ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2018; 4(2): 227-229
www.allresearchjournal.com
Received: 28-12-2017
Accepted: 30-01-2018

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The study on pica at tertiary care hospital

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Abstract
Pica is habitual eating of chalk, coal, sand, pebbles, crayon, slate pencil *etc*. Pica is seen as abnormal behaviour in psychological conditions and also in low Socio economic status, family disputes and disorientation. Mentally retarded children of above 2 years age are seen with the habit of pica. Pica causes health hazards and complications like poisoning, gastro intestinal problems and worm infestation. We observed 21 cases of pica in our study at Apollo institute of medical sciences and District head quarters hospital at Chittoor in Andhra Pradesh. We observed cement eating in 3 cases, insects and mud in eating 4 cases, slate pencil and chalk eating in 4 cases, soil and mud eating in 2 cases, paint eating in 4 cases, hair eating and nail biting in 4 cases. These children are Anaemic, malnourished, lethargic, with distension of abdomen. Some of them are mentally retarded, History of worm infestation, abnormal hair growth, and underweight are seen. All the children were investigated for Haemoglobin, peripheral smear, serum ferritin, iron binding capacity, ESR, stools for ova cyst, urine microscopy and albumin. Treatment: All the children were treated with micronutrients like iron and zinc, deworming with albendazole and high protein supplemented diet. They required multidisciplinary approach with the team comprising of psychologist, social workers, parents, friends and teachers.

Keywords: pica, cement, ants, mud, soil, chalk, slate pencil, zinc, ane mia, paint and lead

Introduction

Background: Pica is common during the second and third years of life. Incidence is 25 to 33% in younger children and 20% of the children seen at the mental health clinics. Pica spontaneously decreases as age advances. Pica is common in both sexes and is rarely seen in adults except in pregnancy. Pica name comes from Latin, Magpie bird which is known for voracious eating of food and non food items [1]. Pica should be differentiated from exploration of the object by mouth and tasting seen in toddlers which is a normal phenomenon.

DSM-5 Criteria for Pica diagnosis,1.when non food items taken for 30 days or longer in spite of efforts to stop the behaviour [2]. 2. It is not corrected after 18 months. 3. It is not due to part of their culture.4. It is not due to mental disorder or any other medical condition.

Maternal deprivation, emotional trauma, parental neglect, poor supervision, family issues, pregnancy and disorganised family structure are some important issues involved, which are more common in lower socio economic status. They eat paper, chalk, clothing, coins, plants, grass, rock, salt, rubber bands, shampoo, soap, crayons, markers, hair, string, charcoal, plaster, clay, wool, ash, mud, cigarette butts, animal droppings, sand, insects, cement, leaves and pebbles and any other non-food items. Tricophagia is hair eating, xylophagia is paper or wood eating, Acuphagia is eating sharp objects, Lithophagia is stone, soil, dirt and sand eating, Geophagia is clay eating. Glass eating is Hyalophagia, ice and freezer frost eating is pagophagia. Dry wall or paint eating is Metallophagia, faeces and animal dung eating is coprophagia, drinking of urine is Urophagia, eating of paint and chips is Plumbophagia, eating laundry starch is Amylophagia, eating leaves and grass is foliophagia, eating potato is geomelophagia, eating wood, bark and twigs is phytophagia, eating gravel, rock and pebble is lignophagia. Certain east African women eat the soil before, during and after pregnancy as a part of their culture. Autism and Prader –willi Syndrome [2] affected children are more prone for pica. Parent and child psychological causes, Family causes, Environmental causes,

pregnancy, epilepsy, brain damage, Intellectual disability and developmental disorders are some other risk factors for pica.

Aetiology: Mostly Idiopathic. Suggested hypothesis such as

1. Nutritional deficiencies like Iron, calcium, zinc, Thiamine, Niacin and Ascorbic acid
2. Learned behaviour.
3. Social and family factors.
4. Non discriminating oral behaviour.
5. Stress.
6. Underlying biochemical disorders.
7. Lower socio economic status is implicated.

