PICA IN CHILDREN

Faris B. Al-Sawaf *MRCP*

Abstract

Objectives: To see how frequent pica among children; to look at other signs and symptoms of malnutrition as anemia and rickets that are associated with pica; and to see how frequent worm infestations among those children with pica.

Participants and Setting: Children visiting a private clinic during 3 years.

Main outcome measures: Full information was taken from their mothers and thorough examination was done, full blood count was done to 160 patients and stool examination was done to 42 patients.

Results: Pica was found in 11.56% of them whom their age was between 10 and 36 months. Sixty seven percent of them came from presumably poor families. Sixty two percent of them showed signs of rickets. All the infants were pale, and the RBCs were hypochromic microcytic in 91.25% of them. Worm infestation was found in 14.36 %. Six percent of them had splenomegaly.

Conclusion: Pica is not uncommon problem among children and it is frequently associated with iron deficiency anemia, rickets, and worm infestation.

Key words: Pica. Iron deficiency. rickets. pinworm.

Iraqi J Med Sci, 2004; Vol.3(2): 179-181

[1]Introduction

Pica is defined as persistent eating of non-nutritive substances for a period of at least one month without an association with an aversion to food[1], but it is a normal transitory phenomenon during the toddler period[2,3], it is frequently associated with mental retardation, but it has been seen in all ages and both sexes[4] and in patients of lower socioeconomic status[5] and under developed areas[5-8].

It is also found in some cases of iron-deficiency anemia as well as in deficiencies of other nutrients such as zinc[6]. In some cultures pica is considered normal and even therapeutic[9].

The etiology can be explained from nutritional (iron and zinc deficiencies), sensory, physiologic (enjoy the taste, texture, or smell of the item), neuropsychiatric (association with certain patterns of brain disorder), cultural or psychosocial (family stress)[5,7], sometimes it is regarded as addictive behavior or part of the obsessive-compulsive disorder[6,10]. The effects of pica have been classified into five groups[1,6]:

1. Inherent toxicity (direct toxic effects of the substance).
2. Obstruction {trichophagia (eating hair)}.
3. Excessive calorie intake related to amylophagia (starch eating).
4. Nutritional deprivation
5. Parasitic infections and dental injury[7]

The diagnosis can be difficult and could be missed easily without a high degree of suspicion. Treatment includes education about nutrition along with iron therapy or transfusion, psychological counseling or behavior therapy can also be useful adjuncts[1]. Not all forms of pica are dangerous and some might not require intervention. Severe or recalcitrant cases could require referral to a mental health specialist.

The Aim of the study is to look at:-

1. The frequency of pica among children.
2. The associated deficiencies.
3. The frequency of worm infestation.

Patients & Methods

Three thousand two hundred and fifty infants' between 10 and 36 months of age were reviewed in the private clinic during 3 years.

There were 1805 boys and 1445 girls, their mothers were asked about pica and other symptoms as anorexia, fretfulness, pruritus ani (irritable sleep), excessive sweating, family history of worm infestation. Examination was done to them looking for nutritional status, pallor, organomegaly, signs of rickets (cranio tabes, wide wrist, rickety rosary, bow legs ...etc). Full blood count was done to 160 patients who had history of pica and stool examination for worm was done to 42 patients who had history of pruritus ani. Other investigations as serum ferritin, serum iron and total iron binding

Dept. Pediatrics, College of Medicine, Al-Mosul University. Address correspondence to Dr. Faris B. Al-Sawaf
Received 8th November 2003: Accepted 30th March 2004.

capacity were not done because of difficulties (not available and costy).
Those with pica were given oral or parenteral iron for an adequate time together with vitamin D supplementation if needed; Albendazole was also given in 2 doses for those with worm infestation.

Results

Three hundred seventy six patients (11.56%) had pica. Two hundred and two (53.7%) were boys and 174 (46.3%) were girls as shown in table (1).

Table 1: Shows the sex distribution

Sex	Number	%
Male	202	53.7
Female	174	46.3
Total	376	100

Two hundred fifty two of them (67%) came from presumably poor families who don't eat meat and eggs. The non food materials ingested were sandstones, soil, papers, paint, dirt, and soap. Two hundred thirty three patients of those 376 (61.98%) had signs of rickets. The mothers of seventy one patients (18.88%) were doubtful about their children whether they were harboring worms or not and 59 of them (83%) had positive family history of worm.
Fifty four children (14.36%) had definitely worm infestation from their complaint (pruritus ani) and all had positive family history of worm infestation as shown in table 2.

