

Syphilis: then and now

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Abstract

Getting to know the history of syphilis should begin with an attempt to establish the original source of its spread throughout the world. The dispute about the origin of syphilis, a sexually transmitted infection caused by *Treponema pallidum* (subspecies *pallidum*), had not been resolved even as late as in the twenty-first century, and to this day the supporters and opponents of the thesis that syphilis was brought to Europe by Christopher Columbus' sailors have been fighting without solid and sustainable foundations. The French named syphilis "the Neapolitan disease", while the Italians called it "the French disease".

Key words: syphilis, sexually transmitted infection, history.

Introduction

According to the definition from 1929, "Sexually transmitted diseases, also called venereal diseases (after Venus, the Roman goddess of love), shall be understood as genital diseases caused by a sexually transmitted infection". Currently, the term sexually transmitted diseases (STDs) is more frequently used. These diseases, more often defined as venereal diseases, result from behaviours influenced by socio-economic, psychological and cultural factors.

In 2018, 33,927 newly diagnosed cases of syphilis were reported in the 29 EU/EEA states, comprising 7.0 cases per 100,000 people in countries with a comprehensive surveillance system. The highest rates were noted in Malta, Luxembourg, the United Kingdom and Spain, 17.9, 17.1, 12.6 and 10.3 cases per 100,000 people, respectively. The lowest rates were observed in Croatia, Estonia, Italy, Portugal and Slovenia, with fewer than 3 cases per 100,000 people. The incidence rates of syphilis were nine times higher among men than among women, and the peak incidence was among those aged 25–34 years (29 cases per 100,000 people) [1].

The spectrum of sexually transmitted infections, apart from classic syphilis and gonorrhoea, encompasses a wide range of aerobic and anaerobic bacteria, viruses, protozoans, fungi and even insects.

Getting to know the history of syphilis should begin with an attempt to establish the original source of its spread throughout the world. As it has already been mentioned, *Treponema pallidum* is a Gram-negative bacteria. It does not absorb stain and therefore should be visualised using dark-field microscopy. Although its virulent factors have not been fully understood yet, we know that it enters the body through direct contact, e.g. abrasions in the skin or sexual contact, it reaches the nearest lymph nodes and spreads through the blood. The basic pathology of syphilis is vasculitis. The disease has been divided into several stages [2–4].

A primary lesion occurs at the site of spirochaete penetration 3–4 weeks after incubation as a hard infiltration which turns into an ulcer (*ulcus primarium*).

Ulcers are single, flat, shallow, round or oval, 0.5–1.5 cm in diameter with even edges, a slightly recessed even bottom, shiny surface (mucoïd secretion), and infiltrated base. Ulcer disappears, but it seems, that infiltrated base disappears.

It is most often located on the genitalia (female labia, posterior commissure, vaginal wall, cervix and male inner plate of prepuce, glans penis), as well as on the lips, tongue, buccal mucosa, anus and fingers. Enlarged lymph node regions are also observed for several weeks. They are hard, painless, without packages and necrosis, mobile relative to the substrate, with skin unchanged above [5].

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Secondary syphilis results from haematogenous dissemination of *T. pallidum*. It is characterised by severe bacteraemia, skin rash, and a rash on oral mucosa. Enlarged lymph nodes are also for a few months (large, hard, painless, without packages and conglutination, the skin remains unchanged). In the case of early second-stage syphilis, a macular rash occurs most often. There, skin eruptions (spots of similar size – from small to large and of the same round or oval shape) are observed evenly and symmetrically across the body, most often on the side of the torso and on the flexor side of the forearms. They disappear spontaneously after 2–3 weeks without peeling and without trace, or the disease recurs [6, 7].

Late syphilis (*lues tarda*) occurs a few years after infection, in untreated or insufficiently treated patients.

Another problem, more common in the past than today, is congenital syphilis. It is caused by a spirochete acquired by the foetus in the uterus before birth after the 16th week of pregnancy. Early congenital syphilis (*lues congenita recens*) is characterised by profuse rashes: macular (large, confluent and irregular patches, mainly on the buttocks, face, palms and soles), papular (scattered, most often on the face and buttocks), pustular and blistering (palms and feet, oozing erosions with an infiltrated base). In addition, there are infiltrated changes around natural orifices in the form of radial cracks, contributing to the formation of the so-called Parrot's scars, and dark red confluent infiltrates on the buttocks, palms and soles with a taut shiny surface, the so-called "Lacquered buttocks". However, the first symptom is usually coryza syphilitica as a consequence of ulceration of the nasal mucosa, contributing to respiratory and sucking disorders as the disease progresses. In the absence of treatment, there may be permanent bone deformation, the so-called "saddle nose". About 30% of infected children suffer from Parrot's palsy, which results in motor inertia of the upper limbs and contracture of the lower limbs. In addition, hepatosplenomegaly, hyperbilirubinemia, elevated liver tests and haemolytic anaemia are observed [4].

