Prethodno priopćenje
Acta med-hist Adriat 2015; 13(1);95-104
Preliminary communication
UDK: 616.89-008,454+616.935:94(3)"829/842"

THE FIRST CASE OF PAGOPHAGIA: THE BYZANTINE EMPEROR THEOPHILUS (829-842 AD)

PRVI SLUČAJ PAGOFAGIJE: BIZANTSKI CAR TEOFIL (829.–842.)

Effie Poulakou-Rebelakou[1], Costas Tsiamis[2], Dimitrios Ploumpidis[3]

Summary

The Byzantine Emperor Theophilus (829-842 AD) died from dysentery, the exact nature of which is unknown. However, based on the original Greek texts of the Byzantine historians and chroniclers of that era, the possible cause of death may be connected to Theophilus' pagophagia (snow eating), in order to relieve the symptoms of gastric inflammation. Additionally to the symptoms from the gastro-intestinal system, the Emperor seemed suffering from depress after the defeat of his army and the loss of territories, among whom his native town, Amorion. The current study supports the theoretical possibility that the case of pagophagia in the 9th century AD, so well described by a great number of historians because of the sufferer's royal identity, extends in the past the knowledge on pica, still attracting the medical interest.

Key words: *Byzantine History; depression; dysentery; pagophagia; Pica*

Pagophagia is the excessive or exclusive consumption of ice, snow or iced water, broadly regarded as a manifestation of pica (Parry-Jones, 1992a). Pica

1 History of Medicine, Athens University Medical School, Athens, Greece.
2 Department of Microbiology, Athens University Medical School, Athens, Greece.
3 1st Psychiatric Department, Aeginiteion Hospital, Athens University Medical School, Athens, Greece.

Corresponding Author:
Effie Poulakou-Rebelakou, 51, Themidos St, Athens 15124, Greece.
Electronic address: efpoulrebel@med.uoa.gr

is defined as a form of appetite disorder, presenting as the persistent eating of non-nutritive substances and has been described since antiquity (Rose, Porcerelli, & Neale. 2000). Some researchers extend the narrow definition to include the eating of both food and non-food items (McLoughlin, 1987), while others classify the picas into food, non-food and mixed types (Crosby, 1971). As a kind of inappropriate behaviour, pica is frequently associated with mental retardation, but it has been observed in all ages and both sexes, and particularly in young children and pregnant women (Diagnostic and Statistical Manual of Mental Disorders-5, 2013; Call, Walsh, & Attia, 2013). The most common types of substances ingested are earth (geophagia) (Nyanza, Joseph, Premji, Thomas, & Mannion, 2014), ice (pagophagia) (Bhatia & Kaur, 2014), chalk, grass, cloth, paper; the eating patterns are referred to as "-phagias" (Rose, Porcerelli, & Neale. 2000). This paper describes a unique case of snow consumption by the Byzantine Emperor Theophilus (829-842 AD), who according to the narrations of the historians and chroniclers of those times was an ice eater, developing a pathologic craving for iced water and snow. Theophilus' health problems are commented in accordance with this habit and an explanation for the causes of his death is attempted.

Pica in Greek Medical Literature

The term *pica* derives from the Latin word for magpie (*kissa* in Greek), named after the bird's peculiar eating behaviour and indiscriminate selection of edible and non-edible items (Parry-Jones, 1992a; Rose, Porcerelli, & Neale, 2000). The terms geophagia and pagophagia derive from the Greek verb *phagein* (to eat) and the words *Gaia* (earth) and *pagos* (ice) respectively. Pica of earth and clay was a well-known entity and the first description of geophagia in connection with pregnancy is traced in the Hippocratic Collection: *If a pregnant woman feels the desire to eat earth or charcoal and then eats them, the child's head will show signs of these things* (Hippocrate, 1853; Woywodt & Kiss, 2002). Soranus (1st-2nd centuries AD) the most famous gynaecologist of antiquity also described pica during pregnancy: *Some people say that pica (kissa) has been thus termed from a certain bird but others, however, say that it has been termed this from the ivy (kissos), for it twines around in a way that also varies. It usually sets around the 40th day and then persists for about four months. Women are affected by the following: appetite for things not customary like earth, charcoal, tendrils of the vine, unripe and acid fruit* (Soranus, 1991). Aetius of Amida (6th century AD) providing evidence of the Byzantine knowledge on pica, attributed it only to pregnancy: *Approximately during the second month*

of pregnancy, a disorder appears that has been called Pica, a name deriving from a living bird, the magpie... Women then desire different things... some prefer spicy things, others salty dishes and again others earth, egg shells or ashes (Aetius, 1901) In the following centuries, the term pica is often used in a medical setting; in a 17th century text of the French physician Lazarus Riverius, a reference to ice and snow consumption by chlorotic girls constitutes an early mention to ice-eating pica, known as pagophagia (Parry-Jones, 1992a; Parry-Jones & Parry Jones 1992b). A number of case reports are published in the 20th century, associating the ingestion of extraordinary amounts of ice with iron deficiency (Coltman, 1969; Reynolds, Binder, Miller, Chang & Horan, 1968).

