acknowledged that it was "a well known fact to medical practitioners residing in unhealthy districts in the tropics that a number of patients ... suffered from poverty of blood". Anaemia occuring in the tropics was no isolated phenomenon but similar to that found universally (1,2).

Plum working amongst the Digo and Embu found a higher degree of anaemia associated with Ancylostomiasis (3). In these cases iron therapy always resulted in some improvement, but the causes were not always clear. At about the same time Chevallier et al. wrote that anaemia was a common problem amongst the African population (4). Brock realised that this was strongly influenced by parasites and these had to be excluded in determining the aetiology (5).

Despite knowledge of the occurence of anaemia, proper studies were not performed for a long time to determine prevalance in local populations (6,7). Amongst the few early studies done locally Trowell's work in Uganda established that not only was anaemia common but it was also a major cause of morbidity and mortality and was multifactorial in nature (8). He underlined the need for further work in this area. Foy and Kondi undertook extensive research into this problem and they singled out iron deficiency anaemia as being the most prevalent in the tropics (9). They also wrote that it was widespread, severe and an important cause of morbidity. Geographical patterns also emerged from their study and iron deficiency was found to be more prevalent in coastal areas than in the highlands were the megaloblastic types featured prominently. From their experience most patients presented with severe anaemia. Sexual and seasonal patterns were also noted with megaloblastic anaemias being more frequent in males and occuring with a seasonal distribution.

Manson-Bahr studied anaemia in Nairobi and found most cases to be of iron-deficiency type followed by haemolytic anaemia and megaloblastic anaemia (10). Latham and other workers stressed the importance of

nutrition in the causation of anaemia in the tropics (11-13), while others emphasized the role of hookworm (14-18). The subject of malaria as an aetiological factor in anaemia especially in children has been extensively studied throughout the tropics (19-27). The early studies suggested a low incidence of multiple factors; sickle-cell disease was the most common haemoglobinopathy while Ancylostoma duodenale was the most common single aetiological factor (28). Pernicious anaemia was found to be uncommon; Mngola for instance reported only two cases (29). Anaemia was also found to be common in pregnancy as shown by Mati, Habany and Gabbie (30) and Mwana Kuzi and Nhonoli (31).

The paucity of literature on anaemia in elderly patients within the tropics is surprising. While in recent years studies have been done in temperate countries (32), the subject has yet to be fully investigated within the tropics.

The hypothesis put forward is that anaemia encountered in the elderly in tropical regions such as Kenya is predominantly multifactiorial in nature.

Definitions

The following definitions were made as relates to the study:

1. Anaemia is defined as a decrease in circulating haemoglobin per unit volume of blood below the level found within a specific community with respect to age, sex, and altitude (33). A value of 12.0 gdl^{-1} was chosen (34).

2. Elderly was defined as an age of 60 years and over.

Rationale

The reason for the study was to contribute some data on anaemia in elderly patients as it is a major cause of morbidity within the community (27).

MATERIALS AND METHODS

Study Area

The study was conducted at Kenyatta National Hospital amongst patients in the surgical, medical and oncology wards. The period of study was from 1st September 1987 to 30th January 1988. This period was selected to coincide with optimum availability of materials for the study.

Ethical Considerations

Permission was saught and granted from the Kenyatta National Hospital Ethical Committee in order to undertake this study. Informed consent was obtained from the patients who participated in the study.

Study Patients

All consecutive in-patients aged 60 years and above who were found to be anaemic (Hb < 12.0 g/dl) were included in the study.

Selection of the patients was on the basis of clinical impression of anaemia such as pallor and laboratory indices. The study included both patients with anaemia as a major problem and those having other problems but associated with anaemia.

Exclusion Criteria

The following were criteria used to exclude patients from the study:

i) Patients on cytotoxic therapy

ii) Patients on haematenic therapy (iron or folate or vitamin B_{12}).

iii) Patients who had been transfused in the previous three months.

iv) Acute surgical emergencies

v) Post-operative cases following major surgery requiring deep anaesthesia.

Fourteen healthy elderly adults were randomly selected as controls.

Data Collection

Age of the patient was determined on the basis of history and identity card examination. For each patient name, age, sex, in-patient number and home of

origin were noted. Past medical history and physical findings relevant to the diagnosis were coded on proforma I shown in the appendix.

Laboratory Methods

Ten millilitres of blood were drawn via a peripheral vein under aseptic conditons. Two millilitres were put in a sequestrine bottle and this sample was used to make a peripheral smear and in addition to estimating the following:

i) Haemoglobin (Hb).
ii) Packed Cell Volume (PCV).
iii) Mean corpuscular volume (MCV).
iv) Total red blood cell count.

These parameters were obtained using the Coulter Counter (Model S).

Peripheral blood films were stained using standard May-Grunwald Giemsa stain. Stained blood slides were examined and interpreted by the staff in the haematology section of the department of pathology.

Five millilitres were heparinized and the plasma and red cells separated at 3,000 revolutions per minute, for 5-10 minutes and both samples stored at -20° Celcius.

A bone marrow aspirate using Klima or Salah needles was performed on all patients. The smears made were immediately processed and stained with May Grunwald Giemsa stain and optionally stained with cosin for iron stores. Stained slides were interpreted under a light microscope in the haematology section of the department of pathology.

Stool and urine samples were routinely screened for parasites and blood.

Specialized procedures

Stored serum and red cell samples stored at -20° Celcius were used to assay serum and red cell folate and serum vitamin B_{12} levels, using a dual radioimmune-assay Kit (Amersham).

A coombs test, liver function test, a haemolytic screen were done in those patients found to have a haemolytic anaemia.

Where possible further diagnostic tests as outlined in the appendix, proforma III, were done in order to delineate the cause of the anaemia.

All specimens were handled and taken to the laboratory by the author.

Dietary Ratios

A detailed dietary history was taken and based on 24-hour recall of the various foods eaten by the patients.

Results were tabulated as shown in proforma II of the appendix.

Total scores were calculated for each foodstuff and cumulated dietary ratio for all patients for the various food stuffs computed and presented as a ratio of the daily diet.

Control Population

Fourteen healthy, elderly adults with no history of recent medical illness and on normal balanced diet from dietary recall were equally (simultaneously) tested as above for Serum Vitamin B_{12} , serum folate and red cell folate levels..

These formed the control group.

Statistics

The incidence was computed from results of the study and hospital admission records. Frequency tables were drawn demonstrating the clinical findings. Serum folate and vitamin B_{12} and red cell folate data were graphically demonstrated and Fischers Exact Test performed to test the significance against the controls.

Routine haematological indices outlined above were tabulated and frequency, average and standard deviation calculated.

RESULTS

Of 664 patients admitted aged 60 years and above during the period of study, 75 (11.3%) had anaemia and were recruited into the study. Of this group 63 patients were interviewed and fully investigated. Complete profiles could not be obtained in 3 patients as no consent was given. An additional 4 patients could not be studied as they were inadvertently discharged early. Loss of samples and incomplete haematological data excluded 5 patients.

Age Distribution

Table 1 demonstrates wider age range (60-90) in females as compared to males (60-76) with a mean of 64.6 and 63.2 respectively. The male:Female ratio was 2:1. Figure I outlines the age distribution of the patients studied. The majority (57%) fell within the 60-64) year age group and the least patients were oberved in the older age groups.

Geographical Distribution

Geographical origin of the patients is outlined in Table 2.

TABLE 1

Sex distribution in relation to age and haemoglobin level.

Sex	n	%	Age in years		Haemoglobin gldl	
			Range	Mean	Range	Mean
Male	42	66.6	60-76	63.2	3.4-12.0	7.76
Female	21	33.3	60-90	64.6	3.8-12.0	7.66