Late congenital syphilis (*lues congenita tarda*) is most commonly asymptomatic. About 20% of infected children develop interstitial keratitis (*keratitis parenchymatosa*) between the ages of 5 and 30, Hutchinson teeth; Parrot's scars around the mouth and anus; hearing impairment and mental retardation [8, 9].

It is worth mentioning that the spirochete *Treponema pallidum* was identified in 1905 by Fritz Richard Schaudinn and Paul Erich Hoffmann. On this basis, August von Wassermann developed the first serologic test for the diagnosis of syphilis (the Wassermann reaction test) [10].

The history of syphilis

Being aware of the consequences of the disease, we can delve into the past of syphilis, its appearance in Europe, and connections with Polish history. The dispute about the origin of this disease had not been resolved

even as late as in the twenty-first century, and to this day the supporters and opponents of the thesis that syphilis was brought by Christopher Columbus' sailors have been fighting without solid and sustainable foundations. It is likely that infected Indians were taken on board caravels, or sailors "spreading" to a new land were infected by beautiful, red-skinned women. Another idea, similar in time, talks about the army of Charles VIII and its impact on the spread of syphilis in Europe. On 1 September 1494, King Charles VIII of France invaded Italy with a multinational army composed mostly of mercenaries [10].

On the last day of the year, the French troops entered Rome, just abandoned by the Spanish and Italian troops. They remained there for almost a month, carousing and engaging in debauchery. In January, the changed army left for Naples, with loose manners and discipline, followed directly by a cohort of beggars and prostitutes. Naples was captured without a single shot fired, and the winners could indulge in the pleasures of another Italian city. Due to the lack of other permanent achievements, the French took away the seeds of Revival from the attacked lands. But there were also other seeds, much less pleasant, that Charles VIII's soldiers collected during their debaucherous revels – the seeds of a terrible and unknown disease, so unknown that it had no name. The French named syphilis "the Neapolitan disease", and the Italians called it "the French disease" [11, 12]. The first descriptions of the disease come from the Battle of Fornovo (1495). It was then that the military doctor, Cumane, reported what he observed: "many of the knights or infantry had spots on their faces and all over their bodies caused by the boiling of the four humours. Similar to millet grains, they usually appeared on the foreskin, on its inner surface, or on the glans, slightly itchy. Often, a single spot in the form of an innocent bubble appeared at first, but scratching it resulted in a penetrating ulcer. A few days later, the patients experienced incredible pain in their arms, legs and feet, as well as a sudden ejection of large spots [...] [present] for a year or longer if no treatment was applied" [13]. Another doctor, also taking part in the Battle of Fornovo, observed people who lost their eyes, noses, hands and feet as a result of the disease. In addition, when conducting an autopsy of a woman affected by the French disease, he found bone tuberosity. This is when this cruel disease began to be observed. At the end of the fifteenth century, the Spanish published the first extensive medical treatises on this issue, e.g. Marcel Morel's doctoral dissertation. Regardless of the country of origin, all the people writing about syphilis noticed its connection with the sexual act, which is why the first advice concerned abstinence and avoiding intercourse with infected women. Other pieces of advice were more practical. It was recommended to carefully wash the genitals with warm water or white wine after intercourse, and in the case of infection, also with herbal solutions, to sprinkle them with powder composed of,

among others, litharge (lead oxide), gold and cerussite (lead carbonate). Above all else, however, it was believed that the symptoms of the disease were divine punishment for sins, and one should not fight with it. Therefore, infected people were treated like those suffering from leprosy. They were isolated and hardly anyone wanted to have any contact with them.

Another way of dealing with syphilis by the then doctors was to remove ulcers by cauterisation. For this purpose, they used ointments containing mercury. In patients, the lesions were rubbed with ointment once or twice a day and the patients were locked in a steam bath at a very high temperature. The treatment lasted from 20 to 30 days and was so painful that most of the patients preferred death, all the more so because this barbaric procedure was effective for only one in one hundred patients.

The beginnings of “the Neapolitan disease” made all the Europeans terrified. After the description of the first cases, there came a time to name the disease. Syphilis appeared. Hieronymus Fracastorius was born in Verona in 1483. A colleague of Copernicus at the University of Padua where he studied medicine and philosophy at the same time, he was the author of many works. He died, famous and respected, in 1553 near his birthplace. His work “Syphilis sive morbus gallicus” (“Syphilis or the French Disease”) brought him fame. It was a long Latin poem telling the story of Syphilus, a shepherd who insulted the god of sun by knocking down his altars, for which he was punished with a venereal disease. The inhabitants of the surrounding villages named the disease “syphilis” in memory of the one who was first infected. The name, however, was not accepted in everyday life until the end of the eighteenth century [14, 15].

