MALARIA AS COLONIAL EXPERIENCE: EXPLANATIONS OF THE DISEASE BY ESTONIAN SETTLERS ON THE BLACK SEA COAST

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Abstract
The second half of the 19th century saw the beginning of agrarian colonization by Estonians of other regions of imperial Russia. Estonian settlers encountered malaria in the Volga region and Siberia, but the outbreaks with the more serious consequences struck Estonians in the Black Sea coast in Transcaucasia, where Estonian villages Linda, Estonia, Salme and Sulevi were established in the 1880s. This article examines beliefs about the causes of malaria, treatments and preventive measures.

Key words: colonization, medical history, folk medicine, environmental history, Abkhazia.

Introduction

Malaria is tied to colonization in a number of ways. On one hand, the battle against malaria is an outgrowth of the agrarian and colonization policies of colonial powers, as eradication of malaria was seen as a means of colonizing newly subjugated territories and filling them with loyal citizens. Malaria was a significant brake on European colonization in Australia and New Guinea but the scourge was also behind the failure of early American efforts to construct the Panama Canal (Diamond, 2002: 216, 323, 326). Some have expressed doubt as to whether it would have been possible to colonize Africa at all had the true causes of malaria not been discovered and suitable prophylactic and treatment methods developed in the late 19th century (Finley, 1976: 181; Wirz, 1980: 215). The actions of European nations and other colonialist regimes including Japan (Kim, 2015; Packard, 2021) to drain wetlands in their colonies, develop general sanitary conditions and improve diet and control mosquitoes were among the toolbox of colonial authorities for taming "new" lands. Colonists were also often the first victims to bear the brunt of malaria in implementing colonialist policy. The article examines how malaria affected Estonian settlement in Transcaucasia and their views on the disease. Different explanations have been advanced for malaria in different eras, but the physical environment, climatic and geographical conditions have always played an important role in these explanations. The article illustrates what Estonian settlers thought about the causes of malaria and how they treated the disease.

Methods

The article is based on a qualitative historical-ethnographic approach. The source material includes correspondence of Estonian settlers from the late 19th and early 20th centuries, newspaper articles, memoirs, and archival materials, as well as contemporary medical and colonial administrative literature. Through discourse analysis of these sources, the study examines how Estonian settlers interpreted the causes, spread, and treatment of malaria, and how these understandings related to contemporary scientific knowledge and colonial policy. The empirical material is situated within a comparative framework drawing on international scholarship in colonial and medical history.

Discussion and results

Malaria and colonization

At the time that Estonians migrated to the Black Sea coast, malaria was not a completely new phenomenon for them. Estonia had a number of marsh mosquito species (and does today as well). During the 19th century, malaria nearly disappeared from northern Europe thanks to better sanitation and the draining of wetlands (Wirz, 1980: 218). Given that malaria victims made up 0.4% of all deaths in Estonia in the late 18th century and less than 0.3% in the first half of the 19th century (Paal, 2014: 56), malaria was a relatively infrequent cause of death. The situation was different south of the Caucasus, where a number of forms of malaria existed, including tropical malaria. After the Caucasian War and the massive depopulation where local peoples were exiles, the tsarist authorities sought to fill the vacated lands with colonists from inland empire, above all ethnic Russians. However, one-third to one-half of the settlers in the new villages died of malaria within several years or moved away (Jersild, 2002: 140). It has been said that "the history of the conquest of the Black Sea coast was a history of the battle against malaria" (Dzhaparidze, 1954: 13). In the years of outbound Estonian migration to Abkhazia, more than one-half became infected with malaria (Dzhaparidze, 1941: 1). Malaria led the list of the most deadly diseases to affect Estonians in the coastal Black Sea region. The first Estonian settlers wrote that malaria was much stronger than its Estonian sister (Üks Suhhumi rändaja, 1887: 2) and while malaria was generally not a fatal illness in Estonia, that was not the case in Transcaucasia (Vunk, 1914: 7).

