

## Pica with Rare Biochemical Findings in Adolescent: A Case Report

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**Abstract:** Pica is persistent eating of non-nutritive substances and is more common among children and adolescents with intellectual disability. Psychosocial factors along with organic factors have been implicated in the etiology of Pica. Here we report an adolescent child with tendency of eating lead containing paint chips from wall. Several investigations were performed like complete blood count, lead and zinc estimation in blood along with intellectual functioning assessment. He was treated with Fluoxetine and Cognitive behavior therapy along with nutritional supplement

**Keywords:** Pica, Blood count, Lead, Zinc.

### INTRODUCTION

Pica is an unusual craving for ingestion of either edible or inedible substances [1]. Patients may ingest clay, muds, chalk, ice cubes and paint chips from the wall. Pica is most prominent in individuals with developmental disabilities and it has also been observed in men and women equally, particularly among lower socio-economic group. Majority of the Pica cases involve small children, adolescents and pregnant women. Pica poses significant health problems that require medical interventions. These patients may suffer from electrolyte

imbalance and metabolic disorders like lead poisoning, iron deficiency anemia, zinc deficiency in some of the cases [2, 3]. These deficiencies should be corrected and treatment for lead poisoning to be done. Some of the Pica patients may show evidences of parasitic infestations in stool and occasional features of intestinal obstruction.

Here we present an adolescent patient who demonstrated certain less common biochemical changes which are not investigated routinely but having significant importance in treatment aspect and as well as in disease process.

### CASE REPORT

A 14 year old Hindu boy from urban area belonging to lower socio-economic class with no past or family history of psychiatric illness was brought with history of eating clay for last three years and paint chips from the wall for last one year. He was staying in a slum area along with his widowed mother. He had initially started eating clay after breaking clay made cups which are used for serving tea. Initially his mother did not notice this behavior as he was consuming these things in her absence. He started to consume more clay after few months and his mother tried to restrict him but could not succeed. He was consuming clay by breaking approximately 15 earthen cups during that time and he

developed a tendency for refusal of food and became irritable from time to time when he was restricted from such activity. His academic performance was not at all satisfactory during that time. He developed a new habit of eating lead containing paint chips from the wall for last one year. He used to do this in damaged wall of the house and school by scratching with hands and nails and then consumed it. He presented in the Outpatient department in our hospital with bluish discoloration of hands and scratch marks ( Fig: 1,2). He was thin built, ill-kempt but cooperative and having low mood for some time but there was no perceptual abnormality. He was having partial insight and showed willingness for treatment to some extent. On physical examination pallor was noted along with some important biochemical and hematological changes which were low hemoglobin (7.5 g%) and features of microcytic hypochromic anemia like decreased Mean Cell Volume, Mean Cell Hemoglobin and poikilocytosis which is characteristically seen in cases of iron deficiency. His blood lead level was 24.79 µg/dl (Reference Range: 10.00 µg/dl for children) which is higher than normal range and zinc level was 77.18 µg/dl (Reference Range 75-291 µg/dl) which is in low normal level and these are significant findings for this particular case. His intellectual functioning falls under the Borderline category (IQ= 77) and the social and adaptive functioning is below his stated chronological age. His

Thyroid profile, Electroencephalogram and stool examination report was within normal limit.



**Fig-1: Scratch marks and bluish discoloration of hands**



**Fig-2: Patient's image with bluish discoloration of hands**

He was treated with Fluoxetine initially 20 mg per day and later it has been increased to 40 mg per day along with iron, zinc and multivitamin supplement and the patient responded well [4]. He was also referred to General Medicine Outpatient department for controlling high blood lead level. Patient and family members were psycho-educated about the nature of illness. Cognitive behavior therapy was employed for stress reduction and coping skills. He was also advised for regular follow up and to continue medication.

#### **DISCUSSION**

The most significant finding of this case is high lead level in blood along with a strikingly low normal level of zinc with typical features of iron deficiency anemia [5]. In cases of Pica assessment of blood parameters of lead and zinc are not routinely done and the findings of this case is rare [6]. Intellectual function of this patient falls under Borderline category which is characteristic and prevalence of this disorder increases with the severity of retardation [6].

Low plasma level iron and zinc have been found to be associated with Pica and it has been suggested that hypozincemia and low iron level may be a possible cause rather than a consequence [6]. Animal studies in rat suggested that inadequate intake of iron and calcium has been associated with Pica. In many cases it has been seen that unusual eating behavior decreased after iron supplementation [7]. Psychosocial factors like poverty, abuse, disorganized family and maternal neglect have been associated in the etiology of Pica [8]. Further research is needed in future to establish the multi-factorial model of etiology by which familial, socio-economic, cultural and organic factors interact with themselves.

#### **CONCLUSION**

The case reported here showed significant changes in blood biochemistry like alteration in lead, zinc level and hematological parameters which have enormous importance in pathogenesis and therapeutic procedures for Pica.

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