1 Histogram showing age distribution of the patients under study.

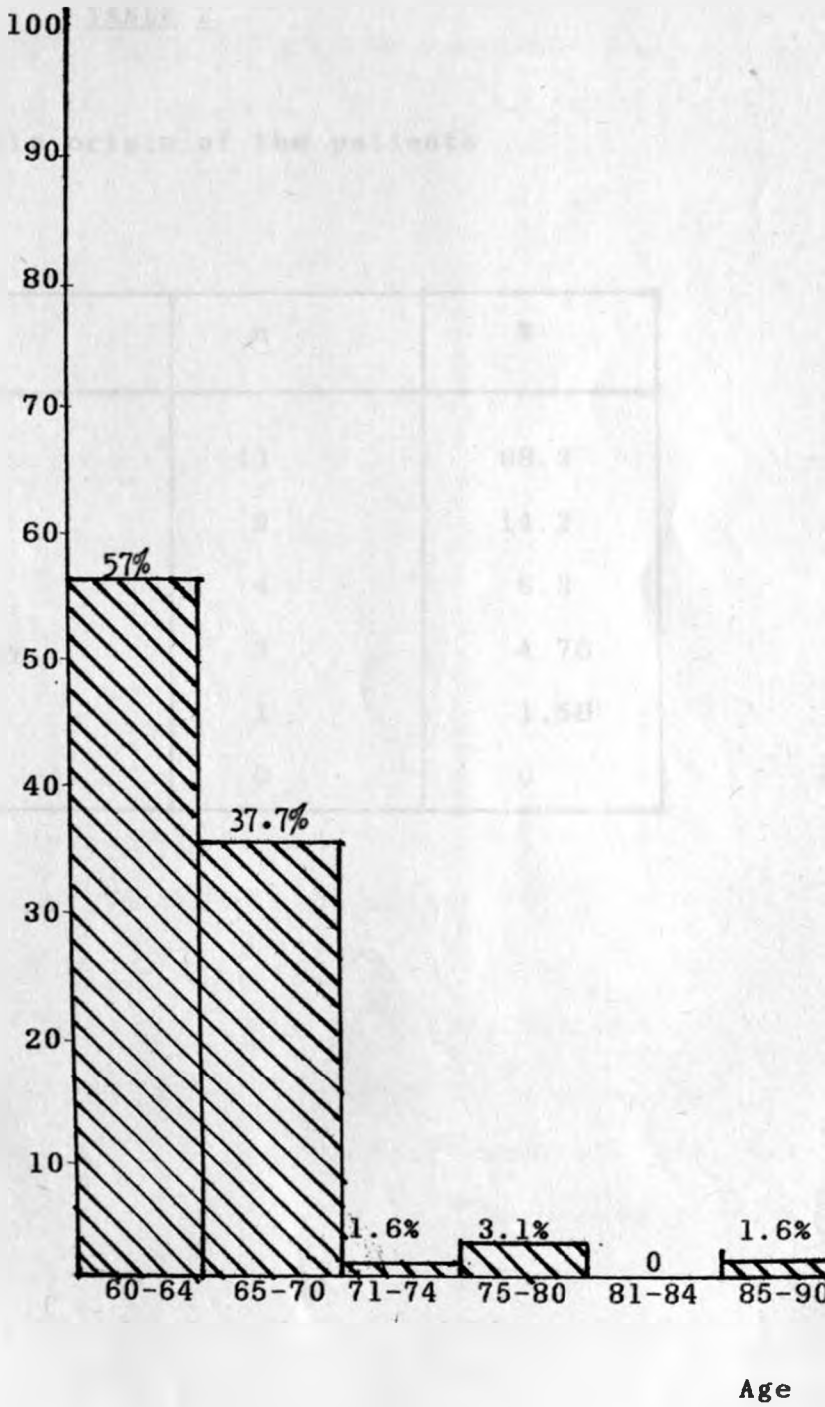


TABLE 2

Home of ethnic origin of the patients

PROVINCE	n	%
Central	43	68.3
Nyanza	9	14.2
Eastern	4	6.3
Rift Valley	3	4.76
Coast	1	1.58
Others	0	0

The majority of patients 43 (68.3%) originated within Central Province. Nyanza Province followed with a Contribution of 9 patients and the least were from Coast province (1 patient) 1.58%. These results reflect the expected pattern as the hospital lies within Central Province and the Kikuyu and Luo form the two major ethnic groups in Kenya.

Presenting Symptoms

Presenting symptoms are outlined in Table 3. Dizziness was the most common complaint encountered with a frequency of 95.2% of the patients. Fainting was observed in 49.2% while weight loss was noted in 79.4%.

Clinical Presentation

All patients had pallor and this was the most important basis for a presumptive diagnosis as shown in Table 4, (Fig.2). Wasting (Fig.3) was observed in (71.4%) of patients and was an important feature in patients with malnutrition and underlying malignancy. Papillary atrophy (Fig.4) of the tongue was observed in 41.3% of patients, a finding which did not correlate with the degree of pallor or type of anaemia.

TABLE 3

Frequency of symptoms at presentation

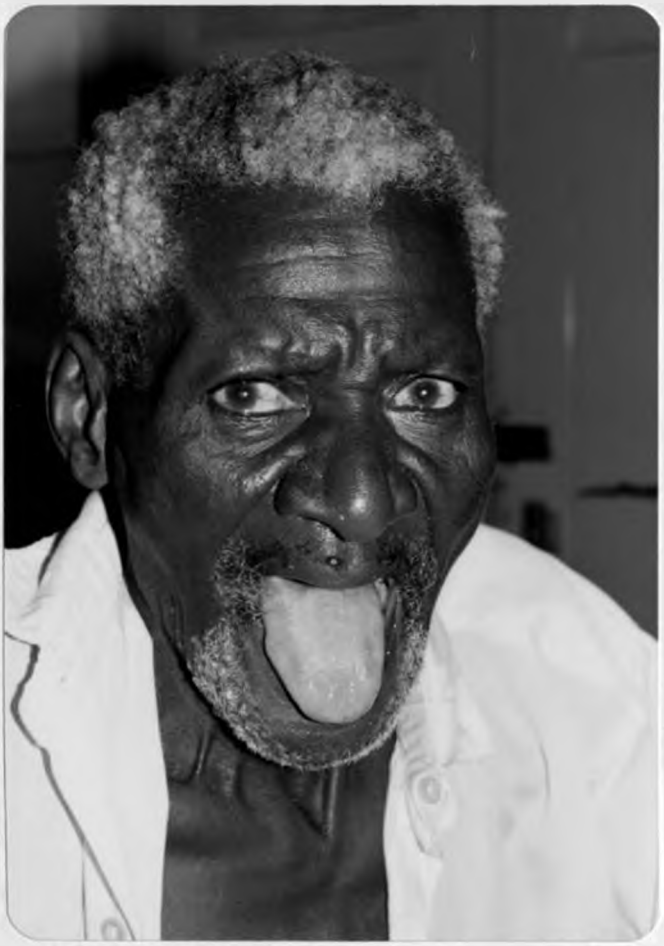
SYMPTOM	n	%
Dizziness	60	95.2
Fainting	31	49.2
Weight loss	50	79.2
Haematuria	2	3.2
Haematochezia	10	15.9
Chronic cough	4	6.3
Epigastric pain	17	27.0
Jaundice	2	3.2
Painful tongue	3	4.8
Others (diarrhoea, bone pain)	14	22.0

TABLE 4

Major clinical findings on general examination

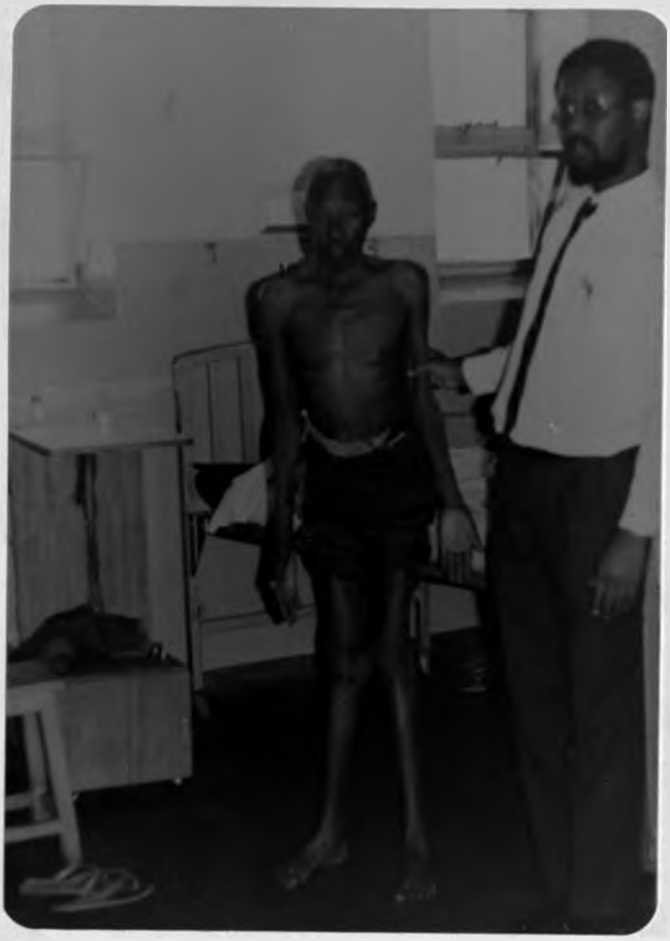
CLINICAL FEATURES	n	%
Pallor	63	100
Wasting	45	71.4
Tongue Papillary atrophy	26	41.3
Oedema	7	11.1
Lymphadenopathy	3	4.8
Koilonychia	2	3.2
Others (Bone Pain, Hepato/ splenomegaly	3	4.8