Table 2: History of worm infestation

History of worm infestation	Number	%	Positive family history of worm infestation	
			Number	%
Doubtful	71	18.88	59	83
Definite	54	14.36	54	100

All the 376 children were pale. Twenty three patients (6.12%) had a palpable spleen.
The haemoglobin level was between 9.5-11.5gm/dl in 55 of those who had their blood tested (160) (34.38%) and it was 6.5-9gm/dl in 105 patients (65.62%) as shown in table 3.

Table 3: The level of haemoglobin

Hb (gm/dl)	Number	%
9.5-11	55	34.38
6.5-9	105	65.62
Total	160	100

Table 4: The shape of RBCs

Shape	Number	%
Hypochromic microcytic	146	91.25
Normochromic normocytic	14	8.75
Total	160	100

The RBCs were hypochormic microcytic in 146 patients (91.25%) and normochromic normocytic in 14 patients (8.75%) as shown in table (4).
Eosinophilia was found in 95 patients (59.37%).
Stool examination showed the eggs of pinworms in 35 samples (83.33%).
Iron therapy with vitamin D supplementation and antihelminthic drug when needed were marvellous in curing these patients and no one came back with the same problem.

Discussion

Pica was more commonly found in those children with the age range 10-36 months and this is in agreement with that reported by Scott and Dalton[3]. Sixty seven percent of patients came presumably from low socioeconomic families and this is consistent with Edwards[5] and others[6-9].
Nearly 62% of the children with pica had signs of rickets which was mainly nutritional due to vitamin D deficiency and it is part of the nutritional deprivation imposed on the child by pica by eating substances instead of nutritive foods, similar findings were found by Weaver[2].
Worm infestation was found in (14.36%) of the patients and was doubtful in 18.88% of the patients with high index of suspicion because of the high positive family history of worm infestation, in a study of Jamaican children with pica, worm infestation was found in more than 70%[11].
The haemoglobin level was 9.5-11.5gm/dl in (34.38%) of those who had their blood tested and it was 6.5- 9 gm/dl in the remaining 65.62% and the majority of them 91.25% had hypochromic microcytic anaemia so pica has frequently been described as a symptom of iron deficiency although it occurs often in those who have normal haemoglobin levels[4,6-8]. Eosinophilia was found in (59.37%) of the patients and eosinophilia should be looked for in patients with pica as claimed by Waller[12]. Helminthic infection causing eosinophilia and gastrointestinal symptoms has been described

and the stool was positive for eggs of pinworms in (83.33%) of those who had their stool tested.
The response to iron therapy was dramatic in all the patients but Mitchell[10] claimed that cessation of pica behavior with iron replacement does not happen often, however, whether continued pica behavior constitutes an addiction or simply a learned pattern of behavior is unclear[10]. Also still it is unclear whether pica causes the anemia or the anemia causes pica[9].
So in conclusion pica is a frequent problem in children and it is frequently associated with iron deficiency anemia and rickets together with worm infestation and it can be cured with iron therapy in addition to other necessary drugs.

References

1. Pica: common but commonly missed. J Am Board Fam pract, 2000; 13 (5): 353-8.
2. Hoare, P., Will, D., and Wrate, R.: Psychiatric disorders. Forfar and Arneils' Textbook of pediatrics. 5th ed. Churchil livingstone. New York. 1998; p.p. 1736.
3. Scott, C., and Dalton, R.: Vegetative disorders. Nelson Textbook of pediatrics. 16th ed. Saunders Philadelphia. 2000; p.p. 72.
4. Diagnostic and statistical manual of mental disorders: DSM- IV. Washingtonm, DC: American psychiatric press, 1994.
5. Edwards, C.H., Johnson, A.A., Knight, E.M., et al.: Pica in an urban environment. J Nutr, 1994; 124 (6 suppl): 954s-962s.
6. Lacey, E.P.: Broadening the perspective of pica: Literature review. Public Health Rep, 1990; 105: 29-35.
7. Sayetta, R.B.: Pica: an overview. Am Fam Physician, 1986; 33: 181-5.
8. Castiglia, P.T.: Pica. J Pediatr Health care, 1993; 7: 174-5.
9. Parry-Jones, B., and Parry-Jones, W.L.: Pica: Symptom or eating disorder? A historical assessment. Br J Psychiat, 1992; 160: 341-54.
10. Mitchell, D., Winter, W., and Morisaki, C.M.: Conditioned taste aversions accompanied by geophagia: evidence for the occurrence of "psychological" factors in the etiology of Pica. Psychosom Med, 1977; 39: 401-12.
11. Robinson, B.A., Tolan, W., and Golding-Beecher, O.: Childhood Pica. Some aspects of the clinical profile in Manchester, Jamaica. West Indian Med J, 1990; 39: 20-6.
12. Waller, B.R.: 3rd, Pendergrass I.B. Index of suspicion. Case 3. Strangulated hernia of the small intestine. Pediatr Rev, 1995; 16: 433-6.