



Case Report

Be Careful of Geophagia in Case of Severe Fatigue: A Case Report

Attention à la Géophagie en Cas d'Asthénie Profonde : A Propos d'un Cas

Alfari AA^{1,2}, Idrissa H^{1,3}, Oumara M^{1,4}**Affiliations**

- 1- Université Abdou Moumouni de Niamey
- 2- Service de Médecine Physique et Réadaptation, Hôpital Général de Référence de Niamey
- 3- Institut des Radio-Isotopes de Niamey
- 4- Service de Procréation Médicale Assistée, Hôpital Général de Référence de Niamey

Auteur correspondant

Alfari Abdoul Aziz, Assistant en Médecine Physique et Réadaptation, Faculté des Sciences de la Santé, Université Abdou Moumouni de Niamey, BP 10896, Niamey-Niger
Tel: 0022792522535
Email : alfarabdo1@gmail.com

Mots clés : Geophagia, fatigue, exercice training, Niger

Key words: Géophagie, Fatigue, Réentraînement à l'effort, Niger

ABSTRACT

Geophagia is the habit of consuming clay, soil, chalk or kaolin. It is highly prevalent in pregnant women because of its antinausea effects. Numerous cross-sectional studies found that geophagy was correlated with anaemia and iron deficiency. The clay is known as iron absorption chelator through the intestinal villus, thus chronic Geophagia potentially leads to martial anaemia. The study reports fatigue complains in 46 years old woman. The onset began 8 months ago in a context of massive clay consumption. The fatigue was classified severe on Borg dyspnea and fatigue perception's scale. The clinical examination found conjunctivas and mucous membranes pallor, hypotension, tachycardia and systolic murmur in cardiac auscultation. No abnormal temperature. Biological exams revealed anaemia with haemoglobin, red blood cells and platelets reduction. Hypocalcaemia and ferritin deficiency were also found. The treatment including Geophagia suspension, iron supplementation and physical training program, led to a total recovery in three months of follow up.

RÉSUMÉ

La géophagie est l'habitude de consommer de l'argile, de la terre, de la craie ou du kaolin. Elle est très répandue chez les femmes enceintes en raison de ses effets anti nauséux. De nombreuses études transversales ont montré que la géophagie était corrélée à l'anémie et à la carence en fer. L'argile est connue pour être un chélateur de l'absorption du fer par les villosités intestinales, de sorte que la géophagie chronique peut entraîner une anémie martiale. L'étude rapporte des plaintes de fatigue chez une femme de 46 ans. L'apparition a commencé il y a 8 mois dans un contexte de consommation massive d'argile. La fatigue a été classée sévère sur l'échelle de Borg de perception de la dyspnée et de la fatigue. L'examen clinique retrouve une pâleur des conjonctives et des muqueuses, une hypotension, une tachycardie et un souffle systolique à l'auscultation cardiaque. Pas de température anormale. Les examens biologiques ont révélé une anémie avec diminution de l'hémoglobine, des globules rouges et des plaquettes. Une hypocalcémie et un déficit en ferritine ont également été constatés. Le traitement comprenant la suspension de la géophagie, la supplémentation en fer et un programme d'entraînement physique, a conduit à une guérison totale en trois mois de suivi.

INTRODUCTION

Geophagy is the habit of consuming clay, soil, chalk or kaolin; It is highly prevalent in pregnant women because of its antinausea effects [1]. Numerous cross-sectional studies found that geophagy was correlated with anaemia and iron deficiency [2]. The clay is known as iron absorption chelator through the intestinal villus, thus chronic geophagia potentially leads to martial anaemia. The normal accomplishment of human daily activities required a good heart function with better quantity and quality of blood supply in the organism. Fatigue is commonly interpreted as indicative of symptomatic

anaemia and may thus play a role in diagnostic and therapeutic decisions [3]. The patient of this study was anaemic and suffered of chronic fatigue that was classified severe fatigue by the modified scale of Borg measuring the perception of fatigue in daily life activities. The management of this clinical case included the total abandon of clay consumption, the iron supplement and the practice of exercises training. Through this study, we report the management of chronic fatigue induced by massive geophagia in the Physical Medicine and Rehabilitation department of Niamey's General Referral Hospital.

