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Vaccine 39 (2021) 3641–3643

Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Commentary

# Lessons from the 1656 Neapolitan Plague: Something to learn for the current coronavirus Pandemic?

Maurizio Bifulco [a,*], Simona Pisanti [b], Idamaria Fusco [c]

[a] Department of Molecular Medicine and Medical Biotechnologies, University of Naples "Federico II", Naples, Italy
[b] Department of Medicine, Surgery and Dentistry 'Scuola Medica Salernitana', University of Salerno, Salerno, Italy
[c] CNR-ISEM (Institute of History of Mediterranean Europe), Cagliari-Rome-Milan, Italy

ARTICLE INFO

*Article history:*
Received 18 April 2021
Received in revised form 16 May 2021
Accepted 17 May 2021
Available online 21 May 2021

*Keywords:*
History of vaccine
Plague
Epidemy
Prevention
Coronavirus
Covid-19

ABSTRACT

In the spring of 1656, an epidemic of bubonic plague suddenly fell on Naples, the capital of the Kingdom of the Two Sicilies. The epidemic had put a strain on the government authorities, forcing them to take sometimes drastic measures but, in most cases, scarcely decisive. The current health emergency caused by Covid-19 disease has many similarities with the epidemics of the past. Here we report the parallelism among plague and Covid-19 in several respects. Taking as a paradigm the plague epidemic of Naples of 1656, we can easily understand how history, showing us how past epidemics were managed and overcome, even with the intrinsic differences due to the limits of time and scientific progress, can still give us a useful lesson to face the present.



The current health emergency caused by coronavirus (SARS-Cov-2) pandemic reminds us of numerous plague and flu pandemics as well as of other terrible infectious diseases that have affected Europe, including Italy for centuries, instilling in each of us an atavistic fear.

In the past, extraordinary events, such as a plague's epidemics, have occurred quite frequently [1–4]. Just think of the Black Death in the Middle Ages [5,6] or the two plague outbreaks that spread in Italy in the seventeenth century [7–11]. Even Naples over the centuries has experienced the trauma of epidemics several times, from the plague of 1656 to the cholera of 1973, passing through a long sequence of typhus, yellow fever, smallpox, chickenpox, tuberculosis, "putrid fevers" and the "Spanish flu".

An epidemic of bubonic plague suddenly struck Naples in 1656, between the months of March and May, and then spread to Rome and Genoa as well as to other Southern Italian territories. Most likely, the disease arrived in Naples brought by a ship coming from Sardinia, where it was already raging from 1652 having caused, in only five years, about 200,000 deaths out of a total of 450,000 inhabitants. The frequent and deeply rooted commercial exchanges between Sardinia and Spain and the lack of adequate health checks in the port of Alghero had favored the arrival of the disease on the island, through a ship from Tarragona [12–14].

The plague, defined as "contagion" by ancient documents due to its rapid diffusion and the way it was used to spread, quickly disseminated throughout the city, as rulers minimized the danger and realized the contagious nature of the disease too late, failing to adopt adequate containment measures in due time [15].

At the beginning of the epidemic, the Neapolitan authorities were "uncertain" about how to deal with the problem. Indeed, no one was able to understand what was happening in the city. Deaths were initially thought to be caused by "contaminated" wheat or by "rank sargos and codfishes" (among the main foods in the diet of the people during the period of Lent, when it was forbidden to eat meat), which were in fact burned or thrown into the sea to prevent other deaths [14]. As deaths increased, rulers began to think of "poisonous powders" scattered by Spanish enemies in the streets and wells of the city, or even in the baptismal fonts. Some foreigners, in fact, were captured and executed as alleged spreaders of plague, also to appease the riots that, for fear of the disease, broke out in the city [14,16].

