

CASE REPORT

CRAVE ENDS IN GRAVE – GEOPHAGIA: A CASE REPORT

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ABSTRACT

This is a case of acute toxic dilation of the bowel loops resulting in a toxic megacolon with a rapidly fatal outcome in a 12-year-old girl with habitual intake of chalk pieces. The child presented with acute abdominal pain, abdominal distension, and intense thirst before death. On examination, dilated bowel loops were seen pushing the diaphragm into the thoracic cavity. Histopathology showed extensive erosions and focal atrophy of mucosal glands. Geophagia is likely to result in various abdominal complications, and one such resulting complication seen here in this report is toxic megacolon, further complicated by electrolyte disturbances and decreased cardiac output, causing death. This case report highlights the importance of recognising geophagia as a potential health risk and the need for comprehensive management strategies. Through this case, we aim to promote better understanding and research into the complex aetiology and consequences of geophagia.

Keywords: *Constipation; geophagia; pica; soil; toxic megacolon*

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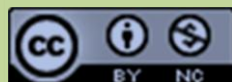
ARTICLE HISTORY

Received: 03.04.2025

Received in revised form: 19.05.2025

Accepted: 22.05.2025

Available online: 30.06.2025



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INTRODUCTION

Geophagy is the intentional practice of consuming earth or soil-like substances such as chalk, clay, or termite mounds. It is a behavioural adaptation that occurs in many nonhuman animals and is more common in primates. Eating behaviour in a child is a complex process associated with sociodemographic characteristics. Good parenting leads to

improved eating behaviour in children. The prevalence of unusual eating behaviour in adolescent children in our nation ranges from 10% to 18.5%¹. This is a case of aberrant eating behaviour of a child due to supervisory neglect, deprivation of care, and lack of parental capacity to seek early medical attention, resulting in grave complications for the child.

CASE REPORT

A 12-year-old girl was brought dead to the casualty at the Government Coimbatore Medical College & Hospital for autopsy with an alleged history of giddiness and unresponsiveness at her residence. On eliciting the history, following an intake of a heavy meal the previous day, she had the complaints of acute abdominal pain with distension, intense thirst with multiple episodes of vomiting in the last 24 hours before death. On probing further into her parents, we found that she had a habitual intake of chalk pieces frequently since childhood, associated with constipation on and off, which was relieved by native treatment. No appropriate medical measures were taken.

Autopsy Findings

The girl was moderately built and nourished. Rigor mortis was present all over the body. Fingernails and toenails were pale. The abdomen was found uniformly distended with a girth of 90 cm. No ante-mortem injuries were noted anywhere on the body.

On dissection of the chest and abdomen, extensively dilated loops of the large intestine were seen, compressing the small intestine and other abdominal organs, and it was also pushing both hemidiaphragms into the thoracic cavity (Fig. 1). The colon weighed 3.2 kg, and on dissection after fixation, a huge amount of sand and gravel admixed with faecal material was observed (Fig. 2). Bowel impressions were seen over the undersurface of the liver (Fig. 3). The stomach contained a few grams of undigested food particles with 20 ml of yellow-coloured mucoid fluid with no specific smell; its mucosa showed erosions with haemorrhagic patchy areas. The small intestine was dilated and contained sand particles with chyme; its mucosa showed erosions with patchy haemorrhagic areas. Other internal organs were normal. The scalp, skull, dura, and base of skull were intact. The brain was pale and oedematous. Neck structures were intact.

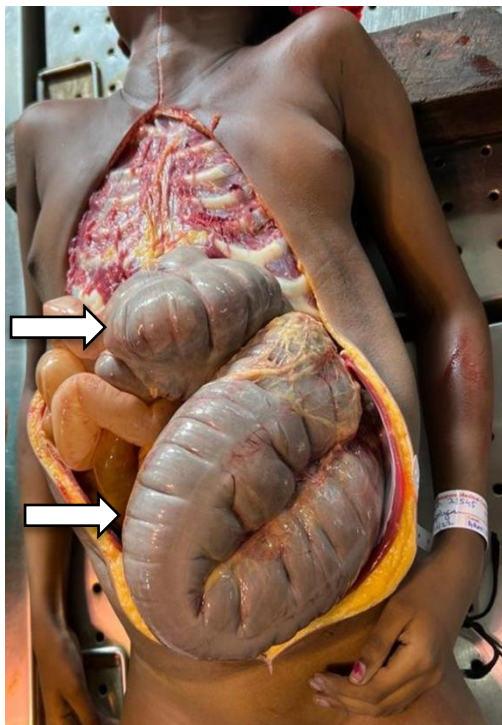


Figure 1: Extensively dilated loops of the large intestine (arrows).

