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Mini Review

Epidemics in Ancient Imperial China – Myths, Facts and Lessons for Posterity

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Abstract

The recorded history of China spanned over 47 centuries. Since the beginning of the first century epidemics of each dynasty had been duly, if incompletely, recorded. This study is an attempt to review the epidemics recorded from the beginning of the first century A.D., when epidemic records first appeared as a regular entry, to the beginning of the 20th century which marked the end of the last dynasty in Imperial China. No attempt is made to stratify the types of individual infections as such scientific knowledge was lacking. Rather, epidemics are treated as one subject, in the broadest sense, of massive and highly contagious infections, occurring wave after wave, affecting society, culture, governments and the rise and fall of empires dynasties. Some of the materials had been used in a previous article in this Journal but reused out of necessity. Yet, every attempt has been made to minimize excessive repetition.

Keywords: Epidemics; ancient imperial china; myths; facts; lessons

Introduction

"Those that fail to learn from history are doomed to repeat it (Winston Churchill"

Since the beginning of Chinese history 4,700 years ago, there had been records of epidemics. The various terms disease, disease, scabies, carrying this meaning appeared on oracle bones and bronze ware inscriptions 4,000 years ago. Subsequent dynasties dutifully recorded major epidemics and this would be passed on in the official history. Apart from the dates most other details are lacking due to limitation of medical knowledge, and even the limited data left today may be inaccurate and incomplete. The following study is based on materials gathered from the official Twenty-five History of Chinese Dynasties, in 359 volumes, officially compiled by imperial historians of subsequent regimes [1]. The only history without imperial approval was that of the Qing Dynasty because subsequently China became a republic. This brief review attempts to go over the epidemics in the long history of this country and try to learn some lessons that should not be repeated.

Dynasty[2]	Dates[2]	Duration years[2]	No. of major epidemics	Remarks
Eastern Han (東漢)	25-219 A.D.	195	13	
Wei (魏)	220-264 A.D.	45	5	Confined to northern & central China
Wu (吳)	229-280 A.D.	52	5	Concurrent with Wei, confined to southern China
Jin (晉)	265-419 A.D.	155	7	From 312 A.D. confined to southern half of China
Early Zhao (前趙)	304-328 A.D.	25	2	Concurrent with Jin, confined to the north
Late Zhao (後趙)	319-351 A.D.	33	1	Concurrent with Jin, confined to the north
Early Qin (前秦)	351-394 A.D.	44	1	Concurrent with Jin, confined to the north
Cheng (成)	304-341 A.D.	38	1	Concurrent with Jin, confined to the west
North Wei (北魏)	386-557 A.D.	172	4 (+3 for cattle & horses)	Concurrent with the 4 Southern Dynasties

4 Southern Dynasties	420-589 A.D.	170	5	Confined to southern half of China
Sui (隋)	581-617 A.D.	37	2	
Tang(唐)	618-906 A.D.	289	8	
5 Dynasties	907-959 A.D.	53	4	Confined to central China
Song (宋)	952-1279 A.D.	320	6	From 1127 A.D. confined to southern half of China
Liao (遼)	916-1125 A.D.	210	2	Concurrent with Song, confined to northern China
Kim (金)	1115-1234 A.D.	120	2	Concurrent with Song, confined to northern China
Yuan (元)	1280-1368 A.D.	88	5	
Ming (明)	1368-1643 A.D.	276	15	8 epidemics occurred in the final 10 years
Qing (清)	1644-1911 A.D.	268	17	
Total Period	25-1911 A.D.	1886	105	Average frequency 1 epidemic per 17.9 years

Table: Epidemics throughout China's Dynasties from 25 A.D. to 1911 A.D.