The physicians of the time stumbled around in the dark, proceeding by trial and error since they did not know the cause and the nature of the disease. The microbiological theory of infectious diseases was still a long way off and the causative agent of plague was discovered only in 1894 by the French bacteriologist

* Corresponding author.
*E-mail address:* maubiful@unina.it (M. Bifulco).

https://doi.org/10.1016/j.vaccine.2021.05.046
0264-410X/

Alexandre Yersin who isolated the bacterium named after him *Yersinia pestis*, during an outbreak of plague in China [17]. For these reasons all the classical medical remedies proposed by Neapolitan physicians in the 1656 plague outbreak, like bloodletting, purge, and poultices to expel noxious humors, were useless [18]. Furthermore, no one wanted to take the risk of reporting a plague epidemic to the competent authorities, since the consequences of such a scourge were extremely severe from a health, social and economic point of view. Giuseppe Bozzuto, doctor at the Annunziata Hospital in Naples, was the only one bold enough to speak of "contagion" from the beginning of the emergency, thus entering disagreement with the other doctors, accustomed to being more diplomatic and to "courting" the Neapolitan viceroy. For this reason, he was sent to prison, and then died because of the plague [13]. This story reminds us of Li Wenliang, the young Chinese doctor who first raised the awareness of an atypical outbreak in Wuhan of a disease very similar to severe acute respiratory syndrome (SARS). In those days that could have been instrumental in avoiding the spread of the epidemic with a timely intervention, his alarm was not only ignored but he was censored and even accused by the police of spreading false and alarmist news, and in the end, he died of Covid-19 disease [19].

In Naples, the whole society, both ordinary people and rulers, was terrified of the plague. The Neapolitan authorities tried to hide the truth to keep the inhabitants of the city under control and to ensure public order. Indeed, any rash reaction of people risked being more dangerous than the disease itself.

Furthermore, declaring the official status of the plague in Naples would have resulted in a forced lockdown of the city, thus blocking the supply of food and necessary goods as well as daily economic and commercial activities. Simply put, it meant starving people. So, was hunger better than the plague?

For these and other reasons, at the beginning there was not a total lockdown of the city, and the unwise decision not to completely isolate Naples, had the predictable result of favoring the spread of the disease in the city and outside it. And along with the plague, riots and deaths also spread to the streets, that crowded with corpses, making an already collapsing health situation even more difficult. As doctors and government officials responsible for maintaining public order were in short supply – most of them had died or fled to avoid getting sick –, slaves, prisoners and criminals were hired in exchange for the promise of future freedom. The city was devoid of officials and deputies accustomed to dealing with public health; in the worst moments, along with the daily activities, even the Neapolitan courts closed their doors [14].

Faced with a disease that had spread throughout Naples and was hard to eradicate, the authorities tried to adopt some emergency health measures that aimed at least to stem it. In addition, the sicks were isolated and quarantined in special places called "lazarettos". The origin of the term lazaretto can be attributed to the fusion of the words Lazarus, the leper who was resurrected by Jesus as narrated in the New Testament, and "nazaretto", from the name of the first quarantine station in Italy, the Venetian Lagoon little island 'Santa Maria of Nazareth'. The few doctors who had remained in Naples were forced to assist the sicks at their own risk, and to carry out the autopsies on infected bodies. The parish priests were asked to secretly report the number of deaths recorded to the authorities so as not to spread further panic among the inhabitants. It was also forbidden to ring the death bells, in order to not frighten people. City officials were told to help, street by street, people isolated in their own homes, which numbered 40,000 in early August [14].

However, although the Neapolitan authorities had asked the cardinal of the city to ban religious services, to avoid uncontrolled gatherings of infected people, processions and religious ceremonies continued to be carried out during the epidemic, undoubtedly becoming the main channels for spreading the plague, as happened before in other cities and countries during plague outbreaks [20]. Even the rulers often took part in religious ceremonies to please the religious authorities and try to allay people's fear. Unsurprisingly, the result of these dangerous actions was an increase in the number of infections [14]. Even today, exorcising the natural fear of illness and death through individual and collective prayer is strongly rooted in religious communities. Religious congregations, as every other form of social gathering, have been reported to have contributed to Covid-19 spreading, highlighting as fundamental preventive strategies during epidemics and pandemics, the practice of social distancing [21].