Fig. 2



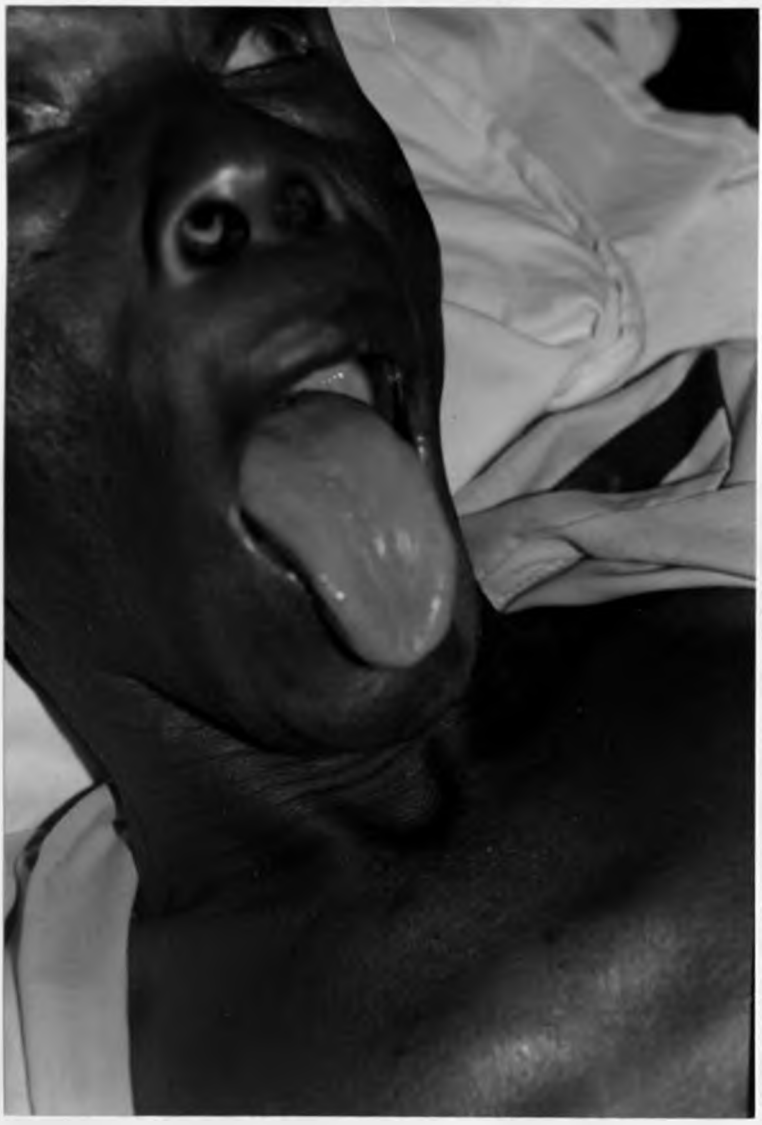
Patient with a low haemoglobin (Hb < 5 g/dl) presenting with severe pallor as indicated by the tongue.

Fig. 3



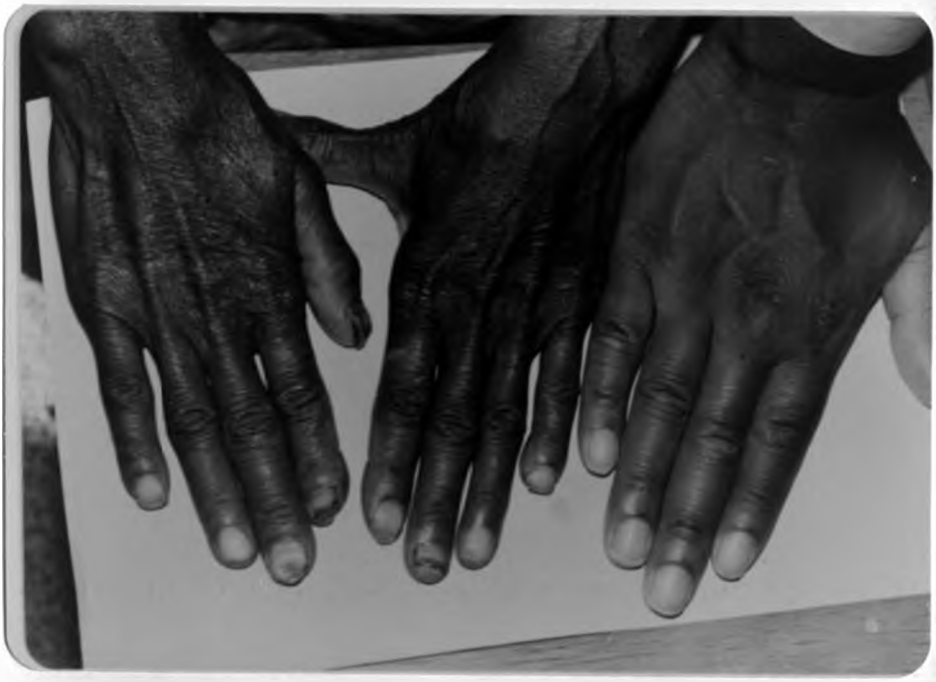
Patient with marked wasting and anaemia. Note wasting of biceps muscles and inability of patient to support himself due to weakness.

Fig. 4



Tongue in anaemic patient with raw surface and papillary atrophy.

Fig. 5



Koilonychia in finger nails of elderly patient with iron-deficiency anaemia.

Lymphadenopathy, observed in 3 patients, was a common feature especially in infections and neoplastic disorders. Koilonychia (Fig.5) was an infrequent finding observed in only two patients, and in both cases was associated with severe iron deficiency anaemia.

Other findings such as bone pain and hepato-splenomegaly were observed in three patients (4.8%).

Haematological parameters

The haemoglobin level ranged from 3.0 gdl^{-1} to 12.0gdl^{-1} with a mean of 7.85 gdl^{-1} and standard deviation of 2.90 (Table 5).

Type of anaemia

The type of anaemia was determined from the haemotological data according to MCV, peripheral blood film (FIG 10-12) and bone marrow examination (FIG 13, 14).

In 63 patients who had complete parameters determined, iron deficiency was found to be the most common single type of anaemia, being observed in 22 (34.9%) of the cases as shown in Table 6.

TABLE 5

Haematological parameters.

Paremeters	Mean	Deviation Std.	Minimum	Maximum
HB	7.85	2.90	3	12
PCV	23.38	7.91	11	41
WBC	11.20	7.47	4	49
RBC	2.99	0.95	1	5
MCH	26.28	5.36	15	40
MCV	63.80	31.26	60	111
MCHC	32.29	-	28	37

TABLE 6

Distribution of patterns on Peripheral blood film.

FEATURES	n	%
Normocytic Normochromic	29	46.0
Microcytic Hypochromic	22	34.9
Macrocytic	7	11.1
Haemolytic	2	3.2
Dimorphic	3	4.8
Total	63	100

A large number (46%) had a normocytic normochromic type of picture (Table 6) which is consistent with a picture expected in anaemia of chronic illnesses. A large number of patients (25.4%) had a normal bone marrow (Table 7, Fig 6) and this was noted to be associated with a normocytic normochronic peripheral blood film pattern.

Seven patients (11.1%) were confirmed to have megaloblastic anaemia. Of these, 5 had an assay of red cell and serum folate and vitamin B_{12} performed. Two samples had haemolysed and were therefore unsuitable for analysis. Four patients (6.3%) had folate deficiency while one patient (1.6%) had B_{12} deficiency.

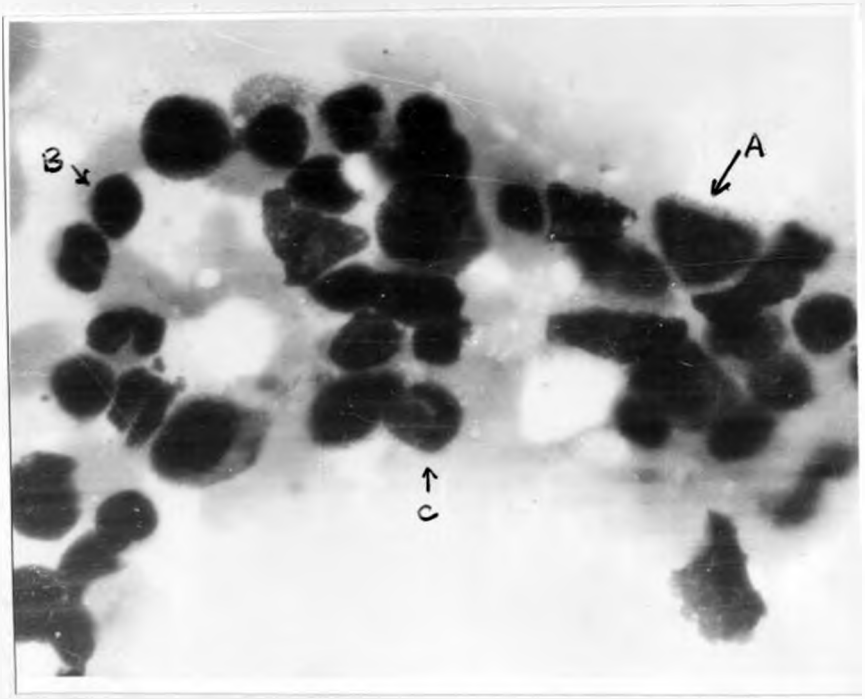
There was a statiscally significant difference in serum folate levels between patients and controls (Fig.7) when subjected to Fischers Exact Test ($P < 0.05$). No such significance was observed in B_{12} and red cell folate levels (Significance levels P=0.263 and P=0.1514 respectively all greater than P=0.05 (Fig. 8,9).

