

THE MEDICAL MALADIES OF SIR GEORGE EVEREST DURING THE GREAT TRIGONOMETRIC SURVEY OF INDIA

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Abstract

The discovery of Mt. Everest, the highest mountain in the world, was the crowning achievement of geographers, surveyors, and explorers. It was Sir George Everest, the Surveyor General of British India who led this expedition. We attempt to hypothesize the multiple medical and neurological disorders that Sir George Everest suffered and investigate the possible etio-pathogenesis. Most of the information was gathered from the biography of Everest written by J. R. Smith in *EVEREST the Man and the Mountain*. Other sources include Histnett, Toxnet, PubMed, Unlocking the Archives, Gobar Times, Professional Surveyor Archives, Royal Geographical Society, Survey of India, UCLA library and USC Libraries. We conducted an extensive review of medical manifestations of Sir George Everest. We believe that he suffered from a possible combination of Malaria, Typhus Fever, Hepatitis, and Kyasanur Forest Disease (a form of Japanese Encephalitis). Additionally, he suffered from a severe form of painful peripheral neuropathy and intermittent visual symptoms raising the suspicion for multiple sclerosis, cervical radiculopathy and Gullain Barre Syndrome. Everest exhibited episodes of insanity similar to Mad Hatter's Disease and symptoms of Minamata disease secondary to chronic ingestion of mercury which was prescribed in high doses to treat his Malaria and Biliary Fever. Mercury was also prescribed for the additional ailments such as peripheral neuropathy and Syphilis-like infection. His condition exemplified the incessant use of mercury and its toxicity during the pre-antibiotic era. In describing Everest's medical conditions, we also present a detailed account of the symptomatology, treatments, and outcome of his speculated multiple medical and neurological maladies.

Key words: Biography, Everest, Great Trigonometrical Survey of India, Gullain Barre Syndrome, Infection, Kyasanur Forest Disease, Malaria, Medical disorders, Mercury

1. INTRODUCTION

1.1 Sir George Everest (1790 – 1866)

Colonel Sir George Everest (July 4, 1790 - December 1, 1866) was a British colonial surveyor and geographer in India. (Sir Everest pronounced his last name as “Eev-rest” rather than the more popular “Evah-rest”). Born at Gwernvale Manor, near Crickhowell, Powys, in Wales, Everest attended the military academy at Woolwich, and excelled in mathematics. In 1806, he came to India as a cadet in the Bengal Artillery, and was selected by Sir Stamford Raffles to take part in the reconnaissance of the Java Islands between 1814 and 1816. In 1818, he was appointed as an assistant to Colonel Lambton in the Great Trigonometrical Survey (GTS) of the Indian sub-continent. Later with the accidental death of

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Colonel Lambton in 1823, Everest took over as the Superintendent of the survey. Thereafter, he progressed to become the Surveyor General of India, before finally retiring from work due to ill health in 1843. He was largely responsible for completing the trigonometric survey of India along the meridian arc starting from the south of India to Nepal (a distance of approximately 2400 kilometres). Upon returning to England, he was honoured as a “Fellow of the Royal Geographical Society”. He was knighted in 1861, and in 1862 was appointed as the Vice-President of the Royal Geographical Society. He passed away in the year 1866, in Greenwich and was buried at St. Andrews Church in Hove¹.

2. MEDICAL MALADIES OF SIR GEORGE EVEREST

After coming to India, although George Everest lived through numerous medical conditions, he endured many painful symptoms and medical interventions. One reference below describes the medical maladies of Everest and illustrates the harsh environment in India, especially the terrain that was involved with the work of The Great Trigonometrical Survey of India:

“Lambton himself breathed his last in 1823 when his Arc was about halfway up the spine of India. His successor, who conducted the Arc to its grand Himalayan finale, was already debilitated by malaria and dysentery when he took over. He soon got worse, enduring temporary blindness, recurring paralysis, and several bouts of certifiable insanity. Not surprisingly, he also gained a reputation as the most ill-tempered *sahib* in India. His name was Col. George Everest”².

