The Miasma Epidemic of 1018 and the Medical Policies of the Goryeo Dynasty

Lee Hyun-sook

This paper focuses on the miasma epidemic of 1018. Information about this miasma epidemic was recorded in *Goryeosa* and proves that the Goryeo people understood the nature of this new epidemic. Goryeo developed its medical care system in response to this miasma epidemic. It sent physicians and medicaments to the capital and established provincial pharmacies. Since Goryeo specifically named the disease rather than simply refer to it as an epidemic, we can infer that there had been an improvement in the recognition of epidemics. While there is no definitive way to say where the miasma epidemic began, it likely came by land from Khitan or by sea with the delegates and traders from Song. In 1020, Goryeo requested a new Chinese medical text from Song China and tried to adopt Song medicine. Thus this new epidemic stimulated the development of medicine in the Goryeo dynasty.

Keywords: epidemic, miasma epidemic, Hyeonjong, Goryeo dynasty

1. Introduction

Between the tenth and fifteenth centuries, the relationship between East Asian countries, such as the northern dynasties (Khitan 契丹, Jurchen 女眞, and Mongol 蒙古), Song China and Korea, became tense. Also at this time epidemics were spreading across different regions in East Asia. The risk of becoming infected was high due to the increased contact of people across state boundaries.

How were epidemics recorded during the Goryeo dynasty? *Samguk sagi*, from 1145, applied the terms *jil-yeok* (疾疫) and *yeok* (疫) to the descriptions of

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epidemics which broke out during the Goguryeo, Baekje, and Silla dynasties (Miki 1962). *Goryeosa*, published in 1451, recorded the epidemics with almost identical description with what appeared in *Samguk sagi*. Only twenty official records about Goryeo epidemics have been found (Kim 1966). Considering that the Goryeo dynasty lasted for 474 years, from 918 to 1392, the number of remaining records is small.[1]

This paper focuses on the miasma epidemic of 1018 and the medical policies of the Goryeo dynasty. *Goryeosa* identified the outbreak of two epidemics. The first one and the focus of this paper was the miasma epidemic (瘴疫 *jang-yeok*) which broke out in the capital city of Kaekyeong (開京) in early summer of 1018 and the other was *on-yeok* (瘟疫 fever epidemic) which broke out in 1110.

2. Epidemic Diseases and Medical Policies in Early Goryeo

It seems that most epidemics were eruptive diseases in the early Goryeo period. For example, Kyeongjong (955-981) died of an eruptive disease in 981 at 27 years of age. His testament stated that his disease originated from the stress of governing (Lee 2007), which was a typical statement found in the testaments of kings. What we should focus on is the fact that Kyeongjong specified *jiljin* (疾疹 eruptive disease) as the name of his disease. *Jiljin* was also the cause of death of the Silla king Seondeok in 785, after only six years of reigning (*Samguk sagi* Seondeok 6th year 1st month). In 857 another Silla king, Munseong (r 839~857), died twenty days after *jiljin* erupted (*Samguk sagi* Munseong 19th year 9th month).

Typical eruptive epidemics are smallpox, measles, scarlet fever, and eruptive typhus (Miki 1962:23). These contagious diseases spread easily, and not only the kings of Unified Silla, but also aristocrats and many commoners died of these diseases at that time. In Silla and Japan smallpox seems to have been the most prevalent disease from the eighth to the ninth century (Lee 2003:231-2). The existence of eruptive diseases had not been confirmed during the reign of Kyeongjong.[2] Even though he lived in a palace, was isolated from the mundane

1. Kim 1988. I have discovered thirteen new cases through my recent research of tomb inscriptions and the literati anthologies of the Goryeo dynasty (Lee 2007).
2. *Hyang yak kugup pang* (鄕藥救急方), published in late Goryeo, refers to eruptive diseases in the chapter "Various Childhood Diseases." This could well be a reference to small pox and it might have become a common children's disease (Kiple 1995:390-1).

world and had the best medical care, the king died from an epidemic disease in his twenties. And it is likely that many people around Kyeongjong also died or suffered from the same disease (Lee 2008).

In 991, an epidemic spread from P'yŏngyang, the capital of the northwestern prefecture. At that time Seongjong (成宗 r 981-997) made an inspection of the western region and offered relief to victims who lived in the prefectures and counties through which he passed *(Goryeosa jeoryo* Seongjong 10th year 10th month). He exempted people who were forced to neglect their crops because of the epidemic from paying taxes, gave medicine to those who became disabled because of the disease, and gave special presents to those over 80. Seongjong's behavior followed the practice of most kings of pre-modern East Asia; this was the custom when epidemics broke out (Kim 1988).