Over the centuries, syphilis appeared both in simple burgher houses and in the chambers of European kings and rulers. Since its occurrence was commonly associated with prostitution, the approaches to widespread worldwide prostitution changed. Thus, this “oldest profession in the world” was no longer treated with tolerance. There were orders to put prostitution under police supervision along with the obligation for women to undergo medical examination once a week. Despite all of this, the disease appeared in many forms, depending on geographical, weather and demographic conditions. The attempts to standardise legal regulations related to prostitution in France were undertaken in the twentieth century, e.g. by creating a decree of the Ministry of the Interior addressed to the prefects, confirming the regulation of prostitution (1940), and a law “for prevention and combating venereal diseases”, implementing, in particular, the obligation for doctors to report cases of venereal diseases to the health authorities (1942).

Syphilis affected so many people that it was impossible to mention their names. It was even more embarrassing among royal families than among lower classes. On

many occasions, for fear of infection, every person “entering” the bed of a ruler was examined and controlled for the signs of any disease. It was also the case that the rulers were infected by their lovers, and then, unaware, gave this quite an original “gift” to their spouses. In this way, syphilis had unlimited possibilities to spread among upper classes that were not using, at least officially, the services of women of easy virtue. For a long time, the infertility of monarchs was attributed to syphilis, however, as it was later scientifically proven, there was no direct link between these cases. Nevertheless, the fact is that a woman suffering from syphilis is much more likely to have a miscarriage or give birth to a dead baby.

The history of syphilis also has its influence and a rich collection of literature in Poland. A well-known medical historian, Kazimierz Lejman, wrote about it. The most extensive outline of syphilis was presented by Andrzej Stapiński in his book titled “Zwalczanie kiły i rzeżączki w Polsce” (“Fighting Syphilis and Gonorrhoea in Poland”).

The first records of “the Neapolitan disease” in Polish lands dated back to the early fifteenth or even fourteenth century and it is still under discussion today on the origin of syphilis from America. The speed of spreading the disease in Europe suggests that it was brought to Polish lands at the same time. Here it was called a court disease, but the ways of dealing with it proved that it also affected the common people. As early as in 1528, behind the city walls, a hospital for venereal patients was established in Krakow. It resembled today’s medical facilities in name only. The name isolation facilities would be more appropriate here. It was established in the fashion of a Paris institution of the same purpose. In the sixteenth century, like in Western Europe, treatment was based on rubbing mercury ointments. Due to the fact that it was expensive and folk healers and doctors had no experience, another way of dealing with the disease was invented. The naked patient was buried up to his neck in dung, which was to “pull out” the disease [16, 17]. When new isolation facilities where the disease was treated with the use of mercury appeared, this method was slowly abandoned, yet it survived until the eighteenth century [18, 19]. Such a facility was established in Warsaw in 1590 by the Jesuit Piotr Skarga. Syphilis was the subject of many medical dissertations, e.g. “Przymiot” (“Attribute”) by Wojciech Oczko. It explains the essence of the disease on the basis of the so-called humoral theory. It asserts that the human body consists of four humours: blood, phlegm, yellow bile and black bile, and their mutual balance is important for health. Any humoral disorder is the cause of many diseases. This is why syphilis was treated with blood drops at that time. There are no descriptions of syphilis in Poland from the seventeenth century. However, that does not mean that the problem was at least half solved. The descriptions from hospitals conducting 3-month treatment therapies for patients prove that syphilis survived and flourished in the eighteenth century. The nineteenth century brought another problem which was

difficult to solve – children with syphilis were born. Earlier live births with similar symptoms were probably not yet associated with this disease. These children were abandoned, and their number was so large that special wards were established in hospitals for them.

Changes resulting from invasions by oppressors to Polish lands did not have any significant impact on the history of syphilis. It developed freely, claiming more victims.

The life of the rulers of Polish lands was also not free from the risk of being infected with syphilis. The high probability of infection concerned Alexander Jagiellon (died in 1506), who led a very debaucherous lifestyle. Due to the uncertainty of the cause of his death, King Władysław IV Vasa was also thought to be infected with syphilis. The most famous example of syphilis among Polish rulers is still considered to be Marie de la Grange d'Arquien, Queen of Poland, known also by the diminutive form "Marysieńka". She was probably infected by her first husband, Jan Zamoyski. However, this did not prevent Jan Sobieski from loving her to death and writing letters to her, which became a masterpiece of erotic lyricism.