The case of the Emperor Theophilus (829-842 AD)

Theophilus was the son and heir of the Emperor Michael II, founder of the Amorian dynasty of the Byzantine Empire, and a very educated state leader showing real interest in art and learning. Noted for the high level of his Royal Court, he also imitated the policy of the Caliph Harun al Rashid, wandering disguised in the streets of his capital, Constantinople, talking to the poorest and most troubled of his subjects and listening to their complaints, so that he might punish offenders without any consideration of rank or office (Ostrogorsky, 1993). Historians and chroniclers agree that there was something attractive about his personality that created legends round his name (such as that he chose his wife by posing a test to the candidates), although he appeared a religious fanatic opponent to the iconodules, having a strong zeal for iconoclasm. The numerous political and military adventures during his reign forced him to a permanent war against the Muslims with varying success and a strong influence on the Emperor's mood. The most serious event took place in 838 AD, when the Caliph Mutasim defeated the Byzantine army commanded by the Emperor himself at the battle at Dazimon and then occupied Ancyra and Amorium. The latter was the largest and most important fortress of the area and the city from which the reigning dynasty came. In parallel, the iconoclast movement failed to revive and its sphere of influence was confined to the capital and among few faithful followers of Theophilus (after his death, the restoration of the cult of the icons had been the first and pressing priority of the heirs). These two crises of the Empire had a disastrous result for the Emperor's health, already loaded with serious problems.

The chronicler Ioannis Zonaras narrates an episode occurring during the Emperor's stay in the city of Dorylaeon (Asia Minor) where he was informed about his army's defeat and the capture of some of his beloved generals: *The disaster sat on the soul of Theophilus without any consolation and he denied any food or drink except very frozen water, deriving from snow. Ingesting only this, he hurt his digestive system and dysentery emerged* (Zonaras, 1897). Zonaras supports that the Emperor, besides consuming unhealthy water derived from snow, suffered for psychological reasons, mainly the sorrow of his defeat and the consequent capture of his most eminent military leaders. Another chronicler, Ephraem, in his "Historia Chronica" clarifies the aetiology of the disease and describes the Emperor's state, who *"melts from grief"* and finally died from the additional disease: *Consequently the king's soul melts because of a great sorrow and a fatal disease ended his life* (Ephraem, 1990).

Some other chroniclers agree on the question of his dysentery: Michael Glycas writes: *He died from dysentery; the cause of his dysentery was the consumption of frozen water* (Glycae, 1836). Furthermore, Joseph Genesius directly links the emperor's stomach inflammation with the defeat at Amorium. The symptoms were so severe that Theophilus considered the frozen water he drank as almost warm (Genesii, 1834). Theophanes Continuatus agrees that the events in Amorium had a critical influence on the Emperor's health: *After being informed of the bad news, he started suffering from a stomach inflammation, feeling as if penetrated by an internal flame, strongly believing that even the iced water he drank was almost warm; the consumption of this frozen water from snow was the cause of his dysentery* (Theophanes Continuatus, 1838). Finally, Michael Psellus, an eminent historian, politician and philosopher with remarkable medical knowledge, referred to Theophilus' basic illness, melancholy, as a divine punishment (criticizing the Emperor's policy). *He did not differ from melancholic sufferers; he treated people with injustice and cruelty* (Pselli, 1990).

Except the testimonies of historians, a literary source, the "Life of the Empress Theodora", also referred to the Emperor's disease, describing the pain and discomfort of a pharynx inflammation (phlogosis) and the persistent symptoms of dysentery, all signs of divine wrath. A miraculous healing intervention of the Holy Mother ceased the terrible pains, the wild pharynx was calmed and the terrible cries of the emperor were no longer heard (Markopoulos, 1983).