TABLE 7

Frequency of features on bone marrow aspirate.

FEATURE	NO. OF PATIENTS	%
Iron deficiency	22	34.9
Megaloblastic	7	11.1
Haemolytic	1	1.6
Depression	3	4.7
Normal	16	25.4
Reactive	10	15.9
Increased iron	5	8.0

Fig. 6



Normal bone marrow cytology. Note myelocyte (A); late normoblast (B); and band forms (c).

Fig. 7 Graph of Serum Folate Levels in Patients presenting with megaloblastic anaemia

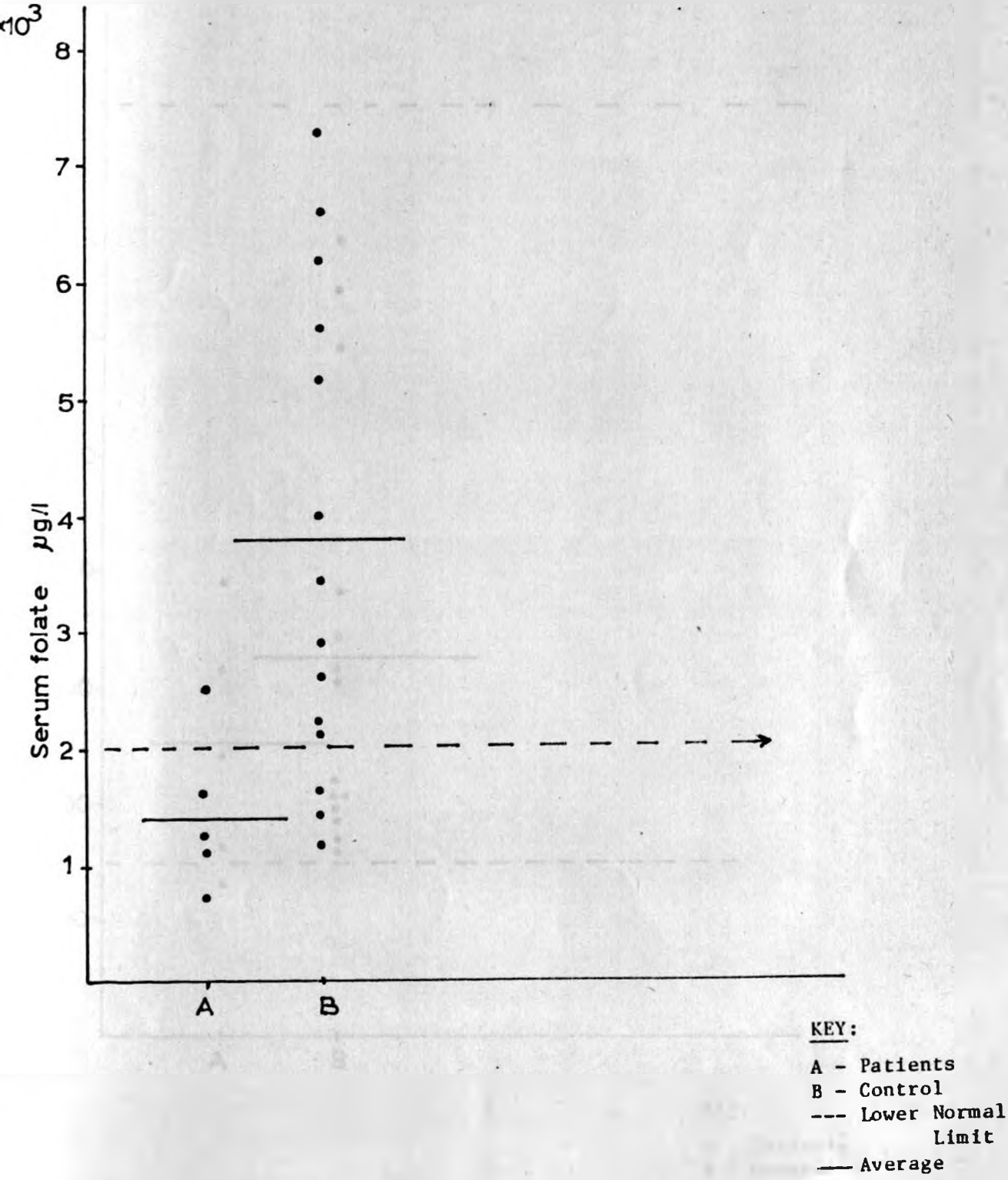


Fig. 8 Graph of Vitamin B_{12} Serum Levels in patients presenting with Megaloblastic anaemia.

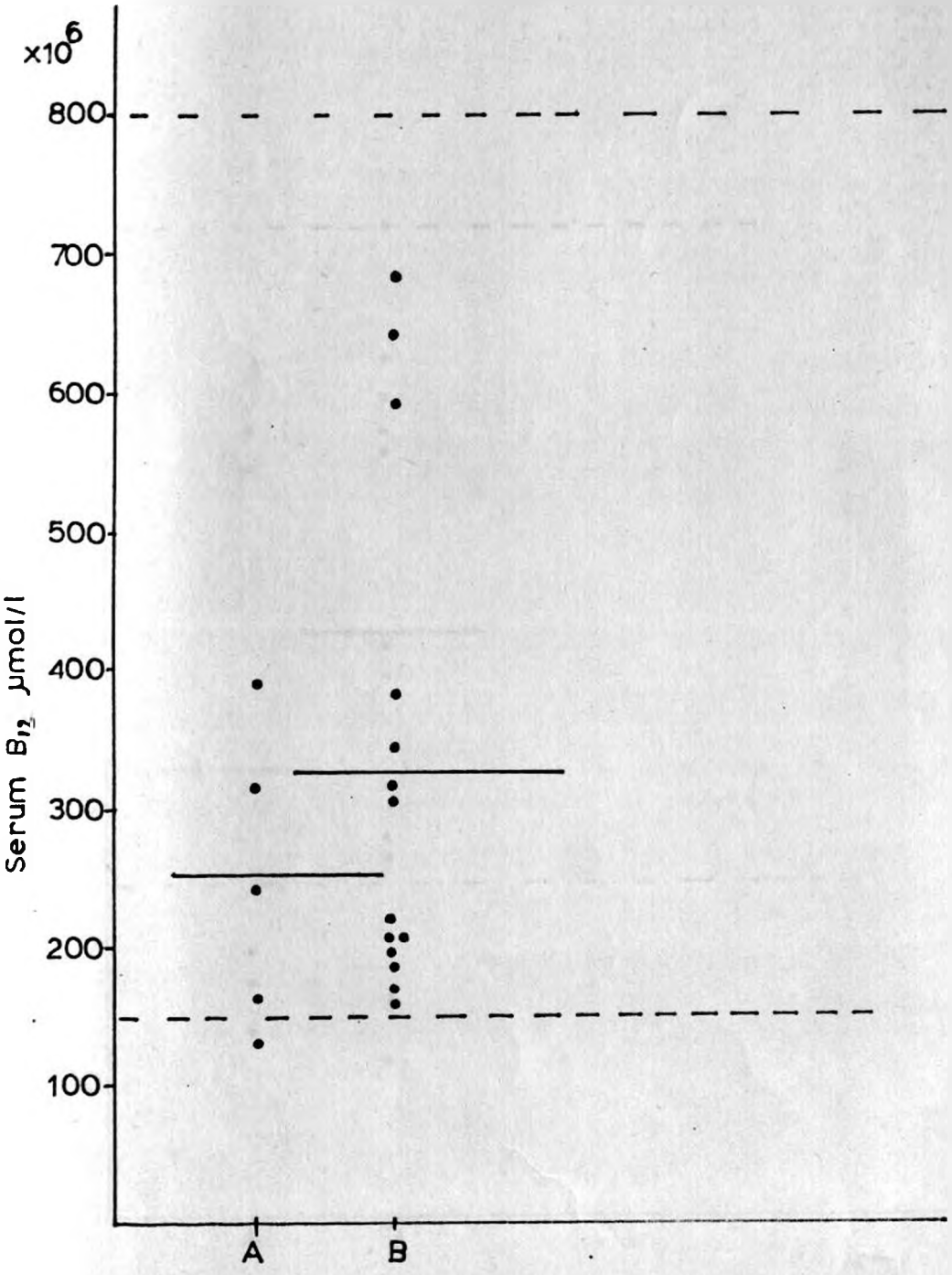


Fig. 9 Graph of Red Cell Folate Levels in patients presenting with megaloblastic anaemia