In Poland, as we can see, the history of "the Neapolitan disease" did not differ significantly from the place of its first reign. Each country has an episode in its history, and only the names of the infected people change.

Finally, it is worth taking a look at the current situation of syphilis since it will also be a part of our history 1 day. The incidence of syphilis, like of most sexually transmitted diseases, is increasing. Recent epidemiologic data show an average increase of 9000 cases per quarter. Serological tests, the best known of which is the Wassermann test (based on IgG class antibodies) [20] allow for early diagnosis of the disease. However, it should be borne in mind that the oldest test used to diagnose syphilis is VDRL. It was invented before World War I, with its first iteration developed by August Paul von Wasserman with the aid of Albert Neisser in 1906. The medication of choice is penicillin, which should be administered for 3 weeks to patients who have had syphilis for longer than a year. It was discovered in 1943, which has forever changed the fate of the patients. The methods presented earlier in the text were more often "punishment for sins" than for relief of suffering, and their final effect was not as good as expected. Mercury and guaiacum treatments were the two alternatives in the fifteenth and sixteenth century, and scientists were proving their effectiveness interchangeably. The historical significance of treating syphilis with Salvarsan ("the arsenic that saved") or compound 606 (the name derives from the 606th compound injected by Ehrlich into syphilis-infected rabbits in 1909) should also be emphasised. Due to its adverse effects, it was then withdrawn and replaced with Neosalvarsan or compound 914 (again after the number of injections into rabbits) [21].

Syphilis in the artistic context

When discussing the history of syphilis, the artistic context dating back to the sixth century must not be overlooked: a Peruvian jug depicted a mother suffering from syphilis, with a characteristic saddle nose and superior incisors with notches on their free margins.

In Europe, the German artist Albrecht Dürer depicted in 1496 the image of a mercenary whose skin bears multiple sores, and a text by a physician Theodorus Ulsenius warning against the new disease, also describing its signs and symptoms [22, 23]. An artwork by Sebastian Brandt also comes from the same year. It depicts the Virgin Mary and the Christ Child shooting light arrows to punish or heal those infected with syphilis [22, 24].

Other prominent pictures include those by Jacques Laniet from the seventeenth century, Luca Giordano, Sadeler [24] and a portrait of Gerard de Lairese painted by Rembrandt in the seventeenth century, clearly emphasising the effects of syphilis, namely the saddle nose [25].

"Inheritance" by the Norwegian painter Edvard Munch portrays a young crying mother holding a child with symptoms of syphilis.

The artwork "Les Demoiselles d'Avignon" by Pablo Picasso, originally called "The Wages of Sin", features a sailor among prostitutes, and a medical student holding a skull as a symbol of mortality.

The symptoms of syphilis are also present in Krakow works of art. Dermatologist and venereologist Franciszek Walter noticed the following skin lesions among probably fifteen-century-old inhabitants of Krakow, carved by Wit Stwoszcz with senile warts (*verruca senilis*), basal cell carcinoma (epithelioma), rosacea (in Walter: "rubella", *acne rosacea*), or varicose veins of the lower limbs (*varices extimitatum inferiorum*) [16, 26].

In 1932, Walter also noticed symptoms of congenital syphilis in "The Arrest of Jesus" scene in a figure called by Walter, a Pharisee with a huge wide and hairless square skull, with a huge convex forehead and clearly protruding frontal bumps (*tubera frontalia*). He noticed "eyes in deeply set eye sockets, with protruding bone rims", "exophthalmos (*exophthalmus*)", "convergent strabismus (*strabismus convergens*)", "there are eyebrows, but no eyelashes", "narrow and sunken upper lip due to lack of base bone", "much paler right pupil, blurred cornea pattern", and finally, what is most characteristic, "saddle nose" (in other words: "bulldog nose", "ram", "blunt", "binocular"). On the other hand, in the "Christ Among Scientists" scene, congenital syphilis can be seen in a scientist with a saddle nose. In the same year, Walter began collecting photographic documentation of his patients' tattoos, which may indicate Walter's interest in medicine, psychology, sociology or arts [16].

In the 14th-century basement of the building situated at Rynek Główny 23 in Krakow, a keystone with a face described as "negroid" or "perfect understanding of cari-

capture” has been preserved. Saint Peter’s nose with its characteristic “saddle nose” is also worth mentioning [16].

Summary

In this way syphilis created its own history and the map of Europe. It was a cruel yet extremely just “ruler” that affected both the poor and the rich. It influenced the number of offspring and, as one of many diseases, was recorded in the works of the scientists, writers and painters of the day. It was a part of life and our history, although more embarrassing than momentous events. However, this is not a reason to forget about its strong influence.

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Conflict of interest

The authors declare no conflict of interest.

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