Ice and Pagophagia

Hippocrates (460-370 BC) had already recognized in his *Aphorisms* (Section II, 51) the medical consequences of sudden changes in body temperature: *Excess and suddenness in evacuating the body, or in replenishing, warming, cooling or in any other way disturbing it, is dangerous; in fact all excess is hostile to nature. However "little by little" is a safe rule, especially in cases of changing from one thing to another* (Masters, 1844; Hippoctates, 1930). However, in the ancient Greek and Roman world, adding ice or snow to wine as a coolant was a popular practice. Snow was packed and carried from the mountains by slaves, used mainly to be added to wine or melted drunk itself. Little was known on ice eating before the work *Praxis Medica* of the French physician Lazarus Riverius (1589-1655) (Parry-Jones, 1992a). Among the items consumed by pica sufferers, Riverius listed cold water, snow and ice (Fairbanks, Fahey, & Beutler, 1971). In the same century, John Archer underlined that *Waters of Snow and Ice are condemned because they are thick and hurt the Stomach.* Based on Hippocratic ideas, Thomas Umfreville listed (1743) a series of cases in which the drinking of iced water after exercise was suspected to lead to serious illnesses, even death (Parry-Jones, 1992a).

There was a widespread scientific belief that ice was dangerous, leading to the loss of natural body heat and then to various diseases of the joints, the nerves and bowels (Parry-Jones, 1992a). The prejudice against drinking cold fluids and iced waters survived in a great number of scientific treatises in the following years.

During the 20th century, when ingestion of extraordinary amounts of ice became accessible, pagophagia was considered related with iron deficiency (Coltman, 1969). In the 10th century, the Arab physician Avicenna commented about the treatment of pica *with iron steeped in fine wine;* the use of iron in various forms to treat pica throughout medical writings had not clarified the exact relationship between them. Two researchers also studied the relation of pagophagia and iron deficiency anemia, stating that anemia is not always present, as an underlying psychiatric disease may be possible (Crosby, 1971; Reynolds, Binder, Miller, Chang, & Horan, 1968). More recent studies (Uchida T, Kawati Y, 2014) support iron therapy in cases of pagophagia, although the pathogenesis of the symptom remains unclear and the mechanism underlying this abnormal behaviour has not been elucidated. It is noteworthy that pagophagia, like every type of pica, depends on a variety of psychological, cultural, behavioural and social factors and cannot be

considered simply a manifestation of a biochemical or nutritional deficiency and the mechanism of pica and its frequent association with iron deficiency has yet to be fully explained (Editorial, 1969a).

Discussion

The most common types of pica, geophagia and pagophagia, present certain differences in geographic distribution and ethnic background. Earth and grass eating is the case of the Babylonian King Nebuchadnezzar who *did eat grass as oxen* and represents a notable biblical example (Editorial, 1969b). Geophagia has been reported in some territories as a part of a cultural and religious custom described by the Nobel laureate author Gabriel García Márquez in his novel *One Hundred Years of Solitude*: the newcomer young woman is accustomed to earth eating *chewing earthworms and vomiting green fluid containing dead leeches* (Márquez García, 1998). Cultural influences have promoted symbolic geophagia as part of religious rites, magical beliefs and efforts of healing in folk medicine (Sayetta, 1986). Geophagia was not only considered connected to rural areas but, furthermore, during the 19th century, it was mentioned by explorers as an exotic and colonial phenomenon: Humboldt described the tribe of the Otomacs in South America, who showed the most peculiar behaviour eating earth in quite considerable amounts. Livingstone also described geophagia in Africa among slaves in Zanzibar (Woywodt & Kiss, 2002). On the contrary, pagophagia is more common in urban areas as ice and iced drinks are easily accessible in our days; during antiquity, only snow could be consumed and this supply was almost impossible.

Several theories attempt to explain the aetiology of pica: nutritional, sensory, physiologic, neuro-psychiatric, psychological and cultural. In infantile theories, pica has been viewed as a hand-to-mouth behavioural response to family stress (e.g., child abuse, parental neglect, separation, deprivation) and an expression to oral fixation (McLoughlin, 1987). Pica also occurs in chronic schizophrenia and this was recognized by early psychiatrists. Krepelin believed pica to be a sign of psychosis while recent investigations reveal a higher prevalence of pica among autistic patients, as compared with patients with Down's syndrome. Furthermore, pica represents a variant of compulsive disorders, together with compulsive eating, bulimia and various addictions. The repeated eating of bizarre and dangerous objects, such as razor blades, glass or needles, may occur as part of a self-mutilation syndrome, sometimes

associated with suicide attempts. In individuals with personality disorders, pica may be the way to gain hospital admissions, such as in Munchausen's syndrome. Finally, a psychoanalytical explanation of pica is that it may be a defensive regression to the oral stage of development and may represent a comforting response in individuals prone to anxiety (McLoughlin, 1987).

