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Medical references and curiosities in the Sherlock Holmes stories

The bonds between medicine and Sherlock Holmes are strong: included in the 60 Holmes adventures are references to 68 diseases, 32 medical terms, 38 doctors, 22 drugs, 12 medical specialties, six hospitals, three medical journals, and two medical schools.¹ His cases spanned the globe, including Australia; in “The Boscombe Valley Mystery” (1891), the cry of “cooee!” was essential to identifying the murderer as a member of the Australian Ballarat gang. In this brief overview, I will look at some of the more curious medical phenomena encountered by Holmes and place them in a modern context.

Sherlock Holmes and cocaine

Holmes’ cocaine addiction is well documented in the fifty-six short stories and four novels Arthur Conan Doyle (1859–1930) devoted to Sherlock Holmes between 1887 and 1927;² *The Sign of the Four* (1890), for example, opens with a detailed description of Holmes injecting the drug into his arm. When cocaine first appeared in 19th century Europe, the medical and lay public struggled to understand its benefits and risks and to distinguish between its use and abuse.³ Doyle had probably read Freud’s “Über Coca” (1884), the standard reference on cocaine at the end of the 19th century,⁴ and, although cocaine was long considered by many to be relatively safe and non-addictive,⁵ the constant anxiety regarding Holmes’ addiction felt by John Watson, his friend and physician, was clear.

Sherlock Holmes and tobacco

The constant use of tobacco throughout the Sherlock Holmes stories reflects the fact that little was known about its risks until the middle decades of the 20th century;⁶ in “The Adventure of the Devil’s Foot” (1910), Holmes indeed deemed tobacco fumes to be non-toxic. Although he sometimes smoked cigarettes, Holmes is primarily associated with pipe-smoking. He enjoyed an early morning pipe, and kept his tobacco in the toe of a Persian slipper. Holmes was a rather heavy smoker at times, consuming as much as an ounce (30 g) of shag tobacco in a single night in “The Man with the Twisted Lip” (1891); in “The Red-Headed League” (1891), he referred to a “three-pipe problem”; that is, one that would occupy him for 50 minutes. Holmes’ interest in tobacco exceeded the simple pleasure of smoking, often citing his own forensic science monograph, “Upon the distinction between the ashes of the various tobaccos”. Even had he known that tobacco smoke contains 7000 chemical compounds and causes cancer and cardiovascular and

respiratory disease,⁷ it is debatable whether Holmes would have changed his smoking habits.

Rejuvenation and the creeping man

In “The Adventure of the Creeping Man” (1923), 61-year-old Professor Presbury is attacked by his otherwise loyal Irish wolfhound Roy. It emerges that he had purchased monkey serum from a doctor named Lowenstein for the purpose of rejuvenation, as Presbury was engaged to a much younger woman. Holmes discovers that the side effects of the treatment included animal-like behaviour, such as walking on all fours, exceptional climbing skills, and character changes that had led to him abusing Roy, explaining the puzzling attacks by his wolfhound. Holmes’ remarkable comment on the affair was that “when one tries to rise above Nature one is liable to fall below it”.

Rejuvenation treatments were topical during the 19th century. Initial reflections on the relationship between hormone production and the ageing process stemmed from Paris physiologist Charles Edouard Brown-Séquard (1817–1894),⁸ who injected himself with an animal testicular extract at the age of 72 years; Serge Voronoff (1866–1951) began transplanting monkey testicular tissue into the human gland in 1920 (without inducing animal-like side effects!).⁹ From 1935, however, rejuvenating operations lost their appeal as artificial androgens became available.⁸

Tapanuli fever

In “The Adventure of the Dying Detective” (1913) we encounter “some of the very worst offenders in the world”: microbes. After killing his nephew, Culverton Smith tries to kill Holmes by infecting him with Tapanuli fever. Holmes convinces the villain that his plan has worked with a performance so convincing that Culverton Smith confesses the murder of his nephew to the “dying” detective.