Figure 1: *"All Things' True Origin", a panel written by Emperor Kangxi in 1692 and bestowed to a Catholic church in Beijing. In four words the Emperor depicted his understanding of God.*

(From Xuite (隨意窩) https://blog.xuite.net/scholastica0210/wretch/110159515)

As earlier records appear very incomplete, this study is limited to the period from the Latter Han Eastern Han Dynasty (beginning from 25 A.D.) to the Qing clear Dynasty (ending 1911 A.D.) [2] Even so, Chinese historians did not give the same attention to epidemics as wars, floods and famines. During this period of 1886 years, there were 105 major epidemics averaging once every 17.9 years. As incomplete reporting and recording is inevitable, the actual frequency should be higher and the intervals shorter. A recount, using only the periods of the two periods where the records seem more complete, shows the East Han Dynasty (25-219 A.D.) had an average of one epidemic every 15 years and the Qing Dynasty (1644-1911 A.D.) one every 15.8 years. Understandably, an average is not a reliable statistic figure and the deviation could be anything from zero (meaning continuation of the epidemic to the next year) up to decades. Remarkably more epidemics seems to cluster around the terminal years of a dynasty and turbulent times of civil wars and unrests. Still, it is interesting to note that the last SARS epidemic which started in November, 2002 [3], and the current COVID-19 which started in December, 2019, are separated by a surprisingly similar gap of 17 years.

Limitations, inaccuracy, missing information and misinformation

Statistical figures are often imprecise in history. Incidence and mortality are not given in exact figures. When an emperor was serious with his "Heavenly Mission" he would persecute any district officer for under-reporting any famine or epidemic. When the emperor was lax he might overlook an epidemic report altogether. When an emperor failed to preside over the imperial court and go through the reports the epidemics might go unattended and unrecorded. This happened twice in the Ming Dynasty when at least two emperors spent long years in retreat (for religious meditation or other reasons) resulting in what historians called "headless reigns".

Did historians hide the records of epidemics to promote the image of glory under the rule of the mighty emperors? We could find recordings of famines and epidemics even in the most celebrated golden periods during the Tang Don Dynasty (618-906 A.D.). In any case, the official history was always written by the historians of the next dynasty so that there should have been no fear of censorship. In general, any omission is likely due to loss of data or oversight rather than cover-up – a matter of missing information rather than misinformation.

Stories and Legends

According to ancient legend-based documents, two of the earliest Chinese rulers Huang Ti, literally meaning the Yellow Emperor (Yellow Emperor 2674-2575 B.C.) and Shennong meaning the Divine Farmer (Shennong 27th -26th century B.C.) were both great physicians. This was likely out of necessity because epidemics and illness were likely to have severely afflicted the people. To rule over the country, one must control the epidemics first. Shennong, the Divine Farmer was said to have tasted hundreds of plants and discovered their medicinal values. When the Yellow Emperor defeated him, he took over not only his land and people but also his medical knowledge. Aided by the invention of Chinese writing by one of his ministers, the Yellow Emperor compiled his "Classic of Internal Medicine", the first medical book in China. Armed with his medical knowledge and his other great invention, the compass, the Yellow Emperor marched into the mosquito and parasite infested South and built up a unified country. The Yellow Emperor is acknowledged as the father of Chinese traditional medicine and the common ancestor of the Yellow Race, not just by the Han Chinese but also in the legendary traditions of Huns, Turks, Tibetans and Koreans. Two of the Yellow

Emperor's descendants and successors died of unspecified illness while visiting the epidemic-prone South. Yu Shun (Yu Shun 2233-2184 B.C.) and his two wives toured the south as far as Wuzhou (Cangwu) in Guangxi (Guangxi) Province, caught an illness and died there. His two wives died on the way home, ostensibly from intense grief but more likely from the same infectious illness. His successor Hsiayu (Xia Yu Reg. 2183-2177 B.C.), having controlled the Great Floods of the time, held a grand assembly of feudal lords at Huiji (Kuaiji) south of the Yangtze River (Yangtze River), but fell ill and died at the end of the occasion.

