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Hematological cross sectional study of the anemia types in children in Al-Zahraa hospital in Al-Najaf Province.

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ABSTRACT

One hundred patient were agonized from anemia in the Najaf city (AL-Zahraa hospital) the current revision was conducted out on the patient child at age was alternated from one year to twelve year during the period from january2015 extended to December 2015 .This study was ensured the type of the anemia infected to the patient child and , and determine the relation between the anemia , age, gender, and blood parameter (Hb, Pcv, and WBC) and investigation of blood films to detect the morphological change in the RBC . The consequence was exposed, male child percent infected with anemia (58%) and female percent was (42%) . the high percent (44%) of the anemic child at age (one-three) years the common types of anemia and involve the iron deficiency at percent (54%) . There was negative non significance difference between types of anemia and the leukocyte count .The result was appeared decrease in the hemoglobin% and type of anemia that found significant value between anemia and Hb and Pcv.

Keywords: Blood, Anemia

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INTRODUCTION

Anemia is distinct as a reduction in the meditation of circulating red blood cells or in the hemoglobin concentration and a concomitant impaired capacity to transport oxygen. It has multiple advancing factors that can occur in isolation but more frequently co-occur these factors may be genetic, such as haemoglobinopathies; communicable, such as malaria, intestinal helminthes and chronic infection; or nutritional, which includes iron deficiency as well as deficiencies of other vitamins and minerals, such as folate vitamins A and B12, and copper(1). It, one of the maximum shared and extensive complaints in the world, is a public health problem in both industrialized and non-industrialized countries. In 2002 the World Health Organization estimated that anemia subsequent from iron deficiency was one of the ten most important factors contributing to the global burden of diseases and that it increases morbidity and mortality in preschool-aged children and pregnant women (2).Reasons of anemia can be multi-factorial and often coincide, but the primary cause is a diet with inadequate iron foundations (quantitatively and qualitatively); iron deficiency causes an estimated 50%of anemia cases worldwide(3). Iron is an essential mineral in basic neural processes such as myelination, production of neurotransmitters, and energy metabolism(4) Fetal iron stores accrue in the third trimester of pregnancy. Iron content is directly relative to body mass, so newborns with low birth weight have less total iron available. Henceforth the importance of nursing iron status during pregnancy and ensuring that delivery procedures evade early holding of the umbilical cord to prevent iron deficiency(5) Speedy development of neural occurs in the first year of life, when morphological, biochemical and bioenergetics changes can affect all central nervous system functions. Iron is critical at this stage for neurogenesis and cell difference in numerous areas of the brain (6) Iron-deficiency anemia is the final stage of iron deficiency that, if happening during the critical period (aged<2 years) without early interference, can cause irreversible damage, preventing the child from reaching neural development milestones (7-9) Iron deficiency (ID) and iron-deficiency anemia (IDA) last to be of international anxiety. Among children in the developing world, iron is the most common single-nutrient deficiency(10)In industrial nations, despite a obvious decline in occurrence(11)IDA remains a common cause of anemia in young children. However, even more important than anemia itself is the indication that the more common ID without anemia might also unfavorably affect long-term neurodevelopment and behavior and that some of these effects may be irreversible (12,13) WHO has developed a classification system to facilitate international comparisons of anemia as a public health problem. The problem is measured severe if anemia commonness is ≥40%, moderate from 20% to 39.9%, and mild from 5% to 19.9%(14)

MATERIALS AND METHODS

One hundred patient children was infected with some kinds of anemia in the Najaf city/Al-Zahraa hospital .This present study was collected data information about the types of anemia (iron deficiency anemia , hemolytic anemia , sickle cell anemia , megaloblastic anemia and thalassemia). This study was depend on the blood films (microscopic examination) and blood samples was took from patients to carry out some blood parameters by using Ruby (ABBOTT., U.S.A.) in laboratory of AL-Sadder Medical City in Al-Najaf province .

RESULTS

Histopathological changes study

The histological results in figures (1, B &C)showed histopathological changes of blood tissue of patients hypochromic anemia , iron deficiency anemia, thalassemia, microcytic and macrocytic cells when compared with control (1-A).