During Hyeonjong's reign, an epidemic broke out in the summer of 1018 and the winter of 1030. It seems that the epidemics of 1018 and 1030 were not the same disease. Hyeonjong's reign started with a Khitan invasion, and during his reign there were two wars on the Korean Peninsula with the Khitan. These wars impoverished Goryeo and spread epidemic disease (Lee 2007).

What policies were adopted to cope with the epidemics? During the Unified Silla, there were two policies. The first was the ruler prayed to Heaven through a religious ceremony and built many *Bhaisajyaguru* (藥師佛) statues to offer the prayers. The second was that the government developed folk remedies and published medical books (Lee 2003:234-52). But when it came to the Goryeo dynasty, providing medical remedies was the primary policy to deal with an epidemic even though it was quite limited (Lee 2007).

When Taejo Wangkeon (王建 877-943) took the throne in 918, he established a national medical school in Seokyeong (present day P'yŏngyang). Kaekyeong, the capital city, already had a medical school which produced many doctors, but the northwest region needed medical professionals to take care of public health (Kim 1966). Two medical schools were not enough to satisfy the health needs of the Goryeo people. In 987, Seongjong, who recognized the importance of medical care and wanted to develop medical experts for local regions, dispatched medical professors to twelve prefectures and had them teach medical apprentices. He created the twelve medical bases so that more people could get medical care. Seongjong also instituted a regulation that the officers above the fifth rank of civil officer (文官) and above the fourth rank of military officer (武官) could receive medical care from an official physician (官醫). This system had existed since the Tang (唐) dynasty, but it appears that it was introduced following the

Unified Silla period (Lee 2007). Beginning with the Goryeo dynasty the medical insurance system for high ranking government officers changed.

When an epidemic broke out, the poor were the hardest hit in terms of numbers. Their poor environment and malnutrition made them easy victims of an epidemic. As more corpses covered the streets, the easier the disease spread. Thus, the aristocracy recognized epidemics as a big threat to their health. Hence, providing medical care for the poor became a concern for the Goryeo dynasty. During the reign of Gwangjong (光宗 925~975), *jewibo* (濟危寶 relief fund) was established to provide food, clothing, and medicine to the poor. There was also Dongseo-Daebiwon (東西大悲院 east-west medical offices) that provided the poor with medical care and accommodation in the east and west of the capital. They must have been established before 1036 because there is a record of repairs to the west medical office in 1036.

3. Outbreak of the Miasma Epidemic in 1018

While records on epidemics generally did not specify the kind of epidemic, the epidemic which broke out in 1018 was identified as a miasma epidemic (Lee 2008). An miasma epidemic was largely conceived as a disease originating from contact with toxic fog from the forest miasma (山林瘴氣) during the spring and autumn in southern China. Miasma means virulent humid air. When it affected the body and disease broke out, it was referred to as a miasma. The southern region of China has a high temperature and high humidity climate. Hence, epidemics there were called miasma epidemics.

Even in Western countries, miasmas formed in valleys or swamps were believed to be the cause of epidemics before germ theory was discovered.[3] With the introduction of western European medical science to East Asia, Japanese scholars translated miasma as zhàngqì (瘴氣). Medical scholars of Asia and

3. The classical concept of the Western etiology of epidemic disease involves three factors. First is the atmosphere's epidemic constitution. This is associated with climate and season; with miasma arising from the putrefaction of dead bodies, filthy living conditions, and swamps; and to some degree with astronomical phenomena such as the rising of the Sirius. The second factor was individual predisposition and the third factor was contagion. These were to dominate scientific thinking till the time of Pasteur. For more than sixteen hundred years the history of epidemiology was the story of a shifting emphasis on these three basic conceptions (Winslow 1971:73-4).

Europe both believed at that time that stagnant and accumulated virulent humid air produced toxins.[4] In fact, miasma is a broad term encompassing various endemic and infectious diseases of the southern region of China. Miasma diseases include the common cold, malaria, and sunstroke (Mou and Wang 2003:13).

According to *Goryeosa,* "On the *kyeong-o* (庚午) day of the fourth month, after four days of yellow fog, a miasma epidemic had spread throughout the capital city. The king sent official doctors to treat numerous sufferers" (Hyeonjong 9th year 4th month).[5] The yellow fog was described as the cause of the miasma epidemic and is likely the yellow dust from China (Kim 1985). *Goryeosa* specified the name of the epidemic as a miasma epidemic, and the reason for giving a specified name for the disease lies in the fact that they knew what the disease was.