Statistics from the early 1880s indicate that malaria was an existential problem in the settlers' villages in Abkhazia. Mortality in the settlers' villages averaged 15.6% in the early years. In Estonia village, it was slightly lower, 7% (Dzidzaria, 1975: 431). It was written regarding the early period of Estonia village: "Whole families succumbed. Sometimes there was not a single healthy person left to bury the dead" (Meomuttel, 1900: 44). According to descriptions penned by Estonians, whole families were stricken, and mortality was especially high among children. The account of the early days of Linda village states that a large family with many children had settled under a spreading nut-bearing tree. When none of its members had been seen for several days, a visit was paid and every last one was found dead (EAM 284.1.19, p. 10; EAM 284.1.4, p. 11).

As shown by statistics from the 1880s on villages established by settlers in Abkhazia, malaria was indeed a very significant curb on colonization – many settlers left due precisely to malaria (Dzidzaria, 1975: 431; Meomuttel, 1900: 44). The period of the most intense influx and return migration from the Estonian villages was 1884-1885. The main reasons for returning to Estonia also included poor preparation, shortage of plots of land distributed to settlers and poorer than expected farming conditions; but malaria, too, was cited.

Advances in scientific knowledge about malaria

Today, malaria is chiefly associated with mosquitoes but it is a relatively new discovery. Until the past the midpoint of the 19th century, malaria was linked to marshes – the parallel name for the disease in many languages was marsh fever and similar formulations. Medicine generally associated malaria with vapours exuded from decomposition of organic matter, which was believed to essentially poison victims and could be spread to others (Paal, 2014: 60). The toxic malaria vapours were believed to be present mainly during rainy periods, and especially between sunset and sunrise. The vapour was believed to be heavier than air, so that it would pool on the ground. Sleeping on the ground outside was considered dangerous. The toxic vapours were believed to rise from stagnant water and low-lying coasts as well (Wirz, 1980: 217-219; Bruisch, 2020: 373). The 19th century saw major advances in microbiology leading to new knowledge. French military physician Alphonse Laveran discovered a unicellular organism in Algerian patients' blood that carried the disease. How it did get into the bloodstream? The riddle was solved 18 years later by English military doctor Ronald Ross working in India. He studied malaria causing parasites in the blood of birds and discovered that the parasites' reproductive cycle occurs in two phases, one of which is asexual and takes place in birds' bloodstream, while the other is a sexual reproduction phase that takes place in certain species of female mosquitoes. This led to the

idea that perhaps the same principle applied to malaria in humans. Italian zoologist Giovanni Grassi shortly thereafter attempted to prove it empirically. He determined the life cycle of the parasite that causes malaria in humans, *Plasmodium falciparum* and the fact that only female mosquitoes transmit the disease. This debunked the speculative albeit experience-based marsh theory that had been considered true for centuries (Wirz, 1980: 216-218). These advances in the understanding of malaria took place at the time that Estonians were settling the Black Sea coastal area. But at the time that Estonians were migrating to the Black Sea coast, the prevailing theory was still the one that malaria was caused by bad air, e.g. from marshes.

Disease explanations

Looking at what the new Estonian arrivals on the shores of the Black Sea considered the cause of malaria, we see a great amount of variation. For one, they imported from Estonia a mythological notion that malaria can appear as in the form of a grey ghost and "leap" across from a sick person to a healthy one. But the majority of accounts that we have through written sources are essentially rational explanations that reflect the (scientific) knowledge of the day, even if they strike us as not necessarily correct in light of modern knowledge.

a) Dampness

The written accounts reveal that in the early days of settlement, Caucasian Estonians associated malaria above all with moisture from the ground. This is quite logical since it was corroborated in the scientific world at that time – essentially false, but based on accurate observations. In 1883, it was written that malaria was at its most severe in Caucasian Estonian communities in summer when trees were in leaf, since the wind could not dry the damp ground sufficiently (Rezoldt, 1883a: 3). An Estonian writes in 1886 that heat caused much moist steamy air to rise from the valleys, and this caused malaria and made these places unhealthy (Koit, 1886: 68). There was debate about whether the village of Estonia, which was lower in elevation, was more deleterious to the health than the another Estonian village Linda. It was concluded that there was not much difference between the two when it came to the spread of malaria (Pihlakas, 1888: 3). This was confirmed in practice: malaria morbidity was high in both Linda and Estonia. While higher in elevation, Linda was relatively close to the sea, which meant that flows of air carried malaria-bearing mosquitoes there, too. Official publications that describe malaria conditions in Transcaucasia region report that the most hazardous time was July, August and half of September. At other times, infection in Transcaucasia was rare (Pantyukhov, 1899: 44). This observation about seasonality is also reflected in writings by the Estonian colonists.

b) Raw/unripe berries and untreated water. The role of poverty in the spread of malaria.