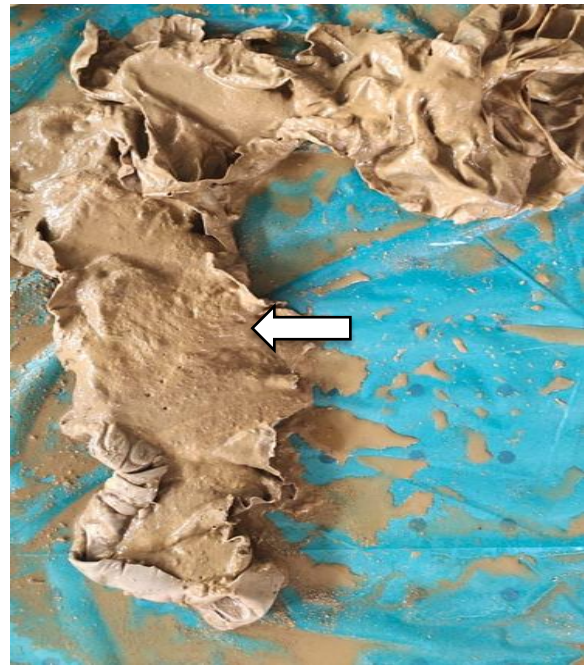


Figure 2: Colon showed a huge amount of sand admixed with faecal material (arrow).

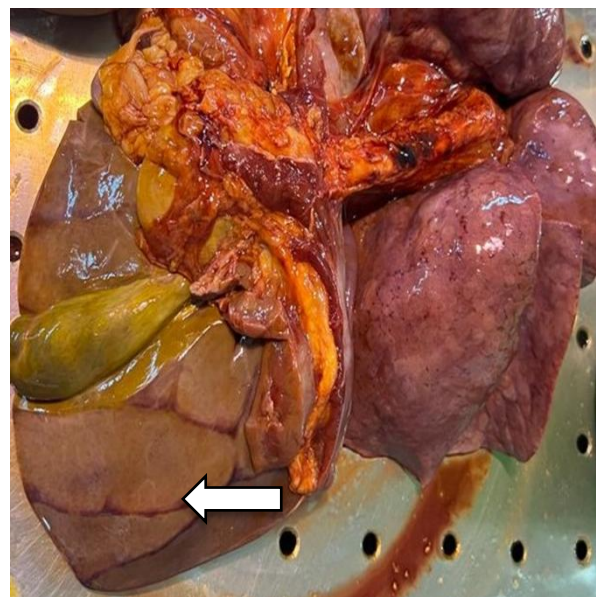


Figure 3: Bowel impression noted over liver (arrow)

Histopathological Examination Findings

Multiple sections of the large intestine showed extensive erosions and focal atrophy of the mucosal glands (Fig. 4). A dense chronic inflammatory cell infiltrate, composed of lymphocytes and histiocytes, was noted in the lamina propria and submucosa, suggestive of a chronic inflammatory pathology (Fig. 5).

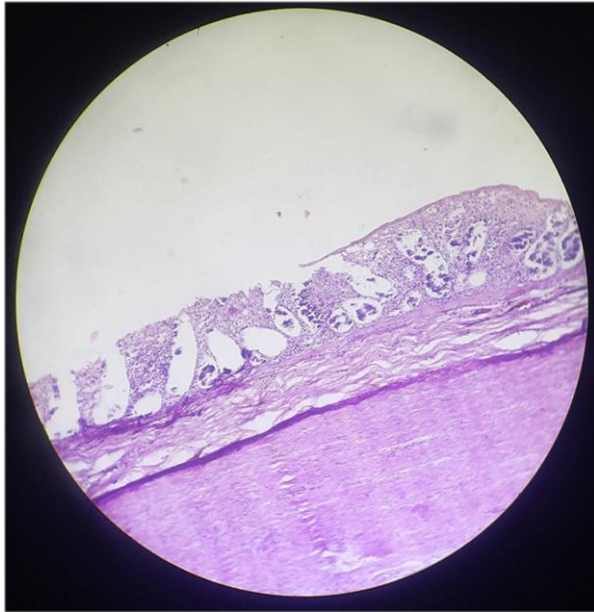


Figure 4: Extensive erosions and focal atrophy of mucosal glands (H&E x10)