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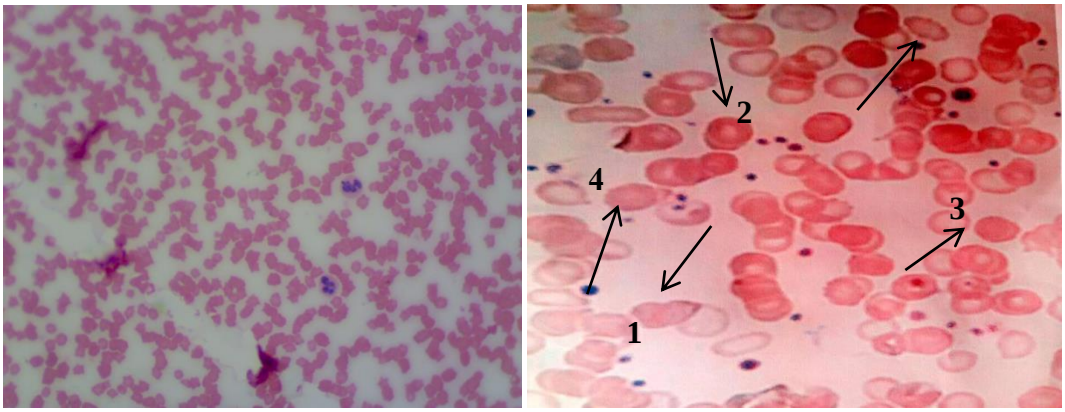
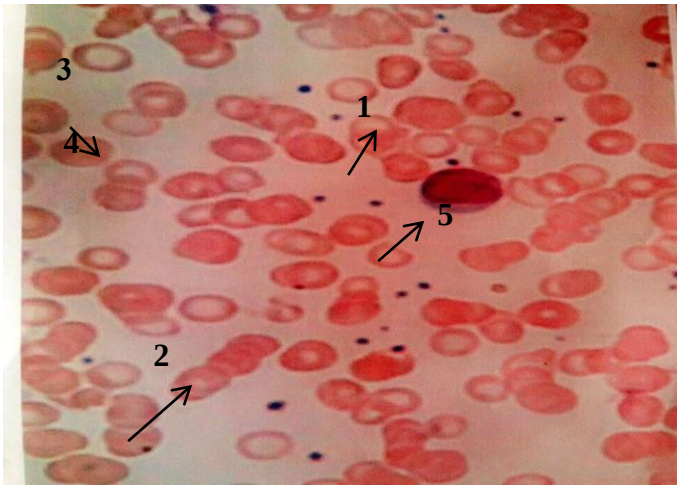


A B



C

Figure (1): A: normal blood tissue. (B): histopathological changes of blood patients revealed (1) small Elliptocytes (2) microcytic hypochromic Rbc (3) target cells. 4-tear shape cell. (C): 1: macrocytic cells. (2) stippling basophilic cells. (3): microcytic hypochromic Rbc 4-sickle cell. 5-macrocytic Rbc.

Hematological study : The present study was found non-significant difference between type of anemia and WBC count as in table (1)

Table 1 : show the relationship between type of anemia and wbc count.

		type of anemia	WBC
type of anemia	Pearson Correlation	1	.042
	Sig. (2-tailed)		.678
	N	100	100
WBC	Pearson Correlation	.042	1
	Sig. (2-tailed)	.678	
	N	100	100

There was significant difference at (p>o.o1) between Hb and type of anemia as in table (2).

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Table (2) : revealed the correlation between the percent of Hb and type of anemia

		type of anemia	HB
type of anemia	Pearson Correlation	1	.052
	Sig. (2-tailed)		.607
	N	100	100
HB	Pearson Correlation	.052	1
	Sig. (2-tailed)	.607	
	N	100	100

Our finding was appeared significant difference at(p> o.o1) between pcv and type of anemia as the table (3)

Table 3: appeared the relation between packed cell volume and type of anemia

		type of anemia	Pcv
type of anemia	Pearson Correlation	1	-.382-**
	Sig. (2-tailed)		.000
	N	100	100
Pcv	Pearson Correlation	-.382-**	1
	Sig. (2-tailed)	.000	
	N	100	100

The present study showed the high percent (44%) of anemia at age group (1-3) years old as in the table (4). And diagram (1).

