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Typhoid

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Typhoid fever is a life-threatening infection caused by the Salmonella Typhi bacterium. It is mainly transmitted via contaminated food or drink. When Salmonella Typhi bacteria are ingested through food or water, they grow and spread throughout the bloodstream. According to the World Health Organization (WHO), as of 2019, an estimated 9 million people are affected by typhoid each year, resulting in approximately 110,000 deaths annually.

The history of typhoid may date back to 430 BCE. A 'plague' attacked Athens in 430 BCE, while the city was under siege by Sparta during the Peloponnesian War (431–404 BC). This was known as the Plague of Athens. Over the next three years, the majority of the population became sick, and as many as one-fourth of the city's population died. Thucydides, an Athenian general and historian, recorded an eyewitness account of this plague as well as a thorough description for future generations to identify the disease. Despite Thucydides' thorough description, historians and clinicians have debated on how to identify the condition throughout the last century. Based on clinical signs, typhoid is one of such diagnoses, which may have caused such epidemic.

Early Virginia (1607-24) was a nightmare world of disease and death, maybe unprecedented in the history of English colonization. Typhoid fever and dysentery may have ravaged Jamestown in periodic epidemics, killing 30 percent or more of the colonists with each outbreak. It might have been responsible for eliminating the entire colony.

Throughout history, typhoid has been prevalent in military and war contexts. During the American Civil War, more than eighty thousand troops perished from typhoid fever or dysentery. William Budd, an English doctor in charge of treating a typhoid outbreak in 1838, discovered that the poison, as he termed it at that time, was present in the excretions of the diseased and could be transmitted to healthy persons by drinking contaminated water. Budd proposed isolating excrement to aid in the prevention of future outbreaks after discovering the link.

Karl Joseph Eberth (1835–1926) was born in Würzburg and was the son of an artist. He inherited his father's talent. He earned his M.D. degree in 1859 from the University of Würzburg. He was the professor of comparative anatomy and histology at Halle. In the year 1880, Karl Joseph Eberth was the first to describe the bacillus thought to cause typhoid fever. Four years later, pathologist Georg Gaffky verified the association by naming the bacillus Eberthella typhi, also known as Salmonella typhosa. The genus "Salmonella" was named after Daniel Elmer Salmon, an American veterinary pathologist and leader of the USDA's research programme.

It was in the in the second half of the nineteenth century, Carl von Liebermeister, a German internist and a native of Ronsdorf, pioneered the study of pathophysiology of fever and body temperature regulation. It was the time, when the usual course of various febrile clinical manifestations was discovered to be specific to distinct infectious diseases. He used biophysical and pharmacological antipyretics, particularly for the treatment of typhoid fever.

Almroth Edward Wright developed the first effective typhoid vaccine, which was introduced for military use in 1896. This vaccine significantly improved the health of soldiers at war, who were more likely to die from typhoid at that time. The vaccine was further developed in London in the years that followed.

In the field of typhoid, the story of Mary Mallon needs special mention. Mary Mallon was born in Ireland in 1869 and she moved to the United States in 1883 or 1884. Charles Henry Warren, a wealthy New York banker, hired her as a chef in 1906 when he rented a summer home in Oyster Bay

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on Long Island's north coast. In 1906, from 27th August to 3rd September, six of the eleven persons in the residence had typhoid fever. At that time, typhoid fever was still fatal in ten percent of cases and primarily impacted deprived populations in cities. The house owners contacted New York City Department of Health sanitary engineer George Soper, who specialized in typhoid fever epidemics, to examine the outbreak. He found that the outbreak was most likely caused by freshwater clams. He had conducted his interrogation of the sick persons, as well as Mary, who had a moderate form of typhoid. Mary continued to host the bacterium, posing a serious threat to the surrounding environment. Although Sober initially suspected that the freshwater clams were to blame, this proved to be erroneous because not all of those affected had eaten them. Sober eventually solved the mystery and became the first author to describe a "healthy carrier" of Salmonella typhi in the United States. Sober began pursuing Mary Mallon in Manhattan in March 1907, and he disclosed that her activities were causing disease and death. His attempted to collect samples of Mary's faeces, urine, and blood resulted in nothing. However, Sober solved the mystery by determining that the cook had previously served eight families. Seven of them had contracted typhoid. Twenty-two patients showed evidence of infection and some of them even died.

That year, many people of New York had been infected by Salmonella typhi, and probably Mary was thought to be the main reason behind this outbreak. Immunization against Salmonella typhi was not very well developed until 1911 and antibiotic treatment unavailable. As a result, a potentially harmful source such as Mary needed to be restricted. Mary was repeatedly accused of being the point of contact for hundreds of the sick. Sober, with the assistance of Dr. Biggs of the New York Department of Health, persuaded Dr. Josephine Baker, who, along with the police, was dispatched to bring Mary Mallon in for testing. She was forced to provide samples. Mary's stool tested positive for Salmonella typhi, therefore she was transferred from North Brother Island to Riverside Hospital, where she was isolated in a cottage. Mary filed an unsuccessful lawsuit against the health department in 1909. During her two-year isolated stay, 120 out of 163 of her stool samples were positive. No one ever sought to convey to Mary the significance of being a "carrier" of typhoid. In 1910, a new health commissioner helped to release Mary and help her find suitable work as a domestic, but not as a cook. Mary was released, but she had no intention of abiding by the deal. She again started working as cook. As a cook at Sloane Maternity in Manhattan, she infected at least twenty-five people in three months. Since then, she was stigmatized as “Typhoid Mary” and eventually “Typhoid Mary” appeared in medical literatures. Mary was again isolated in North Brother Island for the rest of her life. She suffered a stroke in 1932 and eventually died in 1932. By the time of Mary Mallon’s death, hundreds of healthy carriers had been identified. However, only she was imprisoned.

Throughout the twentieth century, the incidence as well as prevalence of typhoid fever steadily decreased. This was due to the introduction of immunizations, use of antibiotics and advances in sanitation and hygiene.

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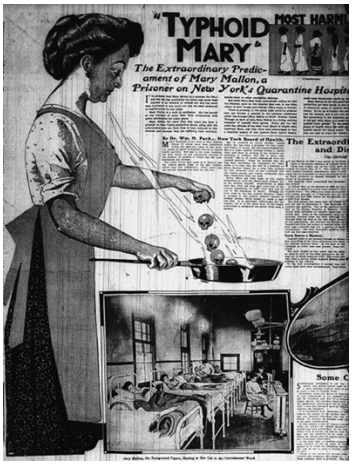

Article about Mary Mallon (known as Typhoid Mary) in the New York American newspaper, June 1909.

New York American, June 20, 1909/New York Public Library Digital Collection

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