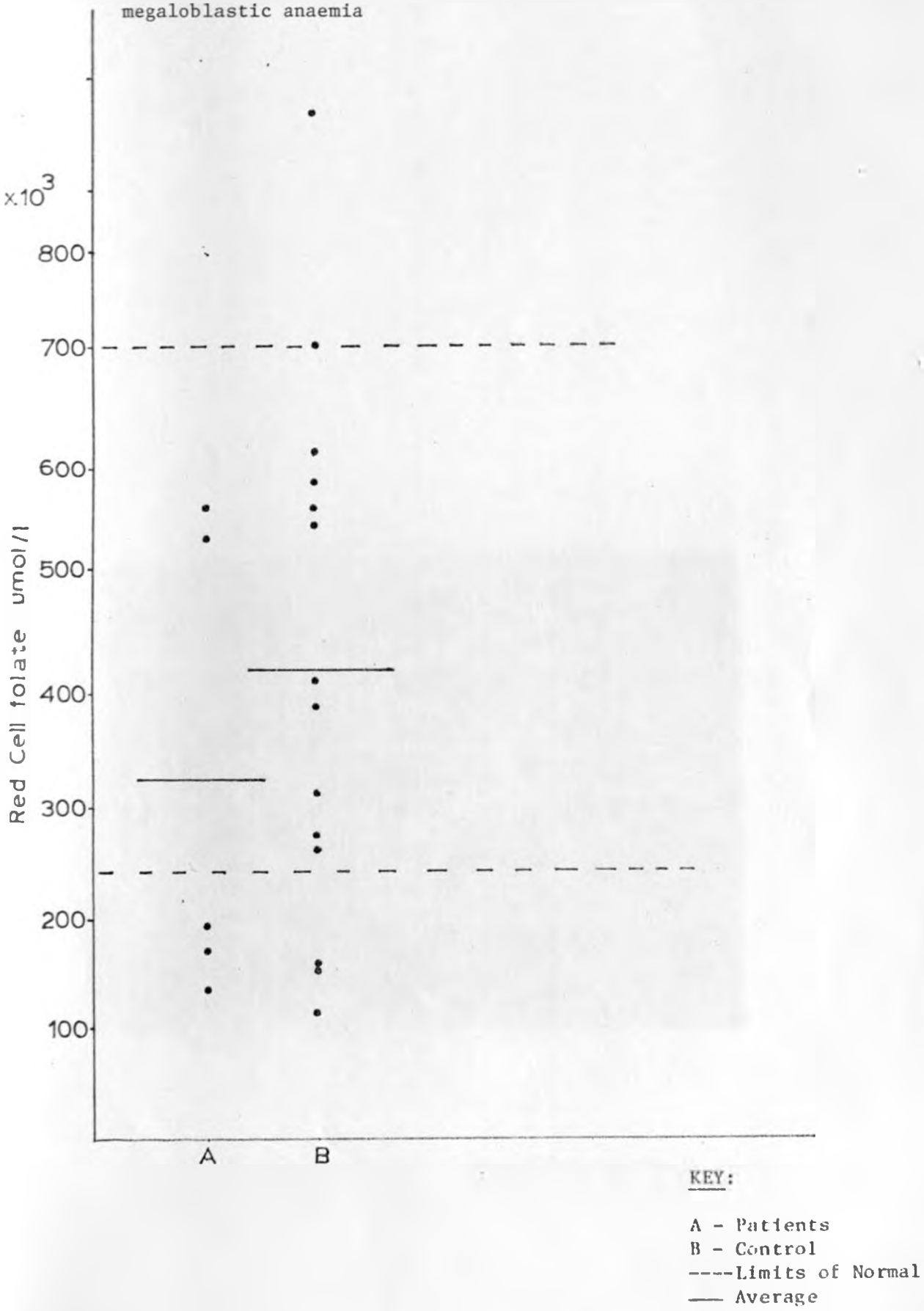
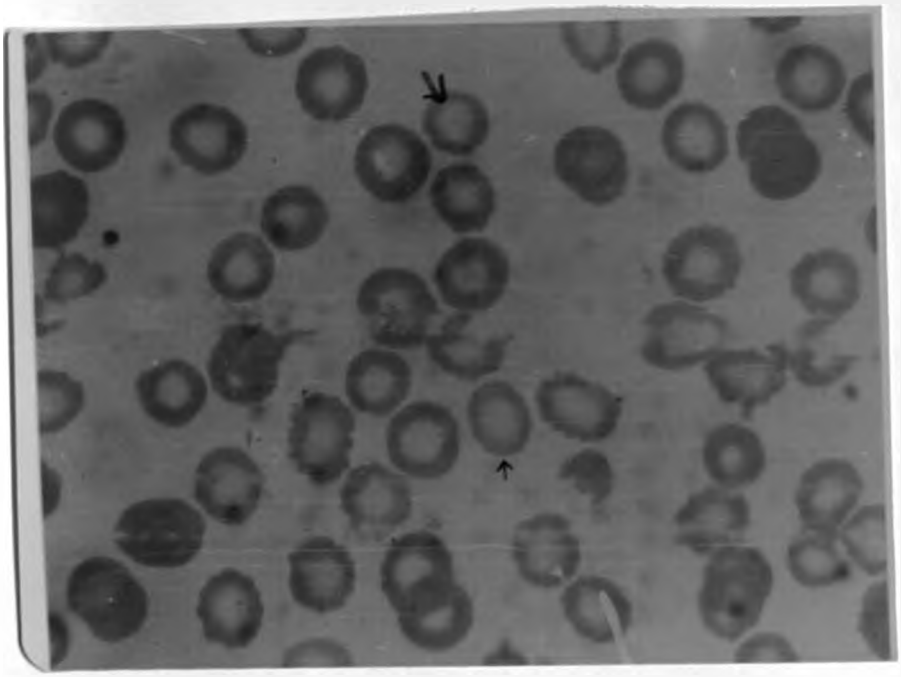
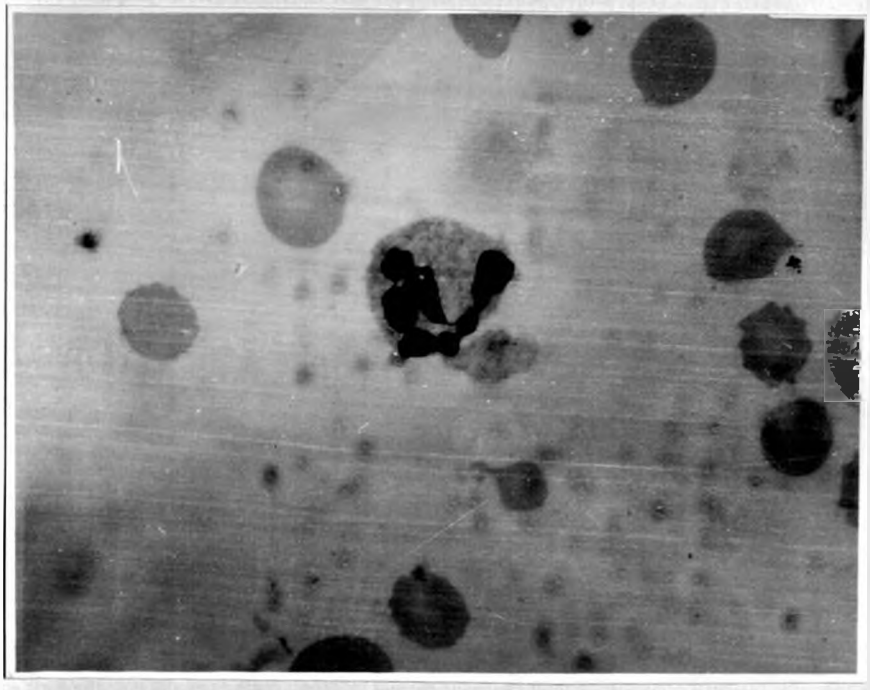


Fig. 10



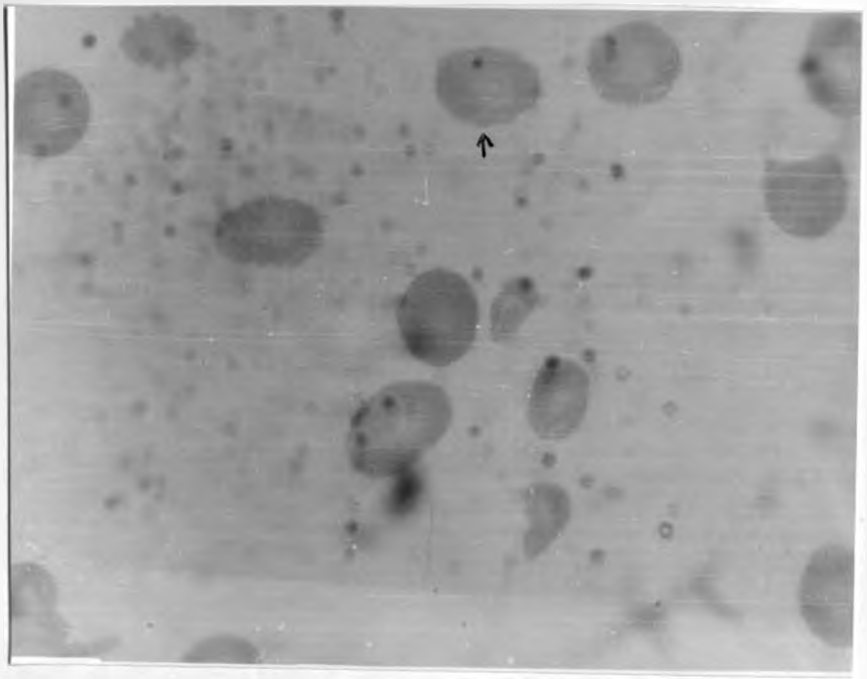
Hypochromic microcytic anaemia in patient with iron deficiency.