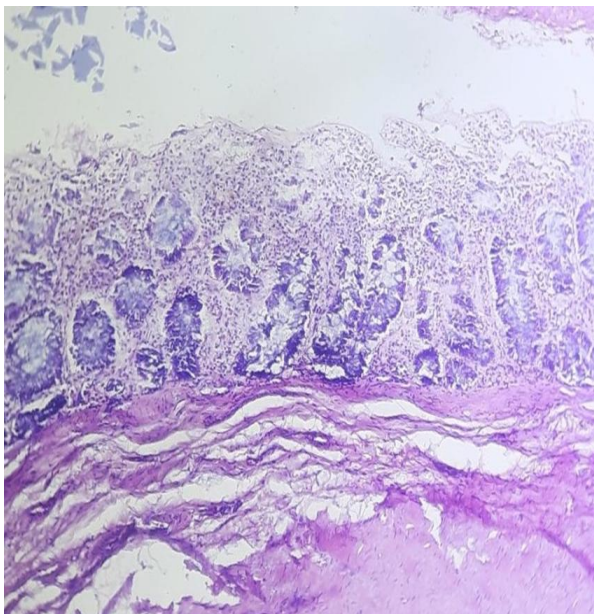


Figure 5: Dense inflammatory cells in lamina propria and submucosa (H&E x10 magnification)

DISCUSSION

Geophagia, a form of pica, is the persistent craving and compulsive eating of chalk, soil, and clay deposits with irresistible desire¹. Under Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5 TR), the criteria for Pica are as follows: Persistent eating of non-nutritive, non-food substances over

at least one month. The eating of such substances is inappropriate to the developmental level of the individual. The eating behaviour is not a part of a culturally supported or socially normative practice². It is commonly reported among school children, pregnant women, and people with psychological disorders^{3,4}. Predisposing factors are nutritional deficiency, cultural factors, and psychological reasons. Although pica is seen in children, it is also a common eating disorder in intellectually impaired patients. In women, it is most often seen during pregnancy. In some parts of the world, the consumption of non-nutritive substances is culturally accepted. Pica usually occurs as an isolated disorder, but there are instances when it may co-exist with schizophrenia, obsessive-compulsive disorder (OCD), and trichotillomania. Adolescents without developmental delay raised the possibility that some form of it fits under the umbrella of obsessive-compulsive (OC) spectrum disorder⁵. Geophagia often goes unrecognised, with patients presenting only when complications occur⁶. This disorder may be associated with mental retardation, which was reported in many studies. Clinically, abdominal pain and vomiting were the most frequently encountered signs. The abdominal plain x-ray may show a significant individualisation of a granite-like content throughout the digestive tract, which reflects the massive amount ingested by the patient. Radiological signs can easily be missed if they are not specifically sought. The chances of detecting soil in the stomach are higher if early pictures are taken. In the small intestine, the sand is much less visible because of its dilution by the large volume of intestinal fluid. Optimal opacification occurs in the colon because of the high absorption of water at this level⁷. Complications are closely linked to the type and amount of ingested material, which includes constipation, intestinal obstruction, perforation, peritonitis, electrolyte disturbances, parasitic infestations, and heavy metal toxicity. They are rare, but the associated mortality is very high⁸. Cases of bowel obstruction (up to 20%) secondary to geophagia in children were commonly reported in the age limits of 5 to 14 years in the literature^{6,8}. When the quantities of non-nutritive substances ingested exceed the capacity of hydration of the digestive tract, they may go to severe bowel obstructive pathophysiological changes leading to

death as reported in this case⁹ (Fig. 6). Dilated bowel loops secondary to toxic megacolon cause inhibition of intestinal secretion, which results in electrolyte disturbances, and the compressive effect of the dilated bowel loops on the diaphragm and the IVC results in a reduction in cardiac output, finally causing death. Although many factors contribute to geophagy, child neglect plays a crucial role. Child neglect related to geophagy can have serious consequences: neglect may be indicated if a child's geophagy is causing harm and not being adequately addressed by caregivers, also linked to inadequate supervision, nutrition, or health care. The potential consequences include nutritional deficiency, toxicity from contaminants, gastrointestinal problems, and developmental delays.

If there is any suspected child neglect case, reporting to the concerned local child protection services or authorities is crucial. The following preventive strategies may be helpful to reduce the incidence of geophagy: raising awareness about the risk associated with geophagy through school programs or workshops, training teachers and health care providers to recognise signs of geophagia, providing balanced meals and snacks to address potential nutritional deficiencies, teaching alternative coping mechanisms and stress management techniques to the affected children, engaging parents in monitoring and supporting the children's health, and environmental modifications like removing access to harmful substances or soil⁹⁻¹¹.

