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COVID-19: Patrimony of medieval-age physicians

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ABSTRACT

In the present scenario, the entire world is facing a crisis due to COVID-19 (Coronavirus disease of 2019) pandemic. It has affected severely and changed the normal course of development of almost every country in the world. The available health infrastructure of even developed countries has become inadequate to manage and control the pandemic. The knowledge of the tools and techniques applied to control and prevent the pandemic worldwide has been obtained from past experiences; almost all the adopted recommendations are based on the teaching of Greek–Arab physicians. It is the need of time to explore the bequest of medieval-age physicians. In this study, the authors reviewed the recommendations of a few famous medieval-age physicians to compile their application at the time of COVID-19.

Keywords: COVID-19, pandemic, Persian medicine, Unani medicine

BACKGROUND

Pneumonia of unknown etiology was reported by the Wuhan Municipal Health Commission to the World Health Organization, China Country Office on December 31, 2019 (1). Later, the initial cases were traced between December 08, 2019, and January 05, 2020, as patients with fever, cough, and dyspnea. Most patients were 40–69 years of age, with slight male predominance. The first death on January 11 and the second on January 16, 2020, were officially reported as due to COVID-19 (2). On January 30, WHO declared COVID-19 a public health emergency of international concern, and on March 11, 2020, it was declared a pandemic (3, 4). On May 4, 2023, the WHO Director-General announced that COVID-19 is an established and ongoing health issue that no longer constitutes a public health emergency of international concern (5).

The disease presentation is nonspecific; it varies from biochemically positive to severe pneumonia and death. The typical signs and symptoms are fever, dry cough, fatigue, expectoration, shortness of breath, sore throat, headache, myalgia or arthralgia, chill, nausea or vomiting, nasal congestion, diarrhea, hemoptysis, and conjunctival congestion (6). The transmission of COVID-19 is facilitated by unprotected exposure to the virus during close contact between people. The infection spreads through respiratory droplets and contact with contaminated fomite surfaces. Physical distancing measures aimed at interrupting transmission are adopted by almost every country to mitigate the disease impact. These measures are time-tested fundamental mechanisms to control the spread of infectious diseases, especially respiratory infections (7).

GLOBAL IMPACT

The epicenter of the ongoing COVID-19 pandemic was Wuhan, China. However, it spread all over the globe at an astonishing pace. This pandemic has severely devasted the human development index across the globe. The world has lost 6,935,889 lives (8). A large number of people have lost their employment, and the hunger spectrum has become more wide. This pandemic has proved that the health infrastructure in the world is inadequate to fight against COVID-19. This is much more than a health crisis. Now, it is a syndemic that spoils almost every sector of human well-being (9).

LESION FROM THE PAST

Evidence shows that the epidemic/pandemic has ravaged humanity throughout the history of human civilization, often changing the course of history. Archaeological and anthropological evidence shows a similar pattern of the epidemic from prehistoric to modern times of COVID-19. The outbreak of the epidemic happened so quickly that the best healthcare facilities available in that era failed. The tools and techniques being used for preventing and controlling COVID-19 are the lessons learned from the past. Preventive measures such as social distancing, quarantine, isolation, and proper personal hygiene practices are pivotal in preventing and controlling COVID-19.

The problem is global, and hence, solutions should be globally applicable. The legacy of the physicians of the medieval era has served humanity for more than thousands of years. They dealt with all the health problems including epidemics. The term "waba" was used for epidemic diseases. Most of the epidemic diseases spread through the inhalation of shared contaminated environmental air. Galen warned that living with patients affected by pestilence is dangerous because they exhale polluted air (10). Hence, the recommendations of Unani (Greek–Arab) physicians aimed to limit the spread of diseases. This recommendation can be broadly categorized into three types:

- Minimize exposure to pestilential air
- Purification of pestilential air
- Prophylactic treatment

Abū Bakr Muhammad ibn Zakariyyā al-Rāzī (860–925 AD) advised staying away from pestilential air during the epidemic. For this purpose, he advised them to retire to dry underground dwellings or stay in a room that is in the middle of the building. Besides this, he advised spraying vinegar and fumigation with the resin of loban (*Styrax benzoin*) and sad kofi (*Cyperus rotundus L.*). He recommended using vinegar frequently in diet and drinks (11).

Nuhul Qumari (died in 980 AD) described that the outbreak of epidemic diseases occurs due to the putrefaction of air. The cause is generalized for all, but the disease due to the inhalation of contaminated air depends upon the susceptibility of the body. During large-scale outbreaks, he advised staying home to prevent infection, spraying vinegar with water, and fumigating the house with sandal and oud (*Aquilaria agollocha*). He also recommended using vinegar and other sour fruit and food frequently (12).

Ibn Sina (980–1037 AD) advised retiring in an underground dwelling or caves or houses with enclosed walls all around; ventilation should be secured slowly during the time of "waba"/pandemic. He also recommended keeping the air warm and charging it with decomposition-preventing agents. He also suggested that the fumigation with sedge, frankincense, myrtle, rose, and sandalwood might be used to purify the air. Further, vinegar in diet and drinks may be used as a prophylactic measure (13).