Two thousand years later, in 49 A.D. the natives of "Five Streams Wuxi" in Hunan Hunan rebelled. One the most brilliant warriors in the Han Dynasty, Ma Yuan (Ma Yuan 14 B.C.-49 A.D.), offered to lead an expedition to that area. The Emperor was reluctant as Ma was already in his 60's. But no one else dared to brave the hazards of infectious diseases in the "Damp South". No one except General Ma who declared, "I would rather die in the battle front than in a comfortable bed amidst my wailing wife and children." And he died in the campaign, not killed by the enemy, but by the epidemic which decimated half of his men as well. The campaign's failure brought repercussions and his family was left unprovided. Their relatives not only turned their backs on them but actually started bullying them. His widow's health broke down and in spite of the devoted care of her three young daughters, eventually passed away. The Emperor heard of the plight of the orphans and received all three girls into the Palace. Eventually he arranged the youngest daughter, and reputedly the most virtuous, to marry his son. When the son succeeded to the throne, she became the Empress – and ended up as a most exemplary Empress in Chinese history.

Twelve centuries later, towards the end of the Mongolian Yuan Dynasty (Yuan 1260-1368 A.D.), a famine swept over China, followed by an epidemic, for which the inept government could find no solution. In the year 1344 A.D. a teenage Buddhist monk was sent out to beg for alms. On his way he was caught up by the epidemic and fell seriously ill. Two mysterious kind "Samaritans" came to his rescue and looked after him until he recovered. An enlightenment dawned upon him: this miserable world needed a different form of salvation from Buddhism. He returned to the monastery, submitted his resignation and raised an army to overthrow the Yuan Dynasty. He became the First Emperor of the Ming Dynasty.

Overcrowding, Starvation and Epidemics

As mentioned in the second paragraph (Incidence and Time Intervals) epidemics tend to cluster around the years immediately preceding the fall of dynasties and during times of unrest. It is tempting to infer that one contributes to the occurrence of the other, or that the two bear some bidirectional relationship.

The association of overcrowding, poor hygiene, floor, famine and war, hallmarks of natural or man-made calamity in connection with epidemics is amply illustrated in history. One of the best-known examples was the case of the Emperor of the Southern Liang Dynasty (Emperor Wu of Liang Reg. 502-549 A.D.), a brilliant warrior, scholar, poet and administrator. Towards the end of his long reign, he turned to Buddhism and indulged in merciful benevolence but was betrayed by a notorious fugitive warrior, Hou Jing (Hou Jing) from the North, to whom he kindly gave shelter. Soon, Hou justified his bad name by seizing control of the army and laid siege to the capitol. Within the city, starvation and epidemic struck and thousands of people died, including the emperor and his prime minister. Eight centuries later, similar tragedies occurred in various cities in China and Europe when Genghis Khan and his sons went on their trans-continental warpath and conquest. In fact, epidemics persisted for several centuries in Europe as the Black Death.

How Epidemics interacted with War and Destiny

Two great epidemics afflicted the end of the Han Dynasty. In 208 A.D., Cao Cao (Cao Cao), the Prime Chancellor, and de facto Head of State, led a large army of some 800,000 men to try to subdue the war lords in the south. He was stopped at Hsiakau（Xiakou）, later renamed Wuchang（Wuchang）along the Yangtze River by the combined forces of Liao Pei Liu Bei (a distant cousin of the Emperor) and Sun Quan Sun Quan, the most powerful ward lord in the south. While the latter managed to burn the fleet of the northerners, their combined land forces were hopelessly outnumbered. But an epidemic broke out which seemed to selectively affect the northern army contributing to their defeat. For the next half century, China was doomed to a tripartition by these three families, Cao, Liao and Suen. Today, Wuchang becomes the southern part of the Wuhan composite City Wuhan, a major industrial center of China and the epicenter of early COVID-19.