Unclean water was a leading alternative theory to toxic or unclean air. It was also believed in the early days of Estonian settlement in Transcaucasia that malaria could be caused by drinking water that had not been boiled (EAM 284.1.19, p. 9). This theory figured in official publications from the early years of settlement (Pantjukhov, 1899: 43), and likely spread among the people. While damp earth and toxic vapours affected anyone who was in such places, drinking of raw water could be avoided.

There were also theories that malaria was transmitted through eating something dangerous. The Estonian press reported that settlers believed that malaria struck after eating berries (Suchum-Kaleest, 1885: 2) or unripe fruit (Koit, 1886: 68; J. T., 1896: 3). The same belief was widespread among the inhabitants of the next-door German villages of Neudorf and Gnadenberg. There it was believed that consumption of peaches caused malaria (Adler, 1930: 329). At first glance there does not seem to be any connection between fruit and malaria. The stomach ache that is a symptom of malaria could indeed also be caused by eating unripe berries and other fruits. It appears that this notion stemmed from confusing wording used in the press: it wasn't that berries caused malaria but people who were subsisting on only fruit were more susceptible to illnesses. Studies from elsewhere in the world have demonstrated the role of social factors, including poverty, on the spread of malaria (Packard, Brown, 1997: 181 ff). Examples have been cited of malaria epidemics that supposedly originated with

mosquito-borne infections but which were truly unleashed by famine or malnutrition. Such epidemics occurred even in the far north such as Arkhangelsk in 1922-23 (Packard, 2021: 1, 8). Malnutrition was also frequent among many of the settlers in Transcaucasia. During one malaria outbreak in summer 1886, a military physician from Sochi visited Salme, an Estonian village. He went from household to household and concluded that Estonians did not need medications but proper food; they were famished. Upon hearing this, the government allocated funds for the villagers to buy food (EAM 284.1.3, p. 39-40). The next year, 1887, it was written in connection with yet another outbreak that the residents of Linda village should eat better (Lamanovsky, 1887: 2). In a manuscript based on recollections of villagers, one inhabitant of Lower Linda, Amalie Kaevats, attributes the epidemics of the early years of settlement to inadequate, poor diet (EAM 284.1.20, p. 17). The possibility that malaria was not solely a medical issue but also a social syndrome began to be recognised in many of the world's colonial areas in the final decades of the 19th century. The colonial authorities realized that a better diet and sanitation were important hedges against malaria (Wirz, 1980: 223). The Caucasian region was no exception.

c) "Excessive" industriousness

In Abkhazia, theories about the spread of malaria collided with colonialist work discourse. Industriousness and Protestant work ethic, of course play an important part in Estonians' stereotypes of themselves. But in colonies, this was given an additional shade by the settler's pioneer spirit, in which hard work has a very major role. Ennobling the settlement narrative through hard toil, where people carve out a new homeland in a savage environment, is internationally widespread motif anywhere that settlers try to eke out a foothold in wild nature. Estonians are no different here. One writer from Linda village does not hold back on the pathos in a text describing the origins of his village: "All of the settlers, being forced by circumstance to leave their homeland and confront the unknown, defying suffering, hardship, ordeals, brought with them the industriousness and ruggedness that epitomizes Estonians …" (ERM KV 823, p. 12).

But encountering malaria, which made its victims powerless, the colonial discourse on industriousness was undermined in a certain extent. How does the malaria-ravaged listless settler fit into the image of the sedulous and tenacious colonist? In a number of writings on Estonian settlers from 1884, malaria is attributed to the fact that Estonians were averse to working as energetically in the hot climate as they did back home. The northern body could allegedly not tolerate that, and that was led to contracting malaria (M. N. H., 1884: 2; *Olevik* No. 46, 1884: 2). Malaria was therefore depicted as something that preyed chiefly on industrious settlers. Malaria sapped the settlers of strength and also led to a reappraisal of the relationship between industriousness and laziness. Estonian settler Jakob Pint wrote in his memoirs that Estonians initially considered the Abkhazians lazy, not capable or willing or working as hard as Estonians. Pint however stated that the cause was not laziness, but malaria (EAM 284.1.11, p. 5), as Estonians had the same experience: malaria kept them from working as hard as they otherwise wanted to.