Fig. 11



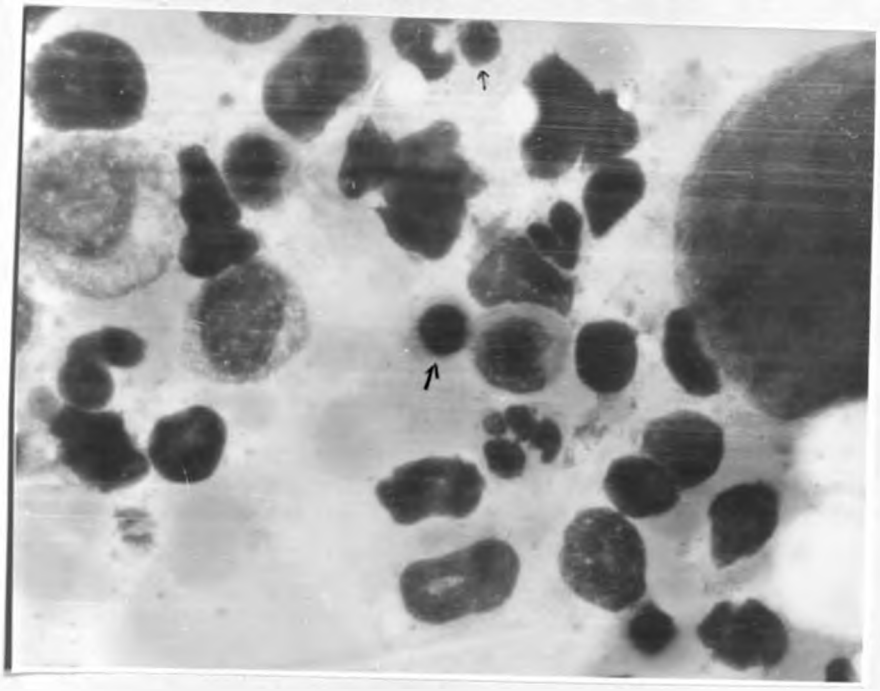
Hypersegmented neutrophil in megaloblastic anaemia

Fig. 12



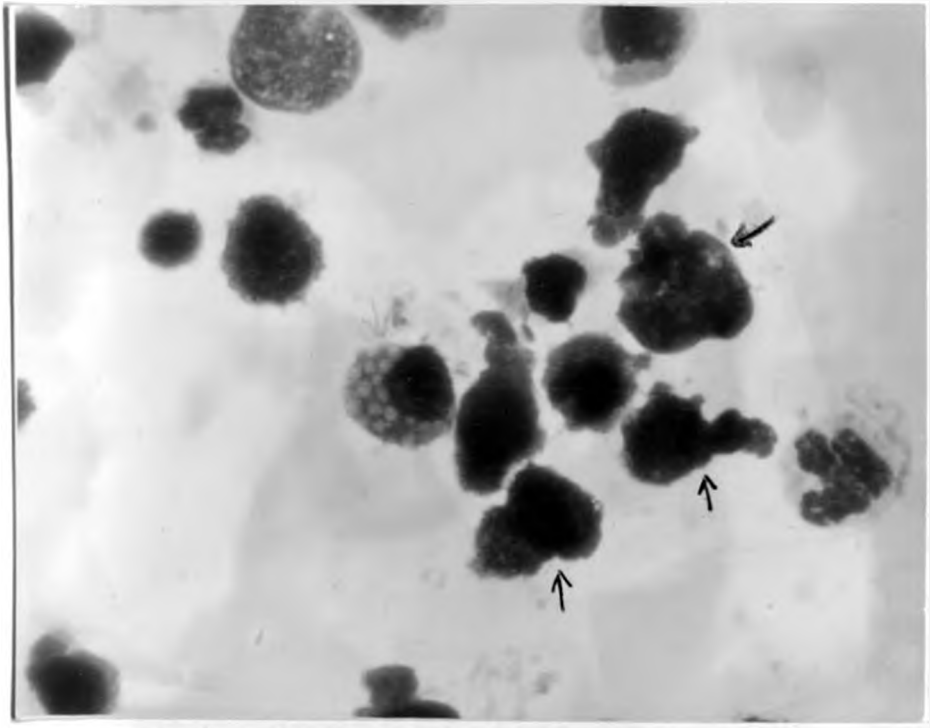
Oval macrocytes in peripheral film of patient with megaloblastic anaemia.

Fig. 13



Micronormoblast in iron deficiency anaemia in bone marrow.

Fig. 14



Irregular cytoplasmic margin. Irregular nucleus; some pyknotic changes, features of dyserythropoiesis in a patient with megaloblastic anaemia.

Despite wide variations in serum folate levels (Fig 7) clustering was observed at lower limits of normals in controls. This was similarly observed in red cell folate levels (Fig.9).

Two patients had a haemolytic anaemia, one due to malaria which was severe and did not respond to standard therapy while the other had features of antimmune haemolytic anaemia. A dimorphic pattern of anaemia was observed in 4 (6.4%) of patients Table 6. The causes in this group was multifactorial.

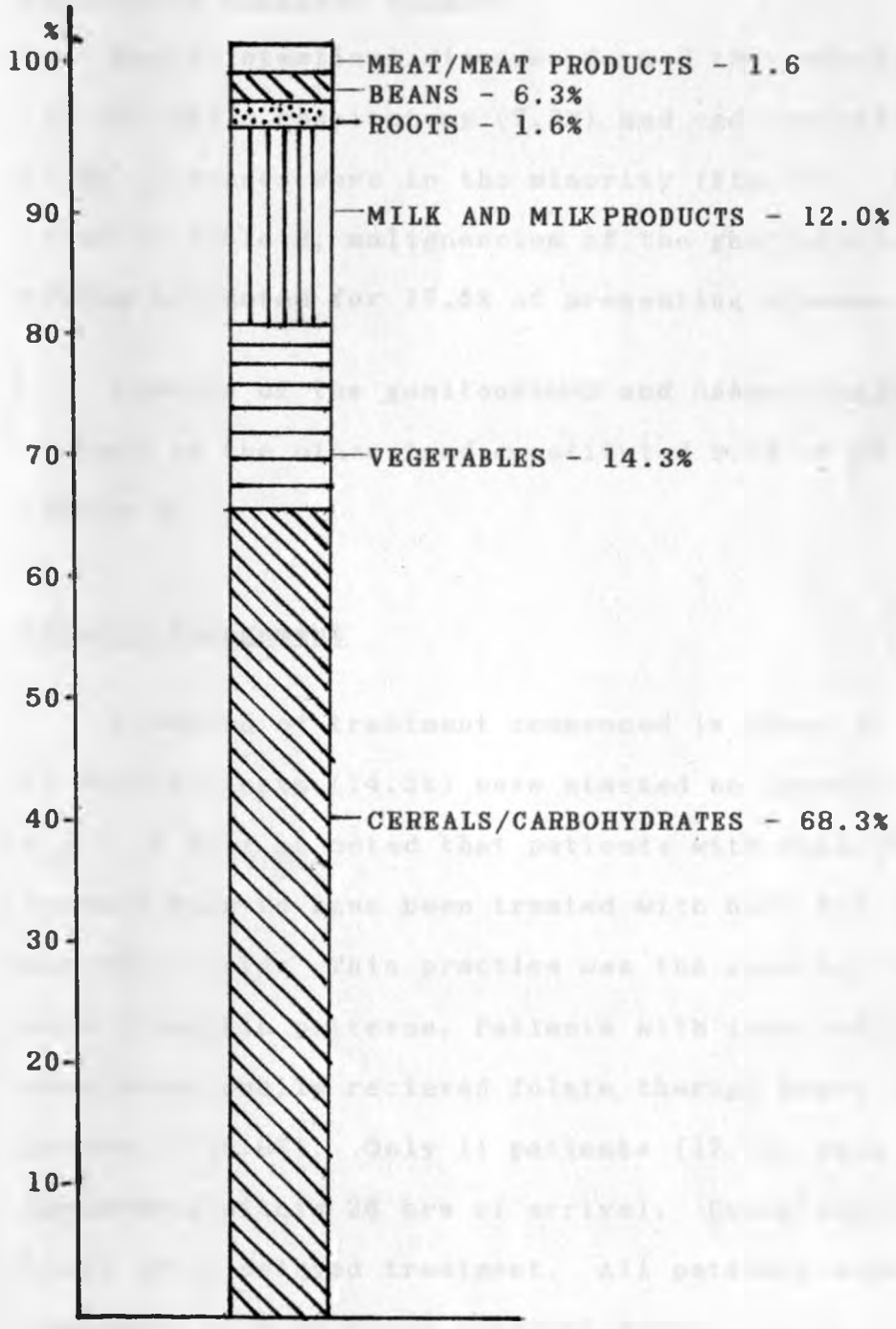
Parasites

Hookworm was the most common infection, being evident in 50% of the stools examined. No active cases of Schistosoma haematobium or mansoni were observed.