Nine years later, in 217 A.D., (notice the short gap) another epidemic swept over the country, killing over half the population, including five of the seven top scholars of the time. The other two died earlier, one being executed by Cao for writing an anti-government thesis opposing the ban on alcohol, the other died of an unknown cause. The literary vacuum was filled by Cao himself and his two sons, the elder finally usurped the throne and ended the Han Chinese Dynasty. An overall negative impact fell over the remaining scholars who disapproved the usurpation and turned their backs on the Cao's "Imperially authored Literature". They resorted to the practice of non-committal abstract discussions called "Clear Dialogues (talk)". That meant they restricted themselves to empty talks with little commitments so as to stay out of trouble. (Clear Dialogues, or more appropriately "Abstract Discussions", form a rather unique part of Chinese heritage. As the name implies, it is a collection of empty talks, with no overt purpose or direction, rather negative or unproductive, but containing certain flavors in life or philosophic elements, even wisdom or humor, and certainly a breakaway from traditional Confucian restrains to return to Nature.) During one of the epidemics, an ardent proponent of "Clear Dialogues" fell critically ill but refused all medical treatment on the grounds that he should follow Nature's plan for a man to live, to fall sick and to die. In his case, Nature's plan went the other way and he eventually recovered.

After forty years, Cao's Wei (Wei) Dynasty was replaced by the Sima (Sima) family. Sima Zhao (Sima Zhao) who master-minded the usurpation for his son to ascend to the throne, sounded a warning, "The Southern Land is damp, invariably epidemics will arise." His son took this advice very seriously and for a long time did not attempt to conquer the South. China remained divided until a tyrant came to seize power in the South and created much chaos that devastated his own defense. The Sima Emperor seized the opportunity and unified China.

In the next two and a half centuries, the barbarians overran the northern half of China, while the mainstream Han people fled and preserved their civilization in the South, protected by the Yangtse River and its tributary, the Han River (Han River). Once again, epidemics seemed to pick on the northern invaders and contributed to the defense of the South. Northern horsemen were unfamiliar with warfare on a huge river as well as the infections rampant along its banks. Many south-bound campaigns by the Huns (Huns), were thwarted by epidemics. As a typical example, in 499 A.D., the king of North Wei (Northern Wei Dynasty) marched a large army as far south as the Han river (Han River), where his army was struck

by an epidemic. He stubbornly continued his campaign marching further to the east; but the epidemic followed him until he died of the infection himself.

In 926 A.D., the first king of the Liao (Liao) Dynasty, comprising northern Chinese nomads, was planning to march south and conquer all China. With his mighty army of skillful horsemen this was deemed feasible but he needed information on the southern geographic hurdles and the strength of the defense force. An envoy was sent from the southern central Chinese government to him to express goodwill and to consolidate further peace arrangement. The Liao monarch was well versed in Chinese classics. He pretended he was friendly and enticed the envoy to an intimate discussion, extracting much needed data on the military strength, the natural barriers of the terrain and the strategic strongholds. Apparently, he won the full trust of the envoy and after a long talk at close distance, because no translator was needed, the encounter ended amicably. Unknown to both parties was the fact that an epidemic was rife in central China and this envoy could have been an asymptomatic carrier. Three days later, the Liao king developed chills and high fever and died after a short illness. The south-bound invasion was aborted.

Twenty years later, the second king of Liao raised an army, marched south and overran Central China, realizing the dream of his father. By this time, Central China's army was so devastated by another epidemic that, after two bitter battles, they could not offer further resistance and surrender. The triumphant king of Liao, entered the Chinese capitol and declared himself Emperor of all China. But his victory was short-lived. Within a few months his men were thoroughly demoralized by the unaccustomed warm and humid climate, the predominantly cereal and vegetable food supply and, above all, the raging deadly infection. The entire army of northern invaders decided to retreat back to the north. The decision came too late. After a brief spell of chills and fever on his homeward journey, the new "Emperor of China" met the same fate as his father.

In 1259 A.D. history repeated itself. The 4th Grand Khan of the Mongolian Empire, Mungo, led an army south to conquer China. He was met with stiff resistance and an epidemic swept through his camp, many Mongolians died including Mungo himself. Mongolian history recorded that he died of dysentery, but the Chinese version said he died from an arrow shot from the defenders. Whatever it was, infection or arrow, it delayed the conquest of China for another sixteen years. It also saved Europe and the Middle East from the Mongolians, because all their princes and their armies rushed back to Mongolia to fight over the succession, and the tide of Mongolian conquest was irreversibly turned back.