Complications: foreign may lodge in oesophagus, ore pharynx, stomach and small intestine. Some time it is aspirated into the airway causing respiratory emergencies. Drooling, wheezing, obstruction and voice disturbances are common. Ascariasis, ankylostomiasis, Toxoplasmosis, Taxocariais are common worm infestations seen. Lead poisoning commonly seen after paint and cigarette butts' ingestion. Lead poisoning can cause irritability, lethargy, ataxia, in coordination, headache, cranial nerve palsy, seizures, encephalopathy, coma and death can occur rarely. Iron deficiency anaemia can affect respiration, energy production, DNA synthesis, cell proliferation, cognitive behavioural, psychomotor changes which are irreversible [3]. Iron deficiency is also associated with pica; breath holding spells, restless syndrome, thrombosis, impaired cell mediated immunity and impaired bactericidal action. Clinical presentations seen in our study are constipation, chronic abdominal pain, nausea, vomiting, ulcers and perforation of bowel with abdominal dissention, loss of appetite, dental changes such as tooth abrasion, abfraction and tooth loss. Investigations: Blood lead levels, iron levels, x-ray abdomen, Upper GI Endoscopy, barium meal are advised. Repeated investigations sometimes necessary to track the foreign body. Treatment: Multi disciplinary counselling involving Psychiatrist, psychologist, Physician, Radiologist, social worker and Family members. Olanzapine, is an anti-psychotic drug used to control the pica. It is dopaminergic, serotonergic and cholinergic agonist. Prognosis: pica often remits in young children and in pregnant women. However it may persist in children with intellectual and developmental disability. Association between pica and micronutrient deficiency is unclear. 43 Pica cases reported out of 6047 cases by Diana Miao *et al*. Lower blood concentration of serum iron, serum zinc and haematocrit were seen. Malnutrition, bowel problems, dental injuries and parasitic infections were seen in that study [4], Deficiency of iron and zinc and certain mental abnormalities are associated with pica. Psychiatric assessment is important. Underlying causes such as inattention, sensory stimulation, seeking relief of stress and anxiety, doing something in add way were seen in 200 pica children from one and half years to10 years. There was male predominance. In one third of cases mothers reported pica. Cough, pain abdomen, pallor, abdominal fullness and poor appetite was reported [5, 6, 7]. Pica can be benign or associated with serious medical Sequlae which requires behavioural and medical therapy [6].

Material and Method

Case study 1- a male child aged about 2 years brought with complaints of eating cement, dead ants, dead insects, soil, dry lime, paints *etc*. On examination he was found to be anaemic, history of parental neglect and he was from lower socio economic status.

1. A female child aged about 3 years was brought to OP with passage of worms supposed to be hook worms, eating of soil, chalk and white barite stone regularly with she has reduced appetite and not accepting food. On examination child was anaemic.
2. A 4 years child brought to this hospital with nail biting and eating of hair. He had history of irregular bowel habit, sparse hair in scalp and constipation.
3. A female child aged 3 years brought with the complaint of eating paint flakes, hair and white wash particle for 2 years. On examination child was irritable with hair thinning and he was anaemic.
4. A 5 years male child brought to OP with the complaint of regularly consuming slate pencil which was reported by school teacher, later it was confirmed by parents. This child used to demand for more slate pencils every day while going to school.
5. A male child aged 2years brought to this hospital with complaint of eating Crayons, brick pieces and cigarette butts which are discarded by his father.He was malnourished, anaemic and was from lower socio economic status.

Observation: Total 21 cases of Pica observed, in this we observed cement eating in 3 cases, insects and mud eating 4 in cases, slate pencil and chalk eating in 4 cases, soil and mud eating in 4 Cases, paint eating 4 cases, hair eating and nail biting 4 case, These children are anaemic, lethargic, anorexic, with distension of abdomen, mental retardation, history of worm infestation, abnormal hair growth and underweight. All the children are investigated for haemoglobin, peripheral smear, ESR, stools for ova cyst, urine Microscopy and albumin. In this cases low haemoglobin, low hematocrit, low serum ferritin, low iron binding capacity, high ESR, in some cases high concentration of lead seen and ova, cysts of ascaria and ancylostoma were positive in many cases.

Treatment includes correction of anaemia with iron, micronutrients like zinc and calcium, deworming, Positive reinforcement of behaviour, Counselling about which is good and which is bad. They required multi disciplinary approach with the team comprising of psychologist, social workers, parents, friends and teachers.

Discussion: Keeping pica box filled with edible Gum and Popcorn *etc*. Psycho social, environmental and family guidance approach are important. Self protection devices and Oral tasting of lemon and showing smell of Ammonia can minimise pica.