With the worsening of the health emergency in Naples, confusion grew rapidly among people, who began to obey less and less the orders given by the authorities. The health cordon, imposed around Naples to control people entering and leaving the city center without the necessary health certificates, was frequently violated. Certificates, a sort of green pass, were often falsified. Many plague victims avoided going to the lazarettos by subterfuge, and preferred to remain shut in their own homes, while others managed to escape from the lazarettos. At that point, rulers had completely lost control of the capital city [14]. During the current Covid-19 pandemic, with the uncontrollable increase in the number of infected, the tracking of positives by manual or digital methods has immediately manifested its limits. There are numerous cases that have been reported in every country of people, especially asymptomatic, who have evaded tracking to avoid being subjected to mandatory quarantine or who have continued to go to work and carry out their normal activities, contributing to further spread of the virus [22].

The plague reached its peak during the summer. Since then, the epidemic situation in the city began to improve. The few survivors were freed from the lazzarettos, and the homes and objects of the plague victims began to be decontaminated by fumigations and other methods. On December 8, on the occasion of the religious celebration of the Immaculate Conception, Naples was officially declared free from plague. The disease had left the capital city, but not the provinces of the kingdom, where it ended only two years later, at the end of 1658. The outbreak had caused an estimated 1,250,000 deaths across the whole kingdom. Death rates were much higher than Covid-19, ranging from 43 percent in the kingdom to around 50 percent in the capital [23].

The epidemic had really put the authorities to the test, forcing them to take sometimes stringent measures which in most cases proved ineffective. In fact, in the absence of adequate medical knowledge on the etiology of the plague as well as of valid treatments, preventing its spread (through lazarettos, sanitary cordons and quarantines) was the only way to fight it [24]. This remains the only effective way we still have today to prevent an unknown infectious disease before scientific research is able to provide an effective cure or a vaccine to prevent it.

As prevention was so important, the Neapolitan authorities should have adopted it very strictly and rigorously. However, other priorities prevailed, in Naples as elsewhere, then as now. Indeed, it was quite impossible to completely block people's movements, economic and social activities, with disastrous consequences for entire populations.

History keeps happening nowadays. The worldwide health emergency caused by coronavirus, as we have discussed above, shares many aspects with past plague epidemics. In fact, despite the obvious differences between the two diseases, the coronavirus now like the plague then, is still barely known from a medical point of view. It spreads with surprising rapidity forcing researchers and doctors to make a considerable collective effort to understand and definitively eradicate this pathology. At the same time the

authorities are called upon to try to prevent and predict the further spread of the epidemic by adopting drastic, albeit unpopular, isolation measures, rather than chasing after the virus.

In other words, given the lack of adequate medical remedies, prevention through isolation and quarantine is still the main way to tackle the new epidemics. Managing such a big health emergency is still an extremely difficult and complex task, today as in the past. It is not easy to suspend normal business activities as well as to prevent people from attending the customary worship and entertainment, convincing them to stay at home and do as much smart working as possible. However, even nowadays extraordinary, urgent, and rigorous measures must be taken and strictly observed, without exception, because otherwise a pandemic is likely to spread more and more.

Compared to the past, today we have scientific knowledges and tools that will surely allow us to manage and overcome the emergency in the shortest possible time. For example, today we have vaccines which did not exist in the past and this is not a matter of little consequence. Several effective vaccines against SARS-Cov-2 have been developed in a record time of less than a year. However, the coronavirus pandemic must be managed and governed by the authorities in a very similar way to plague, learning from the errors of the past.

The plague-coronavirus parallel that we have treated here, taking the Naples plague epidemic of 1656 as a paradigm helps us to understand that history, by showing us how past pandemics were managed, can still give us a useful lesson. As further evidence – if necessary! – of the fact that history, even if today so neglected, together with the other human sciences, still has a valuable lesson to teach. And confirming that history, and in particular the history of medicine, can still offer stimulating food for thought, and must necessarily dialogue with the so-called "hard-science" disciplines [25]. Finally, once again, it is always history that suggests that we must not despair: if the plague managed to be eradicated in the seventeenth century despite the poor hygienic, medical, and environmental conditions, we will be able to definitely overcome this pandemic as well.

## CRediT authorship contribution statement

**Maurizio Bifulco:** Conceptualization, Methodology, Investigation, Resources, Writing - original draft. **Simona Pisanti:** Methodology, Investigation, Resources, Writing - review & editing. **Idamaria Fusco:** Conceptualization, Methodology, Investigation, Resources, Writing - original draft.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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