“The far greater hardship, however, was sickness and disease. As Edney has observed, the British suffered a high mortality rate in India, but the surveyor in the field seems to have been particularly vulnerable to jungle fever. Everest fell victim on a number of occasions, beginning in 1819 when an outbreak of typhus claimed the lives of a tenth of his party and severely weakened his constitution. When he was struck down by malaria in 1835, he was confined to his bed for six months, during which he complained that the ravages of the disease and the equally ravaging treatment *produced such a degree of debility as to make it of small apparent moment whether I lived or died*”³.

In 1838, after contracting yet another serious disease, Everest told his physician, “*Except in-as-far-as the work of the Great Arc is concerned, I would not stay in India on any account*”⁴.

3. EVEREST ARRIVES IN INDIA

After his arrival in India in 1812, the earliest records place Everest in Java in the year 1813. In the year 1816 with the evacuation of East India Company from Java, Everest was immediately deputed to make a rapid survey of the harbors and communications of the South Coast of Java before the departure. It was during this time that he had his first recorded bout of fever, likely due to fatigue. Everest returned to India on November 1816, and joined the GTS in 1818. On the evening of October 2, 1819, Everest fell ill with typhus fever or malaria. Within five days nearly 150 of his camp followers were similarly exhausted to carry the theodolite. In frustration of the spreading fever, Everest said,

“a litter was made for me: Mr. Voysey had a palanquin ... But the jungle fever pursued my party like a nest of irritated bees, long after we had quitted the precincts of the forest”⁵.

By the time Everest reached Hyderabad, he immediately sent public elephants, doolies (litters) and camels with a strong escort to hasten the return of the others, who were little more than corpses when they arrived, as 15 of Everest’s followers perished by the time the party reached the headquarters⁵. Concurrently, both Everest and Voysey were noted to have bouts of delirium. Undefeated, Everest set out again on June 1820 with the same team to continue the survey to the Northern region of Yellapooram,

a town near Bangalore, in Karnataka. However, after a few weeks Everest had a violent attack of jungle fever, a remittent tropical fever and form of malaria that, although gets better during recurring periods, never entirely leaves the body. Eventually, Everest applied for sick leave and on Oct 1st, 1820 sailed from Madras to Cape of Good Hope for a better climate to recuperate.

4. EVEREST RESUMES THE SURVEY

Everest reached Table Bay⁶ towards the end of 1820 and recovered from his fevers⁷. Towards the end of 1821, Everest returned to India and by February 1822 he resumed work in Hyderabad, where jungles and mosquitoes were limited. About a year later on January 20, 1823 Col. Lambton died from an accident, after which Everest formally assumed control of the GTS on March 7, 1823 and set out once again to measure The Great Arc.

On August 1823, Everest had yet another bout of fever, this time accompanied by rheumatism and partial paralysis, which left him semi-crippled for the next two years⁸. He describes one particular period as:

“...about the 20th of August, I had a smart attack of bilious fever, owing to too much labour of computation, which rendered the use of mercury necessary. I got better of this in a few days; but mercurial pills were given to me as a constant dose, and one morning having been overtaken some miles from home by a violent shower which wet me through, I found myself on my return again rather feverish.

The evening of the following day (3 September 1823) is one of which I shall carry the remembrance with me to the grave. I was seized suddenly with an uneasy sensation in my loins; and on the following morning a very violent pain in all my bones, accompanied by typhus fever, showed that the embers of my Yellapooram illness had only been smothered for a time, to burst out more formidably... For six months after this I was never able to lie in any position than on my back, and even then, if my sleep exceeded the period of three hours I was awakened by one of these convulsive paroxysms, attended with agonizing pains such that it reminded me of the iron boot of torture described by the author of Waverley, or as would have been caused by driving a wedge forcibly in between the bones of the leg, and in that position, turning it round”⁵.