1. Pica causes significant risk to health and often requires intervention by health care personnel. They can cause electrolyte disturbance, parasitic infestation, lead and mercury poisoning, obstruction of intestine. aetiology unknown in most of the cases [8]. 2 lead is seen in paints and pigments, lead solder in food cans, ceramic glazes, and drinking water systems with lead pipes, in cosmetic medicines, toys and in Electronic waste and contaminated soils. High dose exposure to lead can cause acute poisoning with symptoms [9]. Features are colic, anaemia CNS depression which may lead to convulsions, coma and death.

Previously lead levels which were considered safe are now compromising the health and causing injuring to multiple organs. Brain injury manifests as behavioural changes, loss of intelligence and lack of attention span [9]. 3. Pica commonly observed in developmental disorders in children [6, 10]. 4. eating inedible items could be due to attention seeing, may be sensory stimulation seeking, anxiety or stress relief, reaction to under stimulation, getting out of doing something and behavioural problem. Strategies 1, to teach what is acceptable and what is not acceptable. 2. Use clear communication i.e. for slate pencil is used for writing only. 3. Provide same sensory opportunity of similar texture example use apple piece inedible things. 4. Ask to participate in other activities.5. Create activity to choose edible or non edible things. 6. Distraction techniques. 7. Praise good behaviour [11] 5. Pica is commonly associated with micronutrient deficiencies. There is a need for greater public health attention and education.

Pica is significantly associated with increased anemia and low Hb, Hct, serum ferritin, iron stores and plasma Zn. The relationship between pica and micronutrient deficiency is unknown, the magnitude of these relationships is comparable to other well-recognized causes of micronutrient deficiencies. Potential physiological mechanism causing the relationship between pica and micronutrient deficiencies merits further study. Pica is best managed by behavioural interventions especially when it is disturbing to the family and dangerous to the patient [12]. Chen XUE Cunet *et al*. observed 700 pica children and found low zinc levels in serum and hair. Supplementation of zinc reduced the pica habit [13]. Richa [8] *et al*. reported mercury and lead poisoning, electrolyte and metabolic disorders, parasitic infections, gastro intestinal problems and intestinal obstructions. Iron deficiency below 2 years is very common in India as reported by Bharat j parmer *et al*. Irreversible cognitive impairment is seen in iron deficiency even without anema [14]. So early diagnosis and treatment of iron deficiency is important. Eating the glass pieces is associated with radiological changes in carpous callosum and sylvian fissure [15].

On x-ray radio opaque particles of clay and lead reported [7, 15]. We also noted similar findings such as radio opaque material in 2 cases in plain X ray abdomen. Tobacco phagia is eating cigarette butts. We observed one child who used to taste cigarette butt as mimicking as a smoker. Iron deficiency causing pica is managed by supplementing iron, zinc, calcium and B-complex [15, 1, 6]. In our study we supplemented iron and other micronutrients. Eating disorders in children is managed by behavioural and supportive approach, constant observation and convincing them can improve the habit of pica.

All the 21 children and their parent's, friend's teachers, family members were informed not to abuse the child. Always praise them with good words such as good boy or good girl. Rewarding with eatable food items can help in some, Social, psychotherapist counselling is given. We advised anti-helminths, iron, zinc and calcium. Periodic weight check up was done. Anitapuri singh *et al*. reported a case of eating mud and engraving of the wall [16]. it was considered as Obsessive compulsory disorder. 4 children of our study used to take paint plaques and mud in the walls. Lead is mixed in herbal, other medicines and lead paints as reported by WHO. Children of painters are having the habit of eating the plaques of paint left over in buckets and walls. 4 children we observed in the present study

Diana a miao *et all*. reported pica with anaemia. Iron treatment [17]. can stop pica spontaneously. We observed in the present study those who are having the habit of pica told that they stopped eating non nutritive substances after haematinics. Team approach necessary, no specific therapy, correct nutritional deficit and medications used to treat underlying behavioural problem will correct it 9 *et al*.

Recommendations and prevention strategy: Observe the incidence, document and report the symptoms. Healthy habits were taught to all the children, encouraged to say the truth and follow hygienic steps and supervision among their friends.

Conclusion: Pica is universal. Irrespective of proper health education and social back ground we are observing children eating non nutritive substances. Constant observation and supporting required. Praising with good words and making them to avoid pica in these children and their friends.

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