Diet

Carbohydrates and cereals formed the major proportion of the staple diet with 68.3% proportion of the daily meal (Fig. 15). Green vegetables composed 4.3% while meats and fruits were eaten sparingly 1.6% and < 1% respectively. Roots and tubers were uncommon ingredients in the diet.

Fig. 15 Daily dietary ratio of foods eaten by patients.



Associated Systemic Disease

Gastrointestinal diseases formed the majority (30.2%) while respiratory (7.9%) and cadiovascular (6.4%) diseases were in the minority (Fig.16). As noted in table 8, malignancies of the gastrointestinal system accounted for 17.5% of presenting disease.

Tumours of the genitourinary and haematological systems on the other hand constituted 9.6% of diseases (Table 9).

Patient Management

A record of treatment commenced is shown in Table 10 Nine patients (14.3%) were started on injections of B_{12}. It will be noted that patients with megaloblastic anaemia seem to have been treated with both Vit. B_{12} and folic acid. This practice was the same for those with dimorphic patterns. Patients with iron deficiency also occasionally recieved folate therapy hence the 10 patients (15.9%). Only 11 patients (17.5%) were transfused within 24 hrs of arrival. Unavailability of blood often delayed treatment. All patients were commenced on a balanced hospital diet.

Fig. 16 Frequency distribution of associated systemic disease

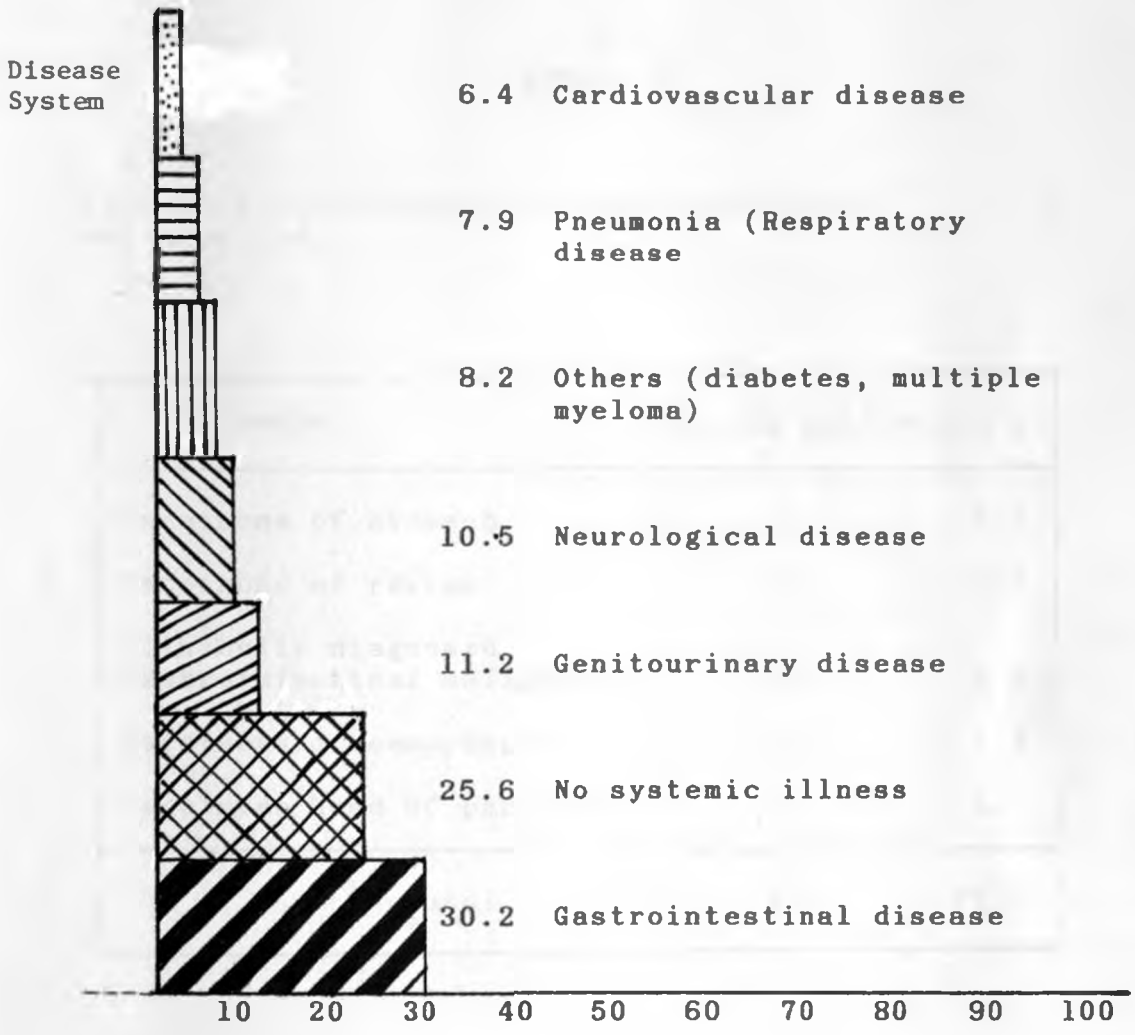


TABLE 8

Frequency distribution of gastrointestinal malignancies.

TUMOUR	NO. OF PATIENTS	%
Carcinoma of stomach	5	7.9
Carcinoma of rectum	2	3.2
Clinically diagnosed gastrointestinal malignancy	2	3.2
Carcinoma of oesophagous	1	1.6
Carcinoma head of pancreas	1	1.6
Total	11	17.5

TABLE 9

Frequency distribution of tumours affecting the genitourinary and haematological systems.

TUMOR	NO.OF PATIENTS	%
Carcinoma of Prostate	3	4.8
Multiple Myeloma	2	3.2
Carcinoma of bladder	1	1.6
Total	6	9.6

TABLE 10

Table of treatment modalities patients were commenced on.

THERAPY	n	% OF PATIENTS
Injections of Vit B 12	9	14.3
Tablets Folicacid	10	15.9
Tables Ferrous Sulphate	30	47.6
Transfussion Before 24 hours	18	28.6
Transfusion After 24 hours	11	17.5
l/v Fluids alone	45	71.4
l/v Fluids and analgesics	5	7.9

DISCUSSION

The choice of a particular number of years of life to classify individuals as 'old', elderly or aged is a product of social history rather than the result of validated epidemiological studies of physical and mental capacity (35). A figure of 60 years was hence chosen for this study, also in part to allow for comparison with data elsewhere.

The use of an arbitrary level of haemoglobin concentration to define anaemia has been critisized (32). There is however considerable value in fixing a dividing line below which the possibility of an abnomality must be considered, and the choice of 12 gdl^{-1} is in agreement with that recommended by W.H.O. and others (32, 34).

The study demonstrates that a total of 75 patients (11%) out of a total of 664 who were 60 years of age and over, admitted during the period of study suffered from anaemia. Anaemia therefore is an important finding in elderly patients admitted to Kenyatta National Hospital.

The true incidence is underestimated as many patients suffering from anaemia may not have access to health facilities. In addition Kenyatta Hospital is a refferal institution and only the most deserving cases are often given priority.

This incidence moreover is poised to rise with the ever increasing population and diagnostic facilities with increased availability of health services.

Geographical distribution

The admissions to Kenyatta reflect National ethnic distribution. The Kikuyu from Central Province form the majority of the population and hence most admissions.

Kenyatta Hospital is also in close proximity to traditional areas occupied by this group. The Coast peoples, being distant and relatively fewer, comprise a minimum of admissions.

Age distribution

The largest proportion of patients (57%) fell in the 60-64 and 65-70 year age group. The number of patients gradually decreased thereafter.

The average haemoglobin according to age groups did not differ much with the ascending age. Large series studies on anaemia in this age group amongst hospitalized patients are lacking. Some hospital based studies incorporated elderly patients, but insufficient sample sizes did not allow conclusions to be drawn.