The description of the Emperor Theophilus' pagophagia is based on historical and non-medical sources. For centuries, there is no mention of such a phenomenon and it is evident that this event attracted the attention of the chroniclers and historians of the Byzantine era, most of which commented on it as a case of Mirabilia (rare and bizarre events) and as a peculiar behavioural manifestation, while attempting to explain the symptoms. The disease may have begun as an acute problem and then became a chronic illness (Lascaratos, 1995). According to historians, the consumption of snow was connected with a subjective sense of internal burning that emerged just after the conquest of his native city, Amorion, by the Arabs. Many psychological traumas derived after the defeat and the capture of his army's leaders, leading to the development of several phobias (Guilland, 1954). His psychological disorder, accompanied by obsessions, led him to deny normal food and ingest exclusively melted snow, drunk as frozen water.

Most sources refer to a pre- or co-existing dysentery caused by parasites (amoebas), very common in cases of dangerous or dubious water (Lascaratos, 1995). It is known that pica in its common types, such as geophagia and pagophagia, is present in ancylostomiasis and in other forms of intestinal helminthiasis but this association rarely received attention in antiquity (Vermeer, & Frate, 1979). A recent work investigated the possible association of pagophagia even with Helicobacter pylori infections in patients with anaemia (Asma, Boga, Ozdogu & Serin, 2009). However, the amoebadic infection is responsible for many psychological consequences, like pessimism, bad mood, sleepless, anorexia. All these symptoms may represent the "psychological" problems of Theophilus, described in the historical sources, as they constituted a part of the clinical situation produced by amoebadic dysentery and not as a result of the Emperor's phobias. The authors may have misinterpreted the possible cause of dysentery in their narrations, because they could not imagine psychological symptoms derived from a gastro-intestinal disease. This theory is based on medical data and is in agreement with the symptomatology that the historians of that era describe (Lascaratos, 1995). Theophilus died because of a chronic gastro-intestinal disease with diarrheal episodes which exhausted him (accompanied by electrolytic disorders), probably due

to a microbial infection derived from the melted snow of doubtful purity that constituted his only diet.

An equal possibility, common in all cases of pica, is whether the dysentery emerged as result consuming substances such as snow, often of poor hygiene and hiding parasites, viruses and microbial agents. If this last hypothesis is correct, then the cause of pagophagia must be traced to other reasons, probably psychological, and gastro-intestinal dysentery must be considered as an inevitable secondary consequence. No matter what is true, the case of the Emperor Theophilus' pica remains unique, as for the first time in the history of the disease, a state leader appears with an old and existing but underestimated appetite disorder, pagophagia, scarcely studied and analyzed.

REFERENCES

1. Aetius Amidenus. (1901) On Kissa, In S. Zervos (Ed.), *Aetii Sermo Sextidecimus et Ultimus* (pp. 12-14). Leipzig: Verlag von Anton Mangkos.
2. Asma, S., Boga, C., Ozdogu, H., & Serin, E. (2009) The association of pagophagia with Helicobacter pylori infection in patients with iron-deficiency anemia. *International Journal of Hematology*, 90(1), 28-32.
3. Coltman, C.A. Jr. (1969) Pagophagia and Iron Lack *JAMA: The Journal of the American Medical Association*, 207(3), 513-516.
4. Crosby, W.H. (1971) Food pica and iron deficiency *Archives of Internal Medicine*, 127, 960-961.
5. Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) *Pica* (1994), p. 96. Washington, DC: American Psychiatric Press.
6. Editorial (1969a) Pagophagia and anemia *Nutrition Reviews:* 27, 52-54.
7. Editorial (1969b) Pica and Iron Deficiency *JAMA: The Journal of the American Medical Association* 207(3), 552-553.
8. Ephraem Aenii (1990). Historia Chronica, In O. Lampsides (Ed.) *Corpus Fontium Historiae Byzantinae* (2417-2418) Athens: Series Atheniensis, Academia Atheniensis.
9. Fairbanks, VF, Fahey, JL, & Beutler, E (1971) *Clinical Disorders of Iron Metabolism* New York: Grune and Stratton.
10. Genesii Iosephi (1834). Regum Libri quattuor, In C. Lachmann (Ed.), *Corpus Scriptorum Historiae Byzantinae* (p. 49). Bonnae, Weber
11. Glycae Michaelis (1836) Annalium, In I. Bekker (Ed.), *Corpus Scriptorum Historiae Byzantinae* (p. 541). Bonn: Weber.