In a similar graphic manner, Everest describes the attack again in a letter addressed to the Surveyor General a year later:

“My original illness was a fever caused by too much attention to business, in consequence of which I was obliged to take mercury. I was recommended by the gentleman of the faculty to ride every morning to perfect the cure, and on the 3rd September last year (1823), in one of my morning excursions, I was wet through, and my left hip and loins, as well as my left shoulder, were immediately seized with the most violent pains accompanied by typhus fever. This illness has continued to torment me... Without intermission, and within the last four months has arrived at my neck, from both of which fragments of decayed bone have repeatedly been extracted, sundry incisions and other surgical operations of rather an unpleasant kind have often been performed... Finding by 18th October that I could bear the motion of a palanquin, I quitted Hyderabad.”⁸.

Although advised by his physicians to go on leave immediately to avoid further damage to his health, he was obstinate in carrying out his plan. He describes his condition at that time in his own words as:

“But it was a desperate resolution; for my limbs being in a great measure paralysed I was in the unpleasant necessity of being lowered into my seat at the zenith sector, and raised out of it again, by two men, during the whole of the observations with that instrument. At the great theodolite, in order that I might reach the screw of the vertical circle... frequently... I have been under the necessity of having my left arm supported

by one of my followers; and on some occasions my state of weakness and exhaustion has been such that without being held up I could not have stood to the instrument”⁵.

From his description, Everest could have suffered from structural damages such as cervical osteomyelitis and cervical radiculopathy from the pain in his neck. Further supporting Everest’s structural damage is the loss of feeling in his left arm.

5. FINAL JOURNEY OF EVEREST

In January 1824, Everest applied for another sick leave, claiming that he felt dangerously ill since August 1823; but by the time permission had arrived, he felt sufficiently better to carry on. However, his better health did not last long. Mr. Griffiths, the medical successor to Voysey stationed at Hoossaungabad (Hoshangabad), had to go some 40 miles into the heart of the forest to treat Everest, who became a perpetual patient. Everest expressed considerable praise for Griffiths who, probably appreciating the stubbornness of his patient, warned Everest of the consequences, but did not expressly forbid him from observing at night, or spending long hours making calculations. At the end of May 1824, Everest had another feverish attack near Hooosungabad. At the same time, the Directors back in England required him to justify his fitness to be in charge of the Survey. In addition to stressing his mathematical prowess and his achievements in his work on the GTS, he described the privations of his journey the previous year, from Hyderabad through 340 miles of jungle, when he almost lost hope of getting across the river Godavari, as proof of his fitness³.

After completing his observations by March 26, 1825, Everest finally agreed to the recommendations of his doctor and applied for sick leave. On March 30, 1825, he had a recurrence of his neurological symptoms which deprived him of nearly all power of motion. On this occasion he was taken to the home of Major Fielding at Goonah. On May 2, 1825, he wrote to Blacker:

“The state of my health during the last month was such as totally to incapacitate me from either mental or bodily exertion but since the last operation performed on me I am a little better and hope to acquire sufficient strength to undertake the journey to Cawnpore (Kanpur) near Agra in North India before the rains set in”⁵.

He stayed with Major Feilding for almost two months. On May 25th he began the journey to the Ganges at Cawnpore (Kanpur) near Agra and then on to Calcutta, which he reached on August 12, 1825. Later that month, Everest again required to leave from work on account of, “*the bad state of his health, and the valuable services rendered by him are brought to the Court’s favourable notice.*” Before going on leave, he wrote a 69 paragraph letter with an appendix to Blacker, an excerpt of which is shown below to portray his life at this time:

“...on the banks Godavery is a tract of country altogether unexplored, and covered with some of the most tremendous forests in the world, it is hardly possible to imagine any part of the Earth more dreary and desolate or more fatal to human existence, I suffered very seriously from two successive attacks of the fever peculiar to that climate, and my constitution received a shock from which it has never effectually recovered. This fever returned in 1823... became so violent about September of that year that I was deprived of the use of my limbs and my life was for a long time in considerable danger”⁷.

From Everest’s notes, his loss of the use of his limbs could have pointed to Acute Inflammatory Demyelinating Polyradiculoneuropathy or otherwise known as Gullain-Barre Syndrome.