Table 4: showed the age group percent in the Childs infected with anemia

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-3 year	44	44.0	44.0	44.0
	3-5 year	20	20.0	20.0	64.0
	5-8 year	18	18.0	18.0	82.0
	8-10 year	8	8.0	8.0	90.0
	10-12 year	10	10.0	10.0	100.0
	Total	100	100.0	100.0	

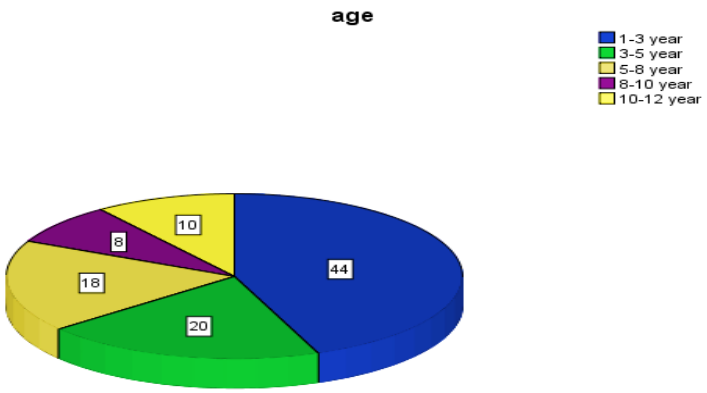

Diagram 1: show the percent of age group in the childhoods were affected with anemia

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Our observation were revealed . iron deficiency anemia had the high percent (54%) as in the table (5) and diagram (2) .

Table 5 : appeared the percent of anemia according to etiological causes.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	iron deficiency	54	54.0	54.0	54.0
	macrocytic anemia	10	10.0	10.0	64.0
	megaloblast anemia	5	5.0	5.0	69.0
	hemolytic anemia	19	19.0	19.0	88.0
	Thalassemia	7	7.0	7.0	95.0
	normochromic anemia	1	1.0	1.0	96.0
	sever anemia	2	2.0	2.0	98.0
	sickle cell anemia	2	2.0	2.0	100.0
	Total	100	100.0	100.0	

Table 6: showed the relationship between gender and type of anemia .

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	58	58.0	58.0	58.0
	female	42	42.0	42.0	100.0
	Total	100	100.0	100.0	

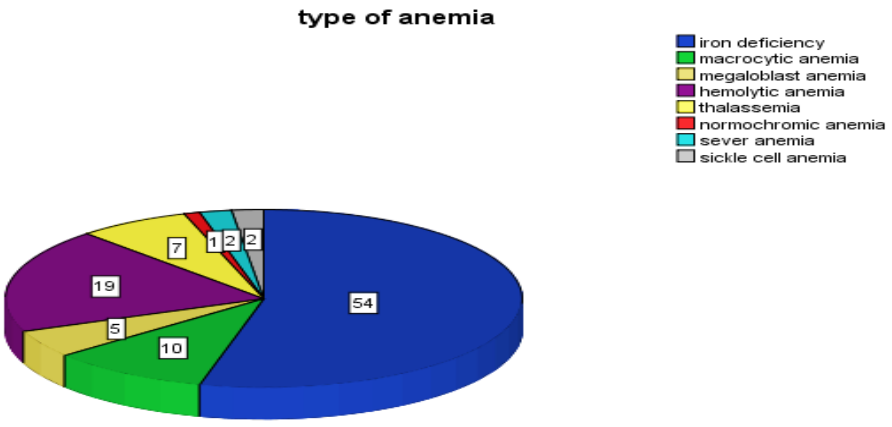

Diagram 2: show the prevalence anemia type due to cause

-the table 6 and diagram (3) revealed the type of gender percent (males and female), the male (58%) and female (42%).