As for China, luck with "epidemic protection" ran out towards the end of the Ming Dynasty (1368-1643 A.D.) During the last ten years of the regime two massive organized bandits numbering over hundreds of thousands swept through the country and as many as eight major epidemics ravaged the land. The pathogens seemed to selectively affect the emperor's forces often disabling an entire army, and contributed substantially to the downfall of the Dynasty.

The powerful Manchurian Qing Dynasty (1644-1911 A.D.), already well-established in the north, now moved south to taken over the country. They met with the same problems as the Liao Dynasty seven centuries earlier, as the ravaging epidemic did not spare the new comers. Many Manchurians including their princes and designated successors to the throne fell victim and perished. By now enough data was gathered to identify the cause as small pox. Rather than retreating back to the north, the Manchurians devised a primitive, if ruthless, method of immunization by exposing the young princes to small pox patients. Only those who developed the pox and survived could be groomed to succeed high posts including the imperial throne. This scheme of natural immunization, was effective at the cost of substantial risk to the lives of recipients. But it enabled the Manchurian to stay as masters over all China.

Kangxi (Reg. 1662-1722 A.D.), one of the greatest Qing emperors, in fact one of the greatest among all Chinese emperors in history, was a typical survivor of small pox exposure. Later in his life he contracted a different but equally morbid illness for which his imperial court physicians could find no remedy. A Jesuit missionary diagnosed malaria which he probably contracted during one of his tours to the south. An extract from a South American tree (quinine) was administered and the emperor recovered. To express his gratitude the emperor gave special prestige to the Jesuit missionaries and they were protected even during religious prosecutions. Today, many Catholic churches in Mainland China still display the emperor's handwritten Biblical message. (Figure 1)

Epidemics beyond humans

The sequential occurrence of epidemics from silk worms to cattle and finally humans had been mentioned in a previous article [4]. In this respect, the records of the northern nomads seemed to pay more attention to domestic animals. Thus, an epidemic of silk worms, one of horses and camels and two of cattle were recorded in the North Wei Dynasty (see Table 1). Today the current transmission of the delta variant of SARS-CoV2 by hamsters imported from Europe to Hong Kong, infecting pet shop staff and pet owners, reminds us of the potential bi-directional transmission of pathogens between humans and domestic animals [6].

Role of Emperors in Epidemics

Most Chinese Emperors were quite positive in handling epidemics. The resolute policy to control epidemics by the emperors in the Han Dynasty (206 B.C.-219 A.D.) has been described in a previous article and will not be repeated here [4].

Fast forward six centuries and we come to the golden periods of early Tang Don Dynasty. An epidemic flared up, this time not in the "Damp South" but all the way along the Yellow River Basin, the heart land of China. The second, and by far the mightiest, Emperor of the Tang Dynasty (Tang Taizong Reg. 627-649A.D.) made a cut and dry response, "Order physicians and bring medicines to control it." As a strong autocratic ruler, the Tang Emperor was able to react swiftly and effectively to epidemics because he had built in each provincial district a medical team always ready to respond to such crisis. Two centuries later, one of his descendants, Wenzong (Tang Wenzong Reg. 827-840A.D.), gave more explicit details in an anti-epidemic decree, "For those afflicted families, if the members all died, let the government provide the burial. For those families with survivors, reduce their tax burden according to their losses. For areas with epidemics still raging, let government provide medical support." A century later, the war-torn Tang Dynasty was replaced by the Second Liang Dynasty (back beam 907-923 A.D.) founded by a robber turned warlord, the First Liang Emperor, Zhu Wen (Zhu Wen), who had killed thousands of people on his way to the throne, including the last two Emperors of the Tang Dynasty. In spite of being a notorious tyrant, as head of an impoverished country facing a deadly epidemic, he did try his best to face the crisis and ordered, "Where the epidemics ravaged, seek out remedial (herbal) formulas and post them on cross-roads." Such a practice of open-mindedly seeking, sharing and publicizing anti-epidemic remedies (without claiming intellectual property and profit) remained a Chinese tradition to this day.