Finally on Nov 11, 1825, Everest sailed from Calcutta to England. On Feb, 1826 he arrived in England, where he sought out multiple extensions to his sick leave, although no references to his state

of health during his stay in England currently exist. Once again, Everest sailed for India on the *Cornwall* and arrived in Calcutta, India on Oct 6, 1830. Due to his illnesses, Everest was bed-ridden for the latter half of February in 1835, and again for most of the period from May to the end of October. His serious illnesses led him to be treated with traditional medicine, as he bled-out to the point of fainting with 1000 leeches, and he endured 30-40 cupping glasses (the application of a heated glass vessel to the skin to draw out blood). However, each successive period of illness was worse than the previous and caused considerable alarm.

Between 1837 and 1839, Everest remained very ill. He describes it as a near fatal illness for which his physicians said recovery was past all hope unless he left India immediately. On Dec 1, 1843, Everest retired and left for England. From July to Nov 1845, there have been claims that he went to the United States for health related reasons, but there exists no trace of his movements or of his contacts. He commented that it was “*for the benefit of [his] health*”⁵. At regular intervals he spent two weeks at Bath, Turnbridge Wells or Brighton as a means of combating his rheumatism and gout. Such was the severity of illnesses that he commented later in 1860, “*I am laid on my beam ends with a severe attack of gout*”⁵. He found the waters at Bath to be particularly helpful in shaking off “*a most tormenting internal pain*”⁵, as even a few days without discomfort was an accomplishment.

6. DISCUSSION

Through our presented references, we can point out that Everest had suffered fevers during his stay in the jungles of the present-day Karnataka region of India. One of the possible fevers that Everest had suffered is called Kyasanur Forest Disease, which is considered a viral hemorrhagic fever with a mortality rate of 10%. We postulated the likelihood of this fever because workers who work in the forest are particularly at risk⁹. Another possibility was that Everest suffered from malaria, which was rampant in India during that time, and the symptoms of malaria help explain his fevers. Known by many different names, malaria appeared in the nineteenth century as intermittent, remittent, marsh, miasmatic, and autumnal fever, and Everest could have suffered from any of those types. Through the fevers Everest had suffered in India, we surmise Kyasanur Forest Disease, Typhus and malaria as possible sources.

Additional medical symptoms that Everest may have suffered include flushed face, reddened eyes, hot, dry skin, agonizing headaches, and aching muscles, which may indicate a scarlatina-type rash or suggest typhoid fever. Simultaneously, Everest may have suffered from malaria, but the difficulty of distinguishing malaria from other diseases supports the theory that malarial fevers were antagonistic to typhus and typhoid fever, such that the presence of malaria and the typhoid-typhus types of fever varied inversely. This suggests that Everest could have had either malaria or typhoid-typhus fever, but not likely both at the same time. Some authors applied this theory of antagonism to tuberculosis, but it has been since noted that tuberculosis as a complication of malaria leads to a quick death, indicating that even if Everest had malaria, he likely did not have tuberculosis^{10,11,12,13}.

In the treatment of malaria, relapses were frequent in all forms even today in patients who are treated exclusively with quinine. Relapses are frequently blamed on draft effects when patients were overheating, overeating, over exposed to the sun, and constipated. Although spontaneous recovery is possible, chronic malaria could lead to varying degrees of anemia, and even to permanently impaired health due to complications like cerebral malaria, pulmonary oedema, disseminated intravascular

coagulation, and shock¹⁴. Unlike malaria at that time in India, typhus fever was not common. Interestingly however, the diagnosis was not uncommon because in the earliest decades of the nineteenth century, when typhoid fever was very common, the term typhus fever was used almost interchangeably with the term typhoid. Occasionally typhus fever was used to denote any type of fever believed to originate in miasmas^{14,15, 16, 17}.