12. Guilland, R. La destinée des empereurs de Byzance. (1954). *Greek Annals of Byzantine Studies* 24, 37-66.

13. Hippocrate. (1853). On Superfoetation. In E. Littré (Ed.), Œuvres d'Hippocrate (vol VIII, pp. 486-487). Paris: J-B Baillère.

14. Hippocrates. (1930) Aphorisms In W.H.S. Jones, P. Potter, E.T. Withington, & K.I.D. Smith (Eds.), *Loeb Classical Library* (vol. IV, pp. 120-121) London: Heinemann & New York: Putnam.

15. Lascaratos, J. (1995). *Diseases of the Byzantine Emperors* (pp. 235-236). Athens: J and J Hellas.

16. Márquez García, G. (1998). *Cien aňos de soledad* (pp. 58, 117). Barcelona: Plaza & Janes

17. Markopoulos, A. (1983) Life of the Empress Theodora. *Analecta National Research Foundation/Center of Byzantine Research* 5, 249-285.

18. Masters, T. (1844) *The Ice Book: Being a Compendious and Concise History of Everything Connected with Ice from its First Introduction into Europe as an Article of Luxury to the Present Time; with an Account of the Artificial Manner of producing Pure and Solid Ice*. London: Simpkin, Marshall and Co.

19. McLoughlin, IJ. (1987) The picas. *British Journal of Hospital Medicine* 37, 286-290.

20. Ostrogorsky, G. (1993) *History of the Byzantine State*. (pp. 206-209). Oxford, UK and Cambridge, USA: Blackwell.

21. Parry-Jones, B. (1992a) Pagophagia, or compulsive ice consumption: a historical perspective. *Psychological Medicine* 22, 561-571.

22. Parry-Jones, B, & Parry-Jones, WLL (1992b) Pica: Symptom or Eating Disorder? A Historical Assessment *British Journal of Psychiatry* 160, 341-354.

23. Pselli Michaelis. (1990) Historia Brevis, In H-G. Beck, A. Kambylis, R. Keydell, & W. De Gruyter (Eds.) *Corpus Fontium Historiae Byzantinae* (pp. 86-87) Berlin & New York.

24. Reynolds, R. D., Binder, H. J., Miller, M. B., Chang, W. W. Y., & Horan, S. (1968) Pagophagia and Iron Deficiency Anemia. *Annals of Internal Medicine* 69(3), 435-440.

25. Rose, EA., Porcerelli, JH., & Neale, AV. (2000). Pica: Common but Commonly Missed. *Journal of the American Board of Family Practice* 13(5), 353-358.

26. Sayetta, R. B. (1986). Pica: An Overview. *American Family Physician* 33(5), 181-185.

27. Soranus. (1991) Pica, In: O. Temkin (Ed.) *Soranus' Gynecology* (pp. 49-57). Baltimore and London: The Johns Hopkins University Press.

28. Theophanes Continuatus (1838) Chronographia, In I. Bekker (Ed.), *Corpus Scriptorum Historiae Byzantinae* (p. 131). Bonn: Weber.

29. Vermeer, D. E., & Frate, D.A. (1979). Geophagia in rural Mississippi: environmental and cultural contexts and nutritional implications *American Journal of Clinical Nutrition* 32, 2129-2135.

30. Woywodt, A, Kiss, A. (2002), Geophagia: the history of earth-eating *Journal of the Royal Society of Medicine* 95, 143-146.

31. Zonarae Ioannis (1897) Epitomae Historiarum In T. Büttner-Wobst (Ed.), *Corpus Scriptorum Historiae Byzantinae* (vol. III, pp. 378-381). Bonn: Weber.

Sažetak

Bizantski car Teofil (829.–842.) umro je od dizenterije, čija je točna narav nepoznata. Kako bilo, na temelju originalnih grčkih tekstova bizantskih povjesničara mogući se uzrok smrti može povezati s Teofilovom pagofagijom (jedenjem snijega), kako bi olakšao simptome upale želuca. Uz simptome u gastrointestinalnom sustavu, čini se da je car patio od depresije nakon poraza njegove vojske i gubitka teritorija, između ostaloga i njegova rodnog grada Amoriona. Ova studija potvrđuje teorijsku mogućnost da je slučaj pagofagije u 9. stoljeću tako dobro opisan kod velika broja povjesničara zbog bolesnikova kraljevskog identiteta, proširujući znanje o piki (pikacizmu) u prošlost, poremećaju koji i dalje privlači medicinsku pažnju.

Ključne riječi: *bizantska povijest; depresija; dizenterija; pagofagija; pika (pikacizam)*