In later years, malaria became the cornerstone of the self-mythology of Estonians in Abkhazia: the difficult beginning was marked by clearing forest for land, contending with wild animals, and on top of it there was malaria as well. The founding narrative was passed on orally, informally and also speeches at festive gatherings, as many extant transcripts attest. At a speech delivered at the 50th anniversary of Salme village in 1934, (EAM 284.1.23, p. 3), and one for the 75th anniversary of that village and the 30th anniversary of the local collective farm (1959) (EAM 284.1.22, p. 3) and a 75th anniversary speech at Sulevi village (EAM 284.1.25, p. 5-6) the initial problems for settlers were enumerated, including malaria, though it was of course added that Estonian's tough nature meant they tolerated the hardship. Prevailing over the hardship was the reason that 75 years later, the villagers could gather to mark the anniversary. Through the Russian-language content, the narrative of the Estonian settlers' battle against malaria and other hardships also made it into contemporary Caucasian historiography. Patiko Alan writes of the Estonians of Salme village how they settled in a region of dense forests and impenetrable marshes teeming with malaria, how they cleared forests and drained swamps and established orchards (Alan, 2016: 35). It cannot be ruled out that the text printed in history books could come full circle back

to the local Estonians but as an expression of reflected self-image – a confirmation to Estonians that Abkhazians saw them in the same way. The image of hard-working settler also aligned with the political aspirations of the tsarist-era authorities. Conquered land had to quickly be put into service to earn revenue for metropolitan Russia. State subsidies for settlers to bring culture to the land, including in the struggle against impeding obstacles, can be seen in the context of the general colonial discourse.

Malaria remedies and countermeasures

a) Magical beliefs.

In past centuries, malaria was viewed through a mythological prism, and thus remedies were also based on superstition. The Estonians who settled in Transcaucasia were well aware of the Estonian folklore on the subject. Malaria was believed to be a demon appearing in the shape of a grey old man, to be hidden from (EAM 284.1.37, p. 26). Two folk remedies were recorded in Estonia village in 1888. One was rolling in pigsty straw, the way a dog might do. The other method was more complicated: one fallen cross had to be picked up in one's left hand from three cemeteries, it had to be kept for three Thursday nights in a stable, the crosses then deposited under a sauna door and water for bath brooms brought across the crosses into the sauna on three Saturday evenings. Three fragments had to be cut out of each cross using the left hand and placed under one's left side for three nights (ERA, H II 33, 1014, p. 28-29). In Sulevi village, inhabitants knew the superstition that one had to crawl through a horse's bridle to ward off malaria. In the same village, malaria was also treated by giving people a fright, including pouring cold water over the person from behind a corner (EAM 284.1.37, p. 26). The settlers had brought these superstitions from Estonia, where startling a sick person was one of the predominant actions. Crawling through a horse's bridle was also known in Estonia (Paal, 2014: 91; 111, 270). The Estonians of Abkhazia knew of these "magical" remedies but often added that they did not work against malaria (EAM 284.1.37, p. 26; EKLA 235.30.13, p. 26). Instead, they put their trust in doctors who were experienced at treating malaria in this region.

b) **Quinine**

The main medication used for malaria by medicine in the 19th century, and which was distributed by authorities in Transcaucasia, was quinine. It was widely available to settlers starting from their arrival. Physicians and pharmacists went from village to village distributing quinine and settlers also travelled to Sukhum-Kale to obtain it. It was dispensed from a large bottle to the public to take home (EAM 284.1.8, p. 8; EAM 284.1.19, p. 11-12).

