

Non Leukaemic Childhood Anaemia in Mosul

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ABSTRACT:

BACKGROUND:

Anaemia is not a disease by itself but it is a sign not diagnosis of many disease and anaemia is very common among children.

OBJECTIVE:

To assess the frequency of anaemia among children

METHODS:

This study include (408) anaemic children (243 male and 165 female) with ratio (1.4:1) their haemoglobin level was below 10g/ dL .

They were admitted to paediatric hospital in Mosul . Routine haematological tests were done and some special haematological tests were performed when indicated.

RESULTS:

Three hundred children (300) out of 408 (73.5%) were admitted because of infection. The most common type of anaemia was normochromic normocytic (53.18%) , the second type of anaemia was hypochromic microcytic (32.11%), haemolytic anaemia represented (8.83%), the rest type of anaemia were normochromic macrocytic anaemia (5.14%) and dimorphic anaemia was (0.74%).

CONCLUSION:

Anaemia is a common paediatric problem and iron deficiency anaemia is the commonest cause of childhood anaemia so that the main focus for prevention of this needs to be on education around childhood nutrition.

KEY WORDS: anaemia, hypochromic microcytic, normochromic normocytic, haemolytic anaemia .

INTRODUCTION:

Childhood anaemia may be defined as a functionally best characterized by a haemoglobin concentration below normal and it is a disorder in which the patient suffer from tissue hypoxia, the consequence of low oxygen carrying capacity of the blood ⁽¹⁾ or can be defined as haemoglobin concentration below established cut off levels. These levels vary depending on the age of the child and the laboratory in which the blood sample is tested. Reference ranges of specific laboratories and age groups should always be referred to. The World Health Organization (WHO) has suggested levels of haemoglobin below which anaemia is said to be present. These levels are < 11g/dL (110g/L) in children aged 1-2 years and < 11.2g /dL (112g/L) in children aged 3-5 years. ^(3,4)

Anaemia is not a disease by itself but it is a sign, not a diagnosis of many other diseases⁽⁵⁾. The commonest type of childhood anaemia is the

hypochromic type in which the commonest cause is iron deficiency, the next variety is thalassaemia minor ^(2,6,7).

A normochromic normocytic anaemia is commonly associated with infections, chronic inflammation and secondary to other illnesses.

Vitamin B 12 deficiency is thought to be rare in children Vitamin B12 deficiency in the foetuses and newborn infants if present is attributed to deficiency of Vitamin B12 in the women during pregnancy and the puerperium ^(8,9). Megaloblastic anaemia of infancy in the west is commonly associated with folic acid deficiency ^(5,8).

METHODS:

All patients admitted to IBN Al-Atheir paediatric hospital for various medical causes during 7 months, starting the first of February until the first of September 1997 and who were found anaemic with a haemoglobin level below the normal range with a total of (408) children (243 male and 165 female) with ratio (1.4: 1), (their mean age was 2.8 years with range of 2 months-12 years), were included in this study, (leukaemic cases were excluded).

Their clinical data were collected including main

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presenting features (pallor, jaundice, infection, gastro-enteritis, splenomegaly and hepatomegaly).

A 2.5 ml of venous blood was drawn into EDTA-tubes and routine blood tests including Hb, PCV, WBC, reticulocyte count were done. Leishmann's stained blood smears were done to study the red cell morphology. They were divided into 5 groups normochromic normocytic, hypochromic microcytic, normochromic macrocytic, haemolytic and dimorphic, according to their haematological data.

Special haematological tests such as haemoglobin electrophoresis, sickling test and direct coombs test were done using standard methods⁽¹⁰⁾.

RESULTS:

During the period of study (408) children were found to be anaemia (leukaemic cases were excluded). Their ages range from (2 months - 12 years). There were 243 boys and 165 girls corresponding to ratio (1.4: 1).

The relationship between the age and types of anaemia are shown in Fig (1).

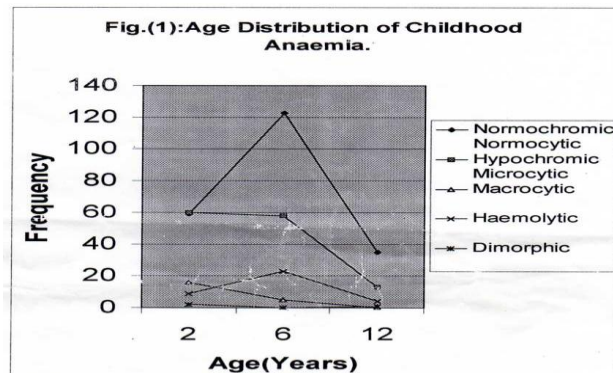


Fig 1: Age Distribution of different types of childhood anaemia.