Role of Ancient Physicians in Epidemics

Due to limited knowledge of the time, ancient physicians could contribute little to the diagnosis, treatment, prevention and control of epidemics. But they certainly put up enormous efforts and sacrifice including risking their own lives. Zhang Zhongjing (Zhang Zhongjing 150－219A.D.) was an outstanding example. He gave a vivid description of the epidemic in 217 A.D. that swept over the country and killed more than half the population. Of his extended family, numbering more than 200 members, less than one third survived. He was the governor of Changsha Governor of Changsha, but spent all his off-duty hours attending to patients (converting his gubernacular office into a clinic). Finally, he resigned and took up full time medical practice. He died two years later, likely from the infection he tried to control or from shear exhaustion. He crystallized his experience in his book, "A Treatise on Miscellaneous Chills and Fever (Treatise on Febrile and Miscellaneous Diseases)," which remained a classic to this day among practitioners of traditional Chinese medicine in China, Korea and Japan.

Summary: Lessons from the Past, Models applicable to the Future

Cyclical Recurrence

Since ancient times epidemics occurred separated by gaps when either the population became immune to the infectious agent and/or environmental factors arose that discouraged the spread of such infections. The present review showed that the average gap between major epidemics in China was 17.9 years which might imply the average time taken for pathogens to evolve to break through the naturally acquired immunity of the human population. Interestingly, the gap between the present new CoVid-19 pandemic and that of the previous SARS epidemic is also 17 years. More research is needed to verify if this is a mere coincidence or some true cyclical phenomenon.

Routes of Transportation and Trajectory of Spreading

The ancient epidemics seemed to spread along the great rivers, which were the major traffic routes of the time, and they took months to spread over the country.[4] However, the pneumonic plague in 1910 spread in a matter of days to cover the entire region of Manchuria. This was ascribed to the newly completed Manchurian railway network.[5] With the extensive air travel network today, the infectious agents spread in all directions, going faster and farther than ever. The virus and bacteria seem to take great advantage of our progress, more than we can against them. After all these years, with all the advances in microbiology, epidemiology and precision molecular medicine, we are still unable to promptly and effectively mount a defense and eliminate this new virus.

Simple Effective non-Pharmacological Measures of Epidemic Control

So far, the time-honored effective measures seem to be 'isolation and containment', a method advocated by a nine-year old Chinese Emperor over two thousand years ago.[4] To this may be added the face mask introduced more recently by Dr. Wu Lien-Teh (Ngoh Lean Tuck), which effectively helped to break the transmission of the highly lethal pneumonic plague of 1910 as mentioned in a previous article.[4] It might be added that introduction of the facial mask was also met with furious objection, particularly by the upper class including the European physician in charge of the anti-plague medical team.[5] Today, Western communities are still hesitant to adopt this simple model of masking, isolation and containment to resolve the problem. It appears that mask resistance is a common problem, transcending racial, geographical and temporal differences. Back in the days of pneumonic plague, mask refusal did not present with too much problem as those who refused to wear masks soon caught the lethal infection and were eliminated. It is sincerely hoped that we would not need such a deadly message to persuade people to wear masks today.

Zeal versus hesitance to acquire active immunity

The Manchurian royalty were so keen to acquire active immunity against small pox that they were prepared to risk their lives with exposure to the actual infection. Such resolute courage may be an important ingredient to enable them to build one of the greatest empires in China's history. This is in stark contrast to the present-day vaccine sceptics who resist the much safer and more effective modern vaccines. The experience of the Manchurians is a lesson well worth our attention.

Bidirectional interaction between epidemics and society stability and destiny

Historically, society could be destabilized by epidemics and vice versa. Epidemics often served as an aggravating factor to tyranny, famines, wars, rebellions and/or invasions to cause the downfall of dynasties. Control of epidemics is not just a health problem, it is also a social issue interwoven with the stability of a regime. As this pandemic drags on to its third year we are seeing more protests and social unrest. From anti-mask, anti-lockdown and anti-vaccine protests, the sentiments started to escalate to anti-government and anti-establishment levels. There is urgency to control this pandemic beyond medical and health considerations.

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