The legacy of John Snow

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John Snow is considered the father of modern epidemiology, as he was the first to seek an association between a water intake and the outbreak of cholera in the mid-19th century. This occurred at a time when the paradigm of spontaneous generation was in a deadly battle with emerging scientific medical knowledge.

Previously, the explanation for the simultaneous occurrence of cases of a disease was considered divine punishment, caused by having disobeyed the laws of the people where the event occurred. An example is described in the plagues suffered in Egypt, specifically the sixth plague, which unfolded according to the biblical text, as follows: “Take handfuls of ashes from the furnace, and let Moses cast them up to heaven in the presence of Pharaoh. The ashes will turn to dust and fall on all the land of Egypt, and throughout Egypt they will produce boils with sores on people and animals. (Exodus 9:8-9).” This description is reminiscent of cutaneous anthrax caused by Bacillus anthracis. However, it could also have been epidemic typhus caused by Rickettsia prowazecki, as there had previously been a plague of lice. However, historians have found no evidence of this occurrence.

It is evident that diseases affect all living species on Earth, in a constant dynamic for survival. Thus, we can go from an epiphytic to an epizootic, to become a zoonosis and later an epidemic. Even in human evolution, there is evidence of diseases such as tuberculosis that have accompanied human history, as demonstrated by the characteristic lesions found in a Homo erectus fossil. Genetic material from the hepatitis B virus has also been found in 7,000-year-old fossils, although it is unknown whether the transmission mechanism would be the same as it is today. However, the first description of an epidemic dates back to the 5th century BC. B.C., when Hippocrates accurately described simultaneous cases of mumps in the city of Thasos, and the term "epidemic" was also used for the first time for this event. Later, the first Antonine Plague was documented in 165 A.D. in Imperial Rome, possibly caused by smallpox. Four centuries later, the Plague of Justinian, which devastated the Byzantine Empire in the 5th century A.D., has been identified

as the first appearance of bubonic plague. Almost ten centuries later, in the 14th century A.D., the Black Death appeared in Europe, both caused by Yersinia pestis, wiping out nearly a third of the continent's population.

Until the mid-19th century, the approach to epidemics was purely descriptive; that is, only the clinical characteristics and, occasionally, the environmental or social conditions present at the time were recorded. However, in 1849, John Snow published the report on the cholera epidemic in London, and later, in 1954, he supplemented it with a detailed description of the event. This event marked a milestone in the way we view health phenomena in the population. The main change was the causal approach to the increase in disease. From then on, a new science was created that would later be known as epidemiology.

Several contributions were made to epidemiology, a science capable of serving as an expert on the health-disease process in the population. Initially, it was adopted by public health decision-makers and later by clinicians, relying on the evidence that epidemiology could provide.

During the first half of the 20th century, public health had established itself worldwide as a guarantor of a better quality of life for the population, always supported by epidemiological knowledge, which in turn served as a pillar of knowledge.

Epidemiology, as a basic science, requires specific scientific research methods and statistics. Essential elements for finding associations between risk factors and disease.

Currently, databases and statistical software are indispensable for epidemiological work; however, the basic principle is the causal relationship, which was rationally explored by John Snow more than a century and a half ago.

You can consult:

1.Snow J. Cholera and the Water Supply in the South Districts of London in 1854. J Public Health Sanit Rev. 1856 Oct;2(7):239-257. PMID: 30378891; PMCID: PMC6004154.

2.Paneth N, Fine P. The singular science of John Snow. Lancet. 2013 Apr 13;381(9874):1267-8. doi: 10.1016/s0140-6736(13)60829-6. PMID: 23589913.