Quinine did not cure malaria but eased symptoms (Üks Suhhumi rändaja, 1887: 2; Pihlakas, 1906: 2; EAM 284.1.11, p. 5). The popularity of the drug among the inhabitants was reduced by the rumour that it was toxic, and its bitter taste made some people resolve to suffer the symptoms rather than ingest it. Some who declined quinine died (EAM 284.1.16, p 4). Quinine would be the main malaria drug in Abkhazia for a long time. Alcohol was also used as an alternative to quinine. This aligned with a belief in Estonia (Paal, 2014: 62). When in Estonian motherland vodka was used to treat malaria then in Estonian villages of Caucasus a belief of the beneficial effects of wine became rooted (EAM 284.1.37, p. 27; Lamanovsky, 1887: 2). It is possible that alcohol eased the symptoms of malaria; however, it did not cure it.

c) **Wetland drainage**

Although the theory of the marsh air origins of malaria proved to be false in the late 19th century, doctors and researchers were not too badly misled. Action taken to drain wetlands and improve sanitation also helped wipe out malaria in many places around Europe in the 19th century (Wirz, 1980: 218). Tsarist Russia also realized a need for land improvement (Bruisch, 2020: 373). Eucalyptus was planted, as it had high water demand and helped to dry out the soil. In the 1850s, malaria was widespread in Sukhum-Kale, but after draining of wetlands, it diminished and by the end of the century it was a popular resort area, although there were still pockets of malaria. Besides the draining of marshland, the inhabitants were urged to keep houses and streets clean and tidy, not use stagnant water for drinking and cultivate suitable crops, to domesticate the landscape. They were also advised to build homes in higher places

and where this was not possible, erect them on stone foundations or, like the natives, on stilts (Pantyukhov, 1899: 44-45). This practice, known in various places around the world, also impacted the architecture in the Estonian settlements in Transcaucasia: the stilts allowed air to circulate under the house. Later, when malaria receded, these were crawlspaces were sealed up.

Based on the first descriptions penned by the Estonian settlers, the gradual wane of malaria can be observed. In the first years of settlement, all of the Estonian villages were afflicted. The fact that clearing and cultivating land helped to eradicate the disease was known to the settlers, probably conveyed by the local authorities who had started the process of taming the land earlier. A number of writings from the Estonian arrivals in Abkhazia in the 1880s emphasized the importance of cultivation in this regard. The settlers were looking for as many Estonian settlers to move to the Estonian villages as possible, and as fast as possible (Rezoldt, 1883a: 3; 1883b: 3; Rahuleid, 1886: 3). In 1894, one Estonian wrote that malaria had nearly been eradicated in the Estonian villages in the Sukhum district, as the land had been cultivated, air was circulating and the sun was drying the house (Tiflisi eestlane, 1894: 2). Writings from the early 20th century contain the realization, now from many writers, that turning forest into cropland had reduced malaria (Suhumi eestlastest, 1912: 2-3; Sulevi …, 1917: 1-2; Vilde, 1934: 164). This aligns with experience from other places – the connection between cultivation of the land and disappearance of malaria is found in nearly all disease loci (Packard, 2021: 11).

d) **Mosquito control**

As mentioned earlier, 19th century medicine did not make the connection between malaria and mosquitoes for a long time. In 1899, a work was published in Tbilisi on the impact of malaria on colonization of Transcaucasia. It recounted recent discoveries that it was not marshes themselves that were to be feared but their denizens, mosquitoes. The author stressed that it was not at that point known how malaria spread, i.e. the adversary's tactics were unknown (Pantyukhov, 1899: 43). It appears the manuscript of the book was written just before Grassi's discovery in 1899. As a number of examples from around the world showed, even though the culprit and transmission method were known, it took time for the information to be adopted. It often took years to persuade medics and other specialists (Kim, 2015: 361, 363). It took time for it to be embraced by the layman as well, as we can see from the materials penned by Estonians in Abkhazia, where the marsh theory remained prevalent for a long time. In this sense, the discourse of Estonia village resident Johan Pihlakas from 1906 is interesting. He writes that malaria is caused by excessive dampness but also adds a footnote that some sources consider mosquitoes responsible. He then returns to the dampness theory, writing that the land was thickly forested in the early years. The air was damp and "contaminated" (Pihlakas, 1906: 2). Pihlakas must have heard of the new theories about mosquitoes but did not take it all that seriously.