The additional affiliations of the medical maladies Everest had include an attack of bilious fever along with diarrhea and dysentery, which point to the possibility of infective hepatitis or malaria. In his treatment of bilious fever, Everest was prescribed mercury. In the preantibiotic era, incessant use of mercury served as a cure for numerous diseases, including malaria. With Everest's mercurial pill treatment, acute mercurial poisoning could have been a possible complication, as it is associated with ulcerations of the stomach and intestine with toxic changes in the renal (kidney) tubules. Anuria (failure to form urine) and anemia may also occur. Compared to acute mercurial poisoning, chronic mercurial poisoning was more common in the 19th century. Known at that time as "Mad Hatters Disease" or "Hatter's Shake", chronic mercurial poisoning can cause diarrhoea, slowed reflexes, poor coordination, ataxia, tremor, impaired vision, and emotional instability, of which Everest exhibited some symptoms. Minamata disease, also referred to as Chisso-Minamata disease, is a neurological syndrome caused by severe mercury poisoning which can lead to ataxia, numbness, muscle weakness, vision abnormalities, damage to hearing and speech and in extreme cases, insanity, paralysis, coma, and death. Through the evidence of his mercurial pill treatment and symptoms, Everest may have suffered from mercurial poisoning.

Everest also points out that he had rheumatism, gout, and partial paralysis. Although no text indicates that Everest suffered from major joint deformities, he did suffer from bone disease, and multiple sources mentioned his partial paralysis, which left him crippled. In one of the letters, Everest wrote that he had "*very violent pain in all [his] bones*"⁵. Later on, he stated that the pain reached his neck, as he underwent an operation to remove fragments of decayed bone from his neck. This suggest that Everest could have been suffering from some form of Osteomyelitis. The possibilities of causes of the aforementioned symptoms could stem from neurosyphilis, which explains the manifestations of severe bone pain with marked weakness of his extremities, particularly the lower extremities. Other possible causes for painful myopathy, or neuropathy, can include the use of mercurials or a form of viral myelitis or even multiple sclerosis. The bone disease and partial paralysis Everest endured only exacerbated his suffering from his fevers and mercurial poisoning.

7. CONCLUSION

Despite his extraordinary determination to complete the survey, and his enthusiasm for his work, Everest remained in a poor state of health throughout his stay in India. His major medical afflictions we believe were associated with Malaria, Viral fever, Typhoid and Infectious Hepatitis. From 1822-1835, he also exhibited neurological symptoms, characterized by weakness and severe pain throughout his body, visual symptoms, and severe episodes of insanity and dementia. Since he also received various forms of treatment for these illnesses, including therapy with mercurial compounds, his neurological symptomatology is speculated to be most likely due to mercury toxicity leading to Minamata disease causing severe peripheral neuropathy, visual symptoms, insanity, and bizarre behaviour (Mad Hatters Disease) as seen in mercurial encephalopathy. Everest's symptoms could have also been multi-factorial

with vitamin B12 deficiency superimposed on mercurial toxicity. In addition to mercurial poisoning, Everest suffered from rheumatological disorders and gout.

Other personal and lifestyle factors may have also attributed to Everest's health conditions. Everest was a bachelor for a large part of his life, and the possibility of neuro-syphilis, tabetic crisis and possible general paralysis cannot be ruled out. The claim that his lifestyle may have contributed to his health can be further substantiated with the fact that he got married at a late age and had 6 children, 2 of which died at 1 and 2 years of age. Whether possibility of congenital syphilis was cause of death of children or other infectious causes remains unknown.

In spite of his illnesses, Everest thrived on his passion for work and accuracy, wherein he was able to provide substantial leadership to the monumental task of completing the Great Trigonometric Survey. He was honoured as a "Fellow of the Royal Geographical Society", and was knighted twice in 1861 and 1862 for his contributions. Although he never reached the tallest mountain in the world during the Survey, Everest will always be remembered through Mt. Everest.

8. ACKNOWLEDGEMENT

Many years ago Sriram Subramaniam MD, Professor of Neurology at University of Vanderbilt, USA talked with the first author about Mount Everest, the highest peak in the world. Together, they talked about the diseases and hardships that Sir George Everest, the man credited with the discovery of Mount Everest suffered during his stay in India. He thought that George Everest was probably suffering from Guillain Barré Syndrome. This discussion made us conduct heavy research on this topic. The authors would like to acknowledge Ray Zhang, Sandeep Singh, and Parampreet Singh for editing and revising the paper.

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