CASE PRESENTATION

Our patient was a 46 years old woman, dressmaker, mother of a daughter of 20 years old, who consulted for a chronic fatigue at the Physical Medicine and Rehabilitation department of Niamey's General Referral Hospital. She was suffering from this fatigue 8 months ago. The patient didn't report any medical history and didn't smoke nor drink alcohol but, gave important information concerning the consumption of clay during many years (Figure 1). She also reported that, due to the fatigue, sewing and kitchen were not possible; the walking was limited to 50 meters. The clinical examination found an aware patient who was suffering of chronic fatigue. The modified Borg's scale of dyspnea and fatigue perception evaluated the intensity to 7/10, this refers to severe fatigue. The examination also revealed the patient's conjunctivas and mucous membranes were very pales, the blood pressure was 10/60 millimeter of mercure, the cardiac rythm at 107 beats/minut and a systolic murmur detected during cardiac auscultation. The temperature was normal. Biological exams showed an anaemia with 6,1 grams per deciliter of haemoglobin, red blood cells : $3,1 \cdot 10^{12}$ /liter, platelets : $141 \cdot 10^3$ / liter, hypocalcaemia :1,8 millimol per liter and ferritin rate was 13,2 nanograms per milliliter. The remaining results such as transaminases, glycaemia, urea and creatinin were normals. In this clinical case, the geophagia might be the only responsible to induce this anaemia and fatigue. all, the clay consumption prohibition, secondarily, the haemoglobin rate implementation by OROFER tablet (iron 100 milligrams and folic acid 500 micrograms,) oral administration once a day. The hypocalcaemia was also corrected by taking calcium 500 milligrams per day in a month. And finally physical training program which included: Muscles strengthening, stretching, walking, stairs and home bike practice associated with breathing exercices during 10 to 30 minuts 3 times per days.



Figure 1. Showing the stock of clay.

Then, the management protocol was consisted, first of The findings after 1 month of follow up, were the raise of hemoglobin rate to 8, 3 grams / deciliter, the decrease of fatigue intensity to 4 on Borg modified scale, the

partial resumption of kitchen and sewing. The outcomes after three months of follow up, were the hemoglobin rate normalisation (11,6 grams per deciliter) and the resumption of all daily activities with a perception of light fatigue accessed to 2/10 on Borg modified scale. This study reports one of numerous health conditions that people develop due to the practice of bad habits in their life.

DISCUSSION

Geophagia is defined as deliberate consumption of earth, soil, or clay for different viewpoints such as psychiatric disease, cultural practice or fact of poverty and famine [4]. Geophagia is very common among women especially during pregnancy and particularly in Africa. This habit is frequent in the general population. Macheka LR and al [5], found 54. % of geophagia in their study and the age of consumers ranged between 15 and 44 years, with a mean age of 29 years. Our patient's age, 46 years is very close with the age range found in the literature, on the other hand, the reasons of soil consumption cited by the authors such as pregnancy, psychiatric diseases, cultural practices or poverty were absent from this patient. She has a stable financial situation because her husband is a nongovernmental organisation responsible, she has a sewing office at her house, their daughter studies abroad and the clinical examination didn't revealed any health issue. In this clinical case, any evidence couldn't justify the occurrence of this anaemia, a part the clay consumption. James AH [6] pointed out that geophagia leads to iron deficiency by a mechanism whereby iron absorption is inhibited by cation-exchange capacity of clay. We remind that, the patient ate 2 or 3 pieces of clay per day, see the above clay image. The anaemia aggravation conducted the patient to be fatigable and unable to achieve her daily life activities. Anaemia is defined by World Health Organisation as the reduction of haemoglobin rate less than 12 and 13 grams per deciliter respectively in female and male gender [7] or hematocrit or red blood cells count. Patients with anaemia typically present with vague symptoms such as lethargy, weakness, and tiredness. Many authors [8] and [9] reported that anaemia leads to several symptoms fatigue, dyspnea weakness, skin pale...In this study, the patient's fatigue was induced by severe anaemia, itself induced by a massive geophagia. Concerning the management of the case, first of all, we proceeded by psychological approach to stop the clay consumption, the anemia correction by administrating daily iron and folic acid. Additionally, to the treatment daily sessions of aerobic exercices, muscles strengthening and stretching. Jackson et al [10] suggest a similar way that emphasis should be made on both physiological and psychological aspects of the individual, but didn't announce the physical training. For the fatigue, regardless of it causes, rehabilitation intervention (physical activities, aerobic exercices, respiration technics, muscles reinforcement) leads to significant reduction of fatigue severity or impact [11]. For anaemia, some authors' realise that, depending on the severity of the iron deficiency and underlying causes, the normalization of the haemoglobin level may take up