The symptoms of the fictional Tapanuli fever were anorexia, severe fatigue, sweating, and fever; the patient could also have cramping body ache, dyspnoea, cough, and a croaking and feeble voice, while their lips had dark crusts and their pupils were dilated.¹⁰ It has been suggested that this fatal Asian disease with a short incubation period was probably primary septicaemic plague,¹¹ while others have diagnosed melioidosis, also known as Whitmore disease.^{10,12} The latter, caused by *Berkholderia pseudomallei*, has a short incubation period but a long latency, and has been identified by the Centers for Disease Control and Prevention as a potential bioterrorism weapon (the “Vietnamese time bomb”).¹⁰

Fainting

The most prominent fainting episode in the Holmes stories is described in “The Adventure of the Empty House” (1903): Watson faints after discovering that, contrary to what he believed, Holmes had not died three years previously. In the Victorian era, fainting was considered appropriate for young women, the most popular explanation being that tight corsets impeded venous return,¹³ but most fainters in the Holmes stories

were men.¹⁴ Watson's general remedy for fainting was brandy, which was even used to prevent fainting in "The Adventure of the Naval Treaty" (1893); curiously, his fiancée Mary Morstan was only offered water when she fainted (twice).¹⁴ Fainting is still regarded as more common in women, and a mixture of factors, including sex hormones, body stature and psychological factors, is probably involved.¹⁵

The devil's foot root: or gelsemium?

In "The Adventure of the Devil's Foot" (1910), the smoke of the devil's foot root powder proves fatal. Holmes and Watson undertake a self-experiment, and the powder causes a "turmoil" in Watson's brain, as he described it.

"Devil's foot" is fictional, but may have been inspired by real plant. As a third year medical student at the University of Edinburgh, Doyle conducted his own self-experiments with preparations of gelsemium root or dried rhizome of yellow jasmine,¹⁶ publishing his findings in a letter to the editor of the *British Medical Journal* on 20 September 1879.¹⁷ Doyle described its effects as including loss of muscular control and partial paralysis, as well as sensory disturbances,¹⁶ similar to the effects of "devil's foot" on Holmes and Watson.

Brain-fever: fever of the brain?

"Brain-fever" is mentioned, among other places, in "The Adventure of the Naval Treaty" (1893), in which it afflicted a Foreign Office employee for several weeks. Its exact meaning is difficult to determine, but it is not another word for meningitis or encephalitis, referring instead to "diseases of the mind due to shock [that] could not be attributed to primary disease of the brain".¹⁴ A more recent author wrote that the "illness appeared acutely following stress and was characterized by varying degrees of delirium, insanity, hysterical behavior, and in some cases fever ... [it] represents an acute reaction to stress and is psychiatric in nature, perhaps representing a transient situational disturbance or a brief reactive psychosis".¹⁸

The blanched soldier: pseudo- and genuine leprosy

"The Adventure of the Blanched Soldier" (1926) describes a British soldier in South Africa who accidentally slept for a night in a hospital for people with leprosy. He later notices blanching of his skin and fears he may have been infected, and thereafter lives in isolation. But it finally emerges that he never had leprosy, but rather "pseudo-leprosy", which is more treatable.

Leprosy is a chronic infectious disease that primarily affects the peripheral nerves and skin, and may lead to skin ulceration and physical deformities.¹⁹ Leprosy has been stigmatised throughout history despite being one of the least contagious infectious diseases;¹⁹ the chances of being infected by spending a night in a leprosy hospital are slim.

Patients with pseudo-leprosy, or ichthyosis (from the Greek for "fish") have prominent scales all over the body, usually large and centrally adherent, with loose edges.²⁰ Often

associated with atopy, ichthyosis vulgaris is also a manifestation of several syndromes.^{20,21} Leprosy and pseudo-leprosy can develop in the same person.²⁰

The adventure of the lion's mane: death by jellyfish

In “The Adventure of the Lion’s Mane” (1926), death is caused by *Cyanea capillata*, or lion’s mane jellyfish. The dermatological changes were precisely described: the “victim’s back was covered with dark red lines with angry wheals curved around his shoulder and ribs”.²² Unlike the Irukandji syndrome caused by an Australian jellyfish that can end in toxic heart failure,²³ contact with *Cyanea capillata* is usually not lethal, unless it elicits an allergic reaction or causes panic that leads to drowning.²⁴ The man who died in the Holmes story had “heart trouble following rheumatic fever”, and it is at least possible that he suffered toxic heart failure; the victim’s son, without any known heart problems, survived contact with the jellyfish.

Conclusion

Fictional as well as non-fictional medical references can be found throughout the Sherlock Holmes stories. Although the final story was published in 1927, the medical fascination with Sherlock Holmes persists even today. This brief overview shows that Doyle’s imagination was not restricted to creating illustrious characters, but could also imagine exotic poisonous roots, tropical diseases, and other medical curiosities.

Image source: Sidney Paget: “Holmes was working hard over a chemical investigation.” In: Doyle AC. Adventure of the naval treaty. *The Strand Magazine* (London) 1893; 6: 392–403.

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