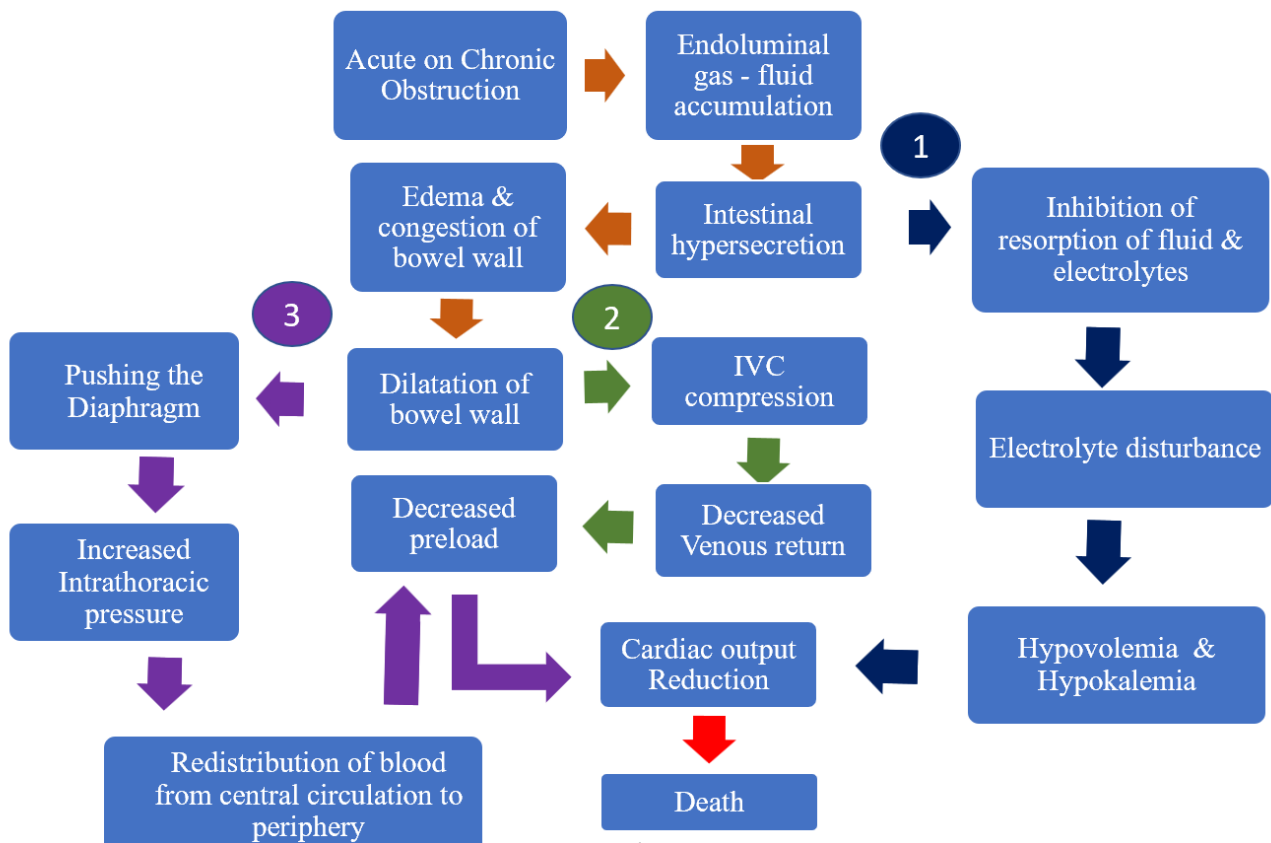


Figure 6: Mechanism of factors contributing to death.

CONCLUSION

Geophagia and its complications are easily preventable but missed because of various factors. So, the approach should not only be limited to early diagnosis and treatment; it needs psychological assessment, nutritional education, and behaviour therapy for the affected children. Parents need to be educated about the risks and health hazards of pica and how to prevent the exposure of their children. Forensic experts and medical professionals might investigate such cases to determine the extent of neglect and potential harm to the children. There should be an inter-disciplinary collaboration between health care professionals, social services, and law enforcement. Hence, geophagia warrants a multi-disciplinary medical and psychological approach for prevention and cure.

ACKNOWLEDGMENTS

None.

CONFLICTS OF INTEREST

The authors declared no conflicts of interest.

ETHICAL ISSUES

The ethical approval for this case presentation was granted by the Institutional Ethics Committee of the Coimbatore Medical College, Coimbatore, India (Ref. No. 192/2024).

SOURCES OF SUPPORT

None.

AUTHOR CONTRIBUTIONS

RB: Conception and design of the work; the acquisition, analysis, and interpretation of data for the work; drafting the work and revising it critically for important intellectual content; final approval of the version to be published; and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. **RU:** Conception and design of the work; the acquisition, analysis, and interpretation of data for the work; drafting the work and revising it critically for important intellectual content; final approval of the version to be published; and agreement to be accountable for all aspects of the work in ensuring that questions related to the

accuracy or integrity of any part of the work are appropriately investigated and resolved. **LP:** Design of the work; the acquisition, analysis, and interpretation of data for the work; drafting the work and revising it critically for important intellectual content; final approval of the version to be published; and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. **RPR:** Design of the work; the acquisition, analysis, and interpretation of data for the work; drafting the work and revising it critically for important intellectual content; final approval of the version to be published; and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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