Ibn Abbas Majoosi (930–994 AD) described that waba was caused by putrefied pestilential environmental air. This putrefaction of air was due to the decomposition of dead bodies or other organic substances. He advised escaping from the areas where environmental air was pestilential. If it was not possible, he suggested retiring to a building of high altitude. A safe distance from the patient with epidemic disease should be maintained; if any of the family members get infected, then the healthy person should stay at higher places compared with the patient to avoid the inhalation of pestilential air exhaled by the patient. The air of the houses should be charged with decomposition-preventing agents, such as fumigation with sandal and camphor and spraying of vinegar mixed in water. A cloth charged with myrtlee (*Myrtus communis*), rose, sandal, and camphor should be kept for the ventilation of houses. He also mentioned that the effect of pestilential air is not uniform. The person whose temperament is in accordance with the temperament of putrefied environmental air is more vulnerable. Similarly, pestilential air causes diseases easily in the body having an excess of morbid matter (corrupt humor). He advised avoiding the intake of high liquid-containing food, using vinegar frequently, not skipping meals, and taking easily digestible foods. He mentioned venesection and purgation for prophylaxis (14).

Ibn Zohar (1092–1162 AD) advised fumigation with the Tarfa (*Tamarix aphylla*) wood or Sandroos (*Tetraclinis articulata*). He suggested inhalation of vinegar mixed with rose water as well as oral use of vinegar for prophylaxis (15).

Ibn Hubal Baghdadi (1121–1213 AD) described that the inhalation of putrefied air increases the *Hararat* of the heart, resulting in the putrefaction of humors in the heart that spreads in the body through arteries and causes malignant fever called epidemic fever. For its treatment, he recommended the *Fasad* (venesection) and purgation for the excretion of putrefied morbid matter. He advised the oral intake of camphor, abe-anar turs (*Punica granatum*), and vinegar along with ice water. He also recommended taking barley water with sugar once in the morning and any sour liquid diet once a day. The leaf of musk willow (*Salix caprea*) and rose should be spread on the floor. He also advised to spray rose water, sandal, camphor, and vinegar. For the purification of air, he advised fumigation with saussurea (*Saussurea lappa*), olibanum (*Boswalia serrata*), myrrh (*Commiphora myrrh*), ambegris, clove (*Eugenia coryophyllata*), mastic (*Pistacia lentiscum*), calamus (*Acorus calamus*), savin berry (*Juniperus communis*), musk and wood (*Aquittaria agobocha*), or sandal and camphor. Rose water along with vinegar should be sprinkled in the house (16).

Ibn Rushd (1126–1198 AD) advocated regimes opposite to the temperament of putrefied environmental air. He advised to retire on the top floor of a multistory building during an epidemic. He recommended the intake of Armenian bole rubra and yellow chalk with vinegar for prophylaxis. He mentioned the use of 4 g powder of aloe (*Aloe barbadensis*), saffron (*Crocus sativus*), and myrrh (*Commiphora myrrha*) in a ratio of 1:2:1 with 35 g drink for prophylaxis. He advised to avoid eating fruits, meat, and fish during the epidemic (17).

DISCUSSION

None of the human civilizations has escaped an epidemic outbreak. Hippocrates is the founder of organized medicine; his era was extremely divested by the Athenian plague. Epidemic outbreaks always changed the normal course of history. Medical scholars of the respective era always performed their best to control the epidemic situation, but their efforts were insufficient most of the time. Hippocrates described the epidemic as a general disease because its cause is accidental and generalized for people of that particular area at that point in time (18). A person with good health is also not secure during an epidemic (19). Hippocrates described that pestilence is spread through shared food, drink, physical activity, air, or other things encountered by the body externally. However, most epidemic diseases are caused by inhaling shared pestilential environmental air (18). As preventive measures, he suggested breathing as little air as possible to minimize the inhalation of pestilential air and bring out the patient from the contaminated area. Galen warned about the danger of contact with the person affected by pestilence (10). At the time of pestilence, Cornelius Celsus advised sailing and traveling (19). Until the middle of the 19th century, epidemics were solely understood based on the miasma theory. The contribution of medieval-age physicians is of utmost importance in developing preventive techniques to control the spread of COVID-19. For epidemic disease conditions, the recommendations can be broadly categorized into three types:

1. **Minimize exposure to pestilential air:** For this purpose, all the medieval-age physicians advocated staying away from pestilential air. Rāzī and Ibn Sina recommended retiring to dry underground dwellings, whereas Majoosi and Rushd advised retiring to a building of high altitude. Majoosi recommended isolating the patient to limit the spread of the epidemic. The Bimaristan of Damascus was the first Islamic hospital, established by Ummayad Caliph Al-Walid bin Abdel Malik in 707 AD (88AH). Institutional quarantine was practiced in this hospital for patients with leprosy and skin diseases (20).
2. **Purification of pestilential air:** On a small scale (household), air purification was recommended by all the aforementioned scholars. They advised fumigating and spraying decomposition-preventing agents such as sedge, frankincense, myrtle, rose, sandal, rose, loban, camphor, vinegar, and so forth.
3. **Prophylactic treatment:** They advised venesection, purgation, and frequent use of vinegar for prophylaxis.

   Other than the aforementioned recommendations, they also advised a healthy diet, drink, and regime during the epidemic.

CONCLUSIONS

All the preventive techniques being used during COVID-19 are the lessons learned before the evolution of the germ theory of disease. The recommendation of medieval-age physicians covers prevention, prophylaxis, and treatment of epidemic diseases. They mentioned preventive measures for cutting the transmission line of causative agents to limit the spread of epidemics, which were adopted during the COVID-19 pandemic. The recommendations of medieval-age physicians are safe and effective in preventing or limiting the spread of the epidemic.

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