to 3 months [12]. As these authors said, after 3 months of follow up, the haemoglobin rate our patient became normal, and she also resumed life activities without any limit.

CONCLUSION

The study talks about severe anaemia and chronic fatigue. Both induced by massive consumption of clay in a 46 years old woman. The management consisted to stop the geophagia, implement the haemoglobin rate and improve the functional capacity by exercises training.

DECLARATIONS

Conflict of interests

The authors declare no conflict of interest

Financing

The work was carried out with own funds

Ethical considerations

All stages of the work were carried out in compliance with the Declaration of Helsinki.

REFERENCES

- Bonglaisin JN, Kunsoan NM, Bonny P, Matchawe C, Tata BN, Nkeunen G and al. Geophagia: Benefits and /fpubh. potential toxicity to human—A review. *Frontiers in PublicHealth* 2022; 10:1-11. Doi: 10.3389/fpubh.2022.893831
- Kawai K, Saathoff E, Antelman G, Msamanga G, Fawzi WW. Geophagy (Soil-eating) in Relation to Anemia and Helminth Infection among HIV-Infected Pregnant Women in Tanzania. *Am J Trop Med Hyg.* 2021 ;80(1) : 36-43
- Weckmann G, Kiel S, Chenot JF, Angelow A. Association of Anemia with Clinical Symptoms Commonly Attributed to Anemia—Analysis of Two Population-Based Cohorts. *Clin Med.* 2023 2024 ; 12(3) : 921. Doi: 10.3390/jcm12030921
- Woywodt A, Kiss A. Geophagia: the history of earth-eating. *J R Soc Med* 2002; 95(3):143-146. doi: 10.1258/jrsm.95.3.143
- Macheka LR, Olowoyo JO, Matsela L, Khine AA. Prevalence of geophagia and its contributing factors among pregnant women at Dr. George Mukhari Academic Hospital, Pretoria. *Afr Health Sci.* 2016; 16(4):972-978. doi: 10.4314/has.v16i4.13
- James AH. Geophagia in Man: Its Nature and Nutritional Effects. *The American Journal of Clinical Nutrition* 1968; 21(12):1384-1393.
- Amidou S, Aoua S, Ollo D, Judicael D, Francois KP, Bonzi Y. Juste BY and al. Anemia and Iron Deficiency Among Hemodialysis Patients at the Opening of the Hemodialysis Center of the Sourô Sanou University Teaching Hospital: A Cross-Sectional Descriptive Study. *Health Res. Afr* 2024; 2 (6): 20-23.
- Neidlein S, Wirth R and Pourhassan M. Iron deficiency, fatigue and muscle strength and function in older hospitalized patients. *European Journal of Clinical Nutrition* 2021; 75:456-463.
- Weckmann G, Kiel S, Chenot JF, Angelow A. Association of Anemia with Clinical Symptoms Commonly Attributed to Anemia—Analysis of Two Population-Based Cohorts. *J Clin Med* 2023; 12(3):921. doi: 10.3390/jcm12030921
- Jackson MS, Adedoyin AC, Winnick SN. Pica disorder among African American women: a call for action and further research. *Soc Work Public Health* 2020; 35:261-70.
- Rooney S, Moffat F, Wood L and Paul L. Effectiveness of Fatigue Management Interventions in Reducing Severity and Impact of Fatigue in People with Progressive Multiple Sclerosis. *Int J MS Care* 2019; (1):35-46. doi: 10.7224/1537-2073.2018-019
- Jimenez K, Kulnigg-Dabsch S, Gasche C. Management of Iron Deficiency Anemia. *Gastroenterol Hepatol (NY)* 2015 ; 11(4) : 241-250.