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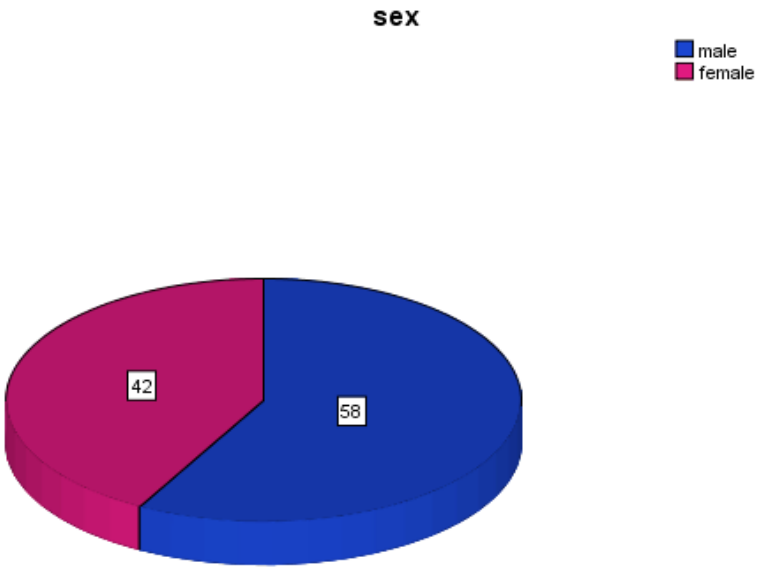

Diagram 3: revealed the percent of gender that related to type of anemia

DISCUSSION

The greatest current data evidence on the worldwide prevalence of anemia ,we observed that between 1993 and 2005, anemia affected one in four individuals globally, pregnant women and young children are great danger (15) our results was publicized significant difference between type of anemia and Hb%, pcv% may be due to malnutrition or parasitic infestation, these suggestion were identical with previous workers they mentioned the etiology of iron deficiency contributing with main factor among child ,include low intake dietary iron and hook worm infection the best sources of iron are fish ,meat and poultry due to the heme iron contained in these have high bioavailability, and hook worm infection is a major cause of anemia in the tropical and subtropical region , the hook worms and anemia have been described among children's in the marshal island (16 .17 ,18) our conclusions were looked no alteration in the total leukocyte count , while the previous author showed the granular leukocyte count was significantly increased in iron deficiency anemia and pointed out the iron has important effect on both granulocytes functions and count(19) these observations varied with present study .The present study showed the common type of anemia was iron deficiency anemia due to nutritious addition was rich or poor in the iron ,some preceding study (20 ,21) was reported the prevalence of iron deficiency and child (1-3 years) in United State of America, this review data collected between (1999-2002) ,this occurrence depend on the race, origin and socioeconomic status , and percent of the iron deficiency anemia (40%) while the present study was documented (54%) . Our explanations were pointed out the male more affected with types of anemia than females .

RECOMMENDATIONS

1-we recommended for good nutritional statue which includes fishes ,meat, spanch, cabbage that rich iron to avoid iron deficiency anemia . 2- avoid bad food such as chips, gaseous drink , and expired.

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REFERENCES

[1] World Health Organization (2004) Focusing on anemia towards an integrated approach for effective anemia control. Joint statement by the World Health Organization and the United Nations Children's Fund. http://whqlibdoc. who.int/hq/2004/anaemiastatement.pdf (accessed April 2007).