Awareness-arising about malaria picked up speed on the Black Sea coast in the 1910s. In 1912, the medical associations of Sochi and Batumi formed malaria committees, and in 1914, Sukhum-Kale followed suit. These committees studied case histories, carried out mosquito control, delivered lectures, prepared informative exhibitions (Dzhaparidze, 1954: 17). It took time for the effects of these efforts to reach villages. An Estonian in Sulevi village wrote as late as 1917 that malaria was caused by downed trees and rotting vegetation. The writer does not mention mosquitoes (Sulevi…, 1917: 1-2). Even in the 1950s and 1960s, there was mention in Estonian villages that malaria could be contracted by sleeping on damp ground (EAM 284.1.25, p. 5). One folk theory about the connections between malaria and mosquitoes was recorded by Erich Kosenkranius, from Sulevi: "The malaria mosquito is different from ordinary mosquitoes. A person's skin turns yellow from its bite, and at a certain time the mosquito larvae begin to reproduce in people's blood" (Kosenkranius, 2009: 71). So instead of *Plasmodium,* the writer mentions mosquito larvae, but still, this can be considered acknowledgement of the mosquito theory instead of marsh theory.

During the Soviet era, organized efforts to control mosquitoes continued on along the Black Sea coast with the establishment of malaria stations. Bodies of water and wetlands where mosquitoes bred were disinfected with petroleum. Abkhazia was the first place in the Soviet Union to introduce a fish species known as Gambusia or mosquitofish; it was released into manmade and natural bodies of water and marshes (Ruhadze, 1929: 52; Dzhaparidze, 1941: 20; 1954: 19, 109).

Although Abkhazia saw outbreaks of malaria in the 1920s and 1930s as well, it was on the wane. It was eradicated first in cities. In villages, the fight against the disease took longer – water for watering fields had to be stored and these were good places for mosquitoes to breed. The existing statistics on Abkhazian villages shows that malaria declined quickly in the first half of the 20th century. For example, incidence in Estonia village fell almost by 75% from 1926 to 1940 (Dzhaparidze, 1954: 121). Today, malaria is rare in the area, although disease vectors do exist.

Conclusion

The Estonian communities of the Black Sea coast conveyed their experiences with malaria in text penned by local correspondents or later accounts. The fight against malaria coincided with an era where *Plasmodium* and the role of mosquitoes in transmitting the illness was still unknown. The colonial authorities introduced quinine, which was also distributed to local Estonians, and embarked on wetland drainage but the mechanisms of the disease were unknown. This was also reflected in the accounts of the disease and remedies used by the Estonians. Estonians had some folk names and magical beliefs regarding malaria from their homeland, which were used in a mix with formal medicine. None of them corresponded to the actual nature of the disease.

Since malaria was one of the main impediments to settlement south of Transcaucasia, it took on a key role in the founding narratives of the settlements. Malaria was one part of savage nature that had to be tamed by man to carve out a stable existence and future for himself and his progeny. The clearing of dense forests and battle with wild animals that posed a threat to the settler households was arduous work and this attested to the settlers' work ethic. Sometimes malaria was attributed to the effects of intense labour. This confirmed Estonians' self-image where hard work played an important role. The battle against wild nature was recalled in village founding anniversary speeches to underscore the heroic efforts from the early days and to reinforce the settlers' identity. Such image-building is universal among settlers, and similar examples exist in founding narratives from the Americas and Africa. It is in correlation with the political aims of colonial authorities. The land being colonized had to be brought to heel and had to become profitable economically and politically for the metropolitan empire.

Information on the discoveries made by Ronald Ross and Giovanni Grassi in regard to the role played by mosquitoes in transmission of malaria arrived in Transcaucasia after bit of a lag time. In particular, this pertains to new knowledge being taken up by the people – earlier ideas that malaria was connected to moisture and toxic vapours were loath to fade from Estonian settler tradition even in the 20th century. On the strength of new knowledge, the authorities improved anti-malaria measures, with a fish species introduced to bodies of water in the Soviet era to eradicate mosquito larvae. Previous measures that were developed before the scientific advances but were effective continued to be used as well. Draining of wetlands, efforts to improve air circulation in structures, clearing of forests and planting of eucalyptus were used in the 19th century and helped to eradicate breeding grounds for mosquitoes even before they were known to be involved in the transmission. These methods continue to be used today, since malaria is not completely eradicated in Transcaucasia.

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