Studies elsewhere demonstrate no significant changes in haemoglobin values of the elderly against the young (36). Reduced haemoglobin has, in this elderly groups, been associated with underlying acute or chronic disorders.

Clinical Features

Not all patients were admitted due to symptomatology related to anaemia. Patients having borderline anaemia were often admitted with underlying systemic illnesses. Symptoms found correlated well with those observed elsewhere (28,37).

Weight loss was a common symptom in 79.4% of the patients. This reflects the significance of underlying

malignancies and malnutrition in this age group. (Fig 11, Table 8, 9). No clinical features distringuished the megaloblastic types from the others, though certain features, such as raw tongue, vitiligo and white hair were more common in patients in these types (37).

The presence of hepatosplenomegaly, though uncommon in this study strongly suggested an underlying gastrointerstinal malignancy. For example, the two patients who had hepatosplenomegaly died.

Aetiology and Types of anaemia

Gastrointestinal diseases were the most commonly observed (Fig 16). The predominance of gastrointestinal lesions has also been described in other studies (38).

Cardiovascular and other systemic diseases were less common as accompanying diseases. Hookworm was noted in 50% of stools, however the role of hookworm anaemia in this age group requires sample studies with emphasis on hookworm loads to determine cause effect relationships.

Iron-deficiency anaemia was noted in 34.9% of cases especially in patients with hookworm and accompanying or isolated gastrointestinal disease This confirms the expected finding in lesions precipitating chronic blood loss. This type of anaemia has been found to be equally common in other age groups often occuring with accompying malnutrition (2, 8-14) and is undoubtedly the single most common cause of anaemia.

Read et al suggested that folate deficiency might be common in the elderly and important as a cause of anaemia (39). Thomson et al (40) were unable to confirm this and other workers showed frequent association with iron deficiency anaemia (32). This study demonstrates the predominance of folate deficiency as a cause of megaloblastic anaemia and confirms the lesser role of Vitamin B_{12} deficiency (29). The unbalanced diet observed amongst the patients is consistent with this observation though precise intake quantities were difficult to asses.

Folate deficiency may occur with no evidence of anaemia as observed in controls (Fig 7). This finding has important implications with regard to malnutrition

in the elderly patients and screening of anaemia in this age group. Strachan and Hendersen (41) have suggested that folate deficiency might be associated with dementia in the elderly. This finding could neither be confirmed nor disproved as larger sample sizes would be required for any significant correlation.

Diet

Foods consumed by patients were varied in types and quantity. Kenyan diets are known to be prepared in many different ways (42-44). It is therefore difficult to draw firm conclusions based on individual intakes and proportions. It is notable however that carbohydrates and cereals form the main staple diet with stews prepared from vegetabels and rarely meat. Carbohydrate sources are varied, most common however is maize meal, bread, chapati and various other corn and wheat preparations. Vegetables are often varied in type but are often green and rich in vitamins and minerals before preparation.

Cereals and carbohydrates consituted 68.3% in proportion of daily meals. Of great importance are the generally poor sources of iron that this staple provides. Bread, chapati and other wheat based cereals are examples of such iron sources (45-47). Vegetables however provide a better source of iron (48), but constituted only 14.3% of daily food rations. Iron from meats sources tends to be of greater nutritional value (49) but again it will be noted that less than 1.6% of the daily food ration is composed of meats.

The African diet has been described as often bulky and rich in phytates and phosphates (17) and these play important roles in reducing the quantity of iron available for absorption. Fruits and fruit juices are often taken in between meals and their exact preparation is difficult to ascertain. As dietary ratios were based on 24-hr recalls, intermittent snacks of fruit were at times difficult to recall.

It is important to observe that these constitute less than 5% of the average Kenyan diet (50) and as ascorbic acid is important in promoting dietary iron absorption, it is an important factor to note. The

diet is hence of poor nutritional value with respect to iron and vitamin B_{12}. Inadequate intakes and doubtful methods of preparation of vegetables may account for low folate levels.

CONCLUSIONS

Conclusions drawn from the study are the following:

1) Nutrition is a major contributing factor to the cause of anaemia in elderly patients.

2) Hookworm may play an important role especially in iron deficiency anaemia.

3) Iron-deficiency is the single most important cause of anaemia in the study group.

4) Folate deficiency contributes significantly to megaloblastic anaemia. Vitamin B_{12} defficiency is less common.

5) Gastrointestinal disease is the major systemic disorder associated with anaemia in patients of this age group.

RECOMMENDATIONS

Following conclusion of the study, the following recommendations were made:

a) Further work needs to be done to asses the folate and vitamin B_{12} status in patients with iron deficiency to determine this presence and frequency of multiple haematinic deficiencies.

b) To asses the contribution of hookworm to the aetiology of iron deficiency anaemia in the elderly patients.

c) Reasses the importance of vitamin C with a view to its use in treatment in cases of iron deficiency anaemia.

d) It was noted that management of patients could have been greatly facilitated with improved availability of blood units for transfussion and diagnostic facilities to allow for discrimination between the different types of

megaloblastic anaemia. The contribution of iron-deficiency in masking folate and vitamin B deficiency would be better understood with availability of such services.

e) With improved availability of facilities, dual therapy of megaloblastic or iron deficiency anaemias must be discouraged. Such practice was found to hamper laboratory investigation and long term management.

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A P P E N D I X

PROFORMA I

ANAEMIA IN ELDERLY PATIENTS I/P. NO.....

NAME .....AGE SEX

Home of ethnic origin .....

a) HISTORY Code: Present - 1 Absent 0

Presenting complaints

Dizziness

Fainting

Weight loss

Blood in urine

Blood in stool

Chronic cough

Coughing blood

Epigastric pain/discomfort

Yellowness of eyes

Tongue pain/swelling

Other specify .....

b) DRUG HISTORY Code: Used - 1, not used 0

Asprin

Others - specify .....

c) SOCIAL HISTORY Code: Present - 1 Absent 0

Smoking

Alcohol

d) OBSTERIC HISTORY Code: Present 1, Absent No. 0

Blood stained/Frank blood discharge

Others - specify .....

e) DIETARY HISTORY

Code:		
	Not eaten	0
	Eaten frequently	1 (daily)
	Eaten occasionally	2 (weekly)
	Eaten rarely	3 (Over weekly intervals)

	Breakfast	Lunch	Supper
Vegetables			
Carbohdrates (bread ugali)			
Meat			
Pure vegetarian diet only			
Milk/milk products			
Roots (yams/cassava)			
Beans			

Others specify .....

PROFORMA II

CLINICAL EXAMINATION

General examination Code: Present - 1, Absent- No. 0

1. Wasted

   Pale

   Tongue swelling or atrophic changes

   Oedema

   Lymphadenopathy

   Cyanosis

   Koilonychia

   Others specify .....

Systemic Examination Code: Present -1, Absent - 0

Does the patient have accompanying:-

1) Cardiovascular disease?

   Specify .....

2) Genito-urinary disease?

   Specify .....

3) Neurological disease?

   Specify .....

4) Respiratory disease

   Specify .....

5) Gastro-intestinal disease

   Specify .....

6) Haematological disorder

   Specify .....

PROFORMA III

LABORATORY FINDINGS Code: Present -1, Absent - No. 0

a) Stool

Blood

Hookworm Ova

Others .....

b) Urine

Frank/microscopic haematuria

Others .....

c) Periferal Blood Film

1) Parasites

a) Malaria

b) Others .....

2) Normocytic
Normochronic

3) Microcytic
Hypochronic

4) Megalocytic

5) Haemolytic features

6) Others - specify .....

d) Coulter Indices (speciy figures) .....

i) P.C.V. .....

ii) Hb.....

iii) W.B.C. Count .....

iv) R.B.C. Count .....

v) MCH .....

vi) MCHC .....

Other relevant indices (specify) .....

e) Bone Marrow Findings Code: Present -1, Absent No 0

i) Iron depleted - confirm iron defficiency

ii) Megaloblastic - confirm nutrional deficiency

iii) Suggestive of Haemolytic picture

iv) Bone Marrow depression

v) Normal

vi) Others - Specify .....

f) Optional Investigations - Specify .....

a) In Megaloblastic Anaemia

Serum Vitamin B_{12} .....

Folate .....

b) In Haemolytic Anaemia

i) Serum Bilirubin.....

ii) Urobilinogen .....

iii) Coombs test .....

iv) Sickling test .....

v) Haemoglobin Electrophoresis .....

Others - Specify .....

Trephine biopsy (in bone marrow depression)

Specify -.....

c) Lymph nodes or tissue biopsy - in confirming malignancy

Specify .....

d) Endoscopy in upper GIT haemorrhage .....

Specify .....

e) Other contributory investigations done:-

Specify .....

Progress and management (specify)

Code: Present - 1, Absent - No. 0

a) Died within 1 week

b) Died within 1 month

c) Managed and discharged for follow up successfully

d) Managed on supportive therapy