[2] World Health Organization (2002) The World Health Report2002: Reducing risks, promoting healthy life. http://www.who.int/whr/2002/en/whr02_en.pdf (accessed April 2007).
[3] World Health Organization; Center for Disease Control and Prevention. Worldwide prevalence of anemia 1993–2005: WHO global database on anemia [Internet]. Geneva: World Health Organization; 2008 [cited 2010 Oct 3]. 51 p. Available from: http://whqlibdoc.who.int/publications /2008/9789241596657_eng.pdf
[4] Georgieff MK. Nutrition and the developing brain nutrient priorities and measurement. Am J ClinNutr [Internet]. 2007 [cited 2010 Feb 26];85(2 Suppl):614–20. Available from: http://www.ajcn.org/content/85/2/614S.full.pdf
[5] Widdowson EM, Spray CM. Chemical development in-utero. Arch Dis Child [Internet]. 1951 Jun [cited 2012 Jun 19];26(127):205–14. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1988372/pdf/archdisch01420-0013.pdf
[6] Beard J. Why iron deficiency is important in infant development. J Nutr [Internet]. 2008 Dec [cited 2011 Mar 4];138(12):2534–6. Available from:http://jn.nutrition.org/content/138/12/2534.full.pdf
[7] González P. Anemia y deficit de hierro en niños y adolescentes. Rev Anemia. 2009 [cited 2010 Jul 6];2(2):13–20. Available from: http://www.revista anemia.org/presentacion-pdf-revista-anemia .php?fi leid=r0202&fi lepdf=gr0pdf2. Spanish
[8] Lozoff B, Corapci F, Burden M, Kaciroti N, Angulo- Barroso R, and Sazawal S. Preschool-aged children with iron deficiency anemia show altered affect and behaviour. J Nutr [Internet]. 2007 [cited 2011 Mar 4];137(3):683–9. Available from: http:// jn.nutrition.org/content/137/3/683.full.pdf.
[9] Carter RC, Jacobson JL, Burden MJ, Armony- Sivan R, Dodge NC, Angelilli ML, et al. Iron defi -ciency anemia and cognitive function in infancy. Pediatrics [Internet]. 2010 [cited 2011 Mar 30];126(2):427–34. Available from: http://pedia trics.aappublications.org/content/126/2/e427.full .pdf+html
[10] United Nations Administrative Committee on Coordination/Sub-Committee on Nutrition and International Food Policy Research Institute. *Fourth Report of the World Nutrition Situation*. Geneva, Switzerland: United Nations Administrative Committee on Coordination/ Sub-Committee on Nutrition; 2000
[11] Sherry B, Mei Z, and Yip R. Continuation of the decline in prevalence of anemia in lowincome infants and children in five states. *Pediatrics*. 2001;107(4):677– 682
[12] Lozoff B, Jimenez E, Smith JB. Double burden of iron deficiency in infancy and low socioeconomic status: a longitudinal analysis of cognitive test scores to age 19 years. *Arch Pediatr Adolesc Med*. 2006;160(11):1108–1113
[13] Bruner AB, Joffe A, Duggan AK, Casella JF, Brandt J. Randomized study of cognitive effects of iron supplementation in nonanemic iron-deficient adolescent girls. *Lancet*. 1996;348(9033):992–996
[14] World Health Organization; United Nations -. University. Iron defi ciency anemia. Assessment, prevention and control. A guide for program managers [Internet]. Geneva: World Health Organization; c2001 [cited 2005 Dec 26]. 114 p. Available from: www.who .int/nutrition/publications/en/ida_assessment_prevention_control.pdf
[15] worldwide prevalence of anaemia, WHO vitamin and mineral nutrition information system , 1993-2005 .public health nutrition : 12(4),444-454.
[16] Allen l. casterline- sable j. prevalence and cause of nutritional anemia . ramakrishnan u,ed.nutrional anemia.boca raton: crc press,2001:7.
[17] pawlowski zs,schad ga,stou Gj.hookworm infection and anaemia : ap-proaches to prevention and control .Geneva : world health organization , 1991.
[18] Roberts AB,Roberts p, Tira T, tulimanu K malnutrition and anemia in Gilbertese pre- school children : a casc- finding and epidemiological survey .j Trop pediatr 1981: 27 :78 .
[19] Takeuchi T , and Mori s (2007).De novo CD5+ diffuse large B cell lymphoma with basophilia in the peripheral blood : successful treatment with autologous peripheral blood stem cell transplantation Am.J. Hematol.,82(2): 162-167.
[20] Centers for Disease Control and Prevention, National Center for Health Statistics. National Health and Nutrition Examination Survey. Available at: www.cdc.gov/nchs/ nhanes.htm. Accessed September 29, 2008.
[21] Cusick SE, Mei Z, and Freedman DS. Unexplained decline in the prevalence of anemia among US children and women between 1988 –1994 and 1999 –2002. *Am J Clin Nutr*. 2008;88:1611–1617.