Three hundred patients 300 (73.5%) were admitted because of infections (Chest infection, gastroenteritis) anaemia was found incidentally, 40 patients (13.3%) had shown pallor beside underlying infectious disease. The remainder 108 (26.47%) were brought to the clinic because of pallor. Their haemoglobin concentration and packed cell volume, types and severity of anaemia are shown in (Table 1).

According to the haemoglobin level 182 (44.4%) had mild anaemia (Hb > 90 g/L), 189 (46.3%) had moderate type, 37 (9.3%) had severe anaemia (Hb < 60 g/L).

Thirty six of cases had haemolytic anaemia (Table 3). The type of anaemia in the remainder was classified according to the red cell morphology into: Hypochromic microcytic, normochromic normocytic, normochromic macrocytic and dimorphic. (Table 1), (Table 3) and (Fig. 1) summarize the various parameters in each group. The diagnosis of thalassaemia major depended upon Hb electrophoresis which show Hb F ranged from 50-90%. The other 2 cases of haemolytic anaemia due to G6PD deficiency were diagnosed according to the clinical picture, blood film findings and proved by fluorescent technique.

Table 1: Haematological Parameters of different types of childhood anaemia

		Normochromic normocytic	Hypochromic microcytic	normochromic macrocytic	Dimorphic
Total No(%)		217 (53.18%)	131 (32.11%)	21 (5.14%)	3 (0.74%)
M: F ratio		1.4: 1	1.5: 1	2: 1	2: 1
Mean Age (year)		2.8	2.3	1.1	3.1
Mean \pm SD	Hbg/L	95 \pm 54	84 \pm 15	69 \pm 2.3	75 \pm 1.9
	PCV L/L	0.298 \pm 0.041	0.284 \pm 0.057	0.235 \pm 0.073	0.27 \pm 0.061
Severity (No.)	Mild	124	51	4	1
	Moderate	90	71	11	1
	Severe	3	9	6	1
Age Distribution (year)	-2	59	60	16	2
	-6	123	58	5	0
	-12	35	13	0	1

Table2: Subtypes of Haemolytic Anaemias.

Thalassaemia Major	Sickle cell anaemia	G6PD Deficiency	Hereditary spherocytosis	Haemolytic uraemic syndrome
20	10	3	1	2

Table 3: Haematological parameters of Haemolytic childhood anaemia.

Total No. (%)		36 (8.83%)
M: F ratio		1.1: 1
Mean Age (year)		2.8
Mean + SD	Hbg/L	61.1 \pm 17
	PCV L/L	0.186 \pm 0.0602
Severity (No.)	Mild	2
	Moderate	16
	Severe	18
Age Distribution (year)	-2	9
	-6	23
	-12	4

DISCUSSION:

Anaemia in general is a common paediatric problem in the topics up to 80% of children, young adult females and pregnant mothers have anaemia^(5,11) this is because of increased demands and excessive losses or both.

Generally anaemia is thought to predispose to infections^(5,11,12)

The vast majority of cases are associated with iron deficiency anaemia particularly between the ages of one and three years and is mild in type⁽²⁾

In this study 131 (32.1%), of all cases had a hypochromic microcytic red cell morphology a picture very suggestive of iron deficiency anaemia. The age distribution was shown in Fig. (1).

As general hypochromic microcytic type of anaemia is the most common type of anaemia in the first 2 years of life (M: F = 1.5: 1), it mean that male were affected higher than female.

The reason for this variation is not clear, it may be attributed to economic and social factors such as

prolonged breast feeding, delayed introduction of mixed feeding and the earlier medical consultation in cases of boys.

The majority of our patients had mild to moderate anaemia and this is in accordance with other studies done in the tropics ⁽¹¹⁾.

Generally anaemia is associated with infections and chronic illnesses ^(5,11) The usual type of anaemia in such conditions is normochromic normocytic.

The pathogenesis is multifactorial including hypoproliferative marrow damages such as infiltration, fibrosis and aplasia, or reduced stimulation such as inflammation metabolic defect and renal disease ⁽¹³⁾

In this study normochromic normocytic anaemia is the commonest type 217 (53.18%). The majority of our patients had mild to moderate anaemia and is more common in male and the severity of anaemia depend on the activity of the primary cause and its duration.

Cases of haemolytic anaemia 36 (8.8%) was thought to have a relatively high frequency due to high incidence of thalassaemia and sickle cell disease in our locality ⁽¹⁴⁾

In this study 21 (5.14%) macrocytic anaemia was seen common below 2 years of life. In general the cause of macrocytic is due to vit. B12 or folic acid deficiency or both. Anaemia due to vitamin B12 deficiency is very rare during childhood. Macrocytic anaemia due to folate deficiency is more common cause in children and associated with repeated infections prematurity and low birth weight ^(5,7).

CONCLUSION:

Anaemia is a common paediatric problem and iron deficiency anaemia is the commonest cause of childhood anaemia so that the main focus for prevention of this needs to be on education around childhood nutrition.

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