Is it true that the miasma epidemic spread after only four days of yellow fog as *Goryeosa* suggests? It is likely that the miasma epidemic had already spread to Kaekyeong. If you examine *Goryeosa* before the miasma outbreak, you can find that there was a serious famine resulting in numerous deaths from starvation during the reign of Hyeonjong. In the third month of 1018 there were so many corpses and skulls on the roads in the Gyeonggi (京畿) district that government officials buried them (*Goryeosa* Hyeonjong 9th year).

In a pre-modern society, farming is very vulnerable to natural disasters and these floods and droughts directly cause famines. Famines were also the cause of malnutrition and weak immune systems (McNeill 1976). Therefore, most epidemics in pre-modern society occurred as part of a vicious circle of bad weather > bad harvest > famine > disease. And while some people died from starvation, others died from the epidemic.

The miasma epidemic of 1018 followed this pattern. In 1016, two years before the miasma epidemic broke out, there was famine in the southern district of Goryeo. The government gave relief rice to the poor. In 1017 the worsening food situation made the government relief give priority to the people of the capital. Despite all the relief efforts, many people died from starvation in 1018, the 9th year of Hyeonjong's reign. Too many people died at the same time to be

4. Shin, Kim, and Yeo 1999:543. Miasma theory was an important concept in the etiology of the east and the west.

5. Young Queen Wonjeong (元貞王后) died at that time. Although there was no record of the cause of her death, she may have been one of the many victims of the miasma epidemic.

buried. If all members of a family died at the same time or were too poor to hold a funeral, the corpses became prey for animals or decomposed until the skull was visible. A miasma epidemic also broke out in the suburbs of the capital in the fourth month (Lee 2007).

When discussing Korean epidemics we must also consider Chinese epidemics since many Korean epidemics spread from China. In Xīliángfǔ (西凉府) of Gānsù (甘肅) province, an epidemic broke out in 1006 and a miasma epidemic also spread in 1010.[6] Xīliángfǔ was the southern part of Tanguts (西夏 XīXià 1032-1227). In the early eleventh century, the Mìnuò tribe (覓諾族) was almost independent and sent their own delegates to Song. But in 1009, Khitan conquered and seized control of Gānzhōu (甘州) for a while (Grousset 1998:208-9). Thus, there is a possibility the miasma epidemic was spread to Khitan from the Mìnuò tribe.

In 1015 miasma spread throughout Róngzhōu (戎州), Lúzhōu (瀘州), Fùshùnjiàn (富順監), and the prefecture of Sìchuān (四川) and produced many deaths (Deng 2006:92). Zhēnzōng (眞宗) of the Song dynasty sent the new medical text *Shènghuìfang* (聖惠方) to assist in the medical care in Xīliángfǔ and Sìchuān. It had 100 volumes that were published in 992. From the eighth to the eighteenth volume, there were many remedies to cure epidemic diseases like *shānghán* (傷寒), *shíqī* (時期), and fever (熱病) (Hong 1984:152). It had a special section on miasma epidemics as well. It might be the main reason why whenever a miasma epidemic broke out in Xīliángfǔ and Sìchuān Zhēnzōng gave *Shènghuìfang* to them (Lee 2008).

Not only were those districts subject to many epidemics but epidemics also broke out among soldiers involved in the war. The epidemic spread from soldiers dispatched to suppress the Chénjìn (陳進) riot. During the reign of Rénzōng (仁宗 r 1023-1047), *janghak* (瘴瘧) spread among soldiers in southern Song. Malaria spread in the province of Quánjiāo (全椒縣) in 1117 as well (Zhang 1998:198).

Chinese epidemics broke out mostly from the fourth to the six month, or late spring and early summer based on the lunar calendar. Miasma epidemics broke out in the fourth and fifth months as well. Hence, there's a possibility that one of the Song epidemics might have been a miasma epidemic, for example the epidemic of 992 and 1003 in capital city.

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6. Sòngshǐ 7: Dàzhōngxiángfú 3rd year 5th month, "Rénwǔ day, Zhēnzōng gave remedies to the Mìnuò tribe of Xīliángfǔ because of the miasma epidemic."

Table 1 Epidemic Outbreaks and Medical Policy Initiatives in Song China before 1018

Year	Month	District	Expression of Epidemic	Song Policy
992	5th	Capital city	many people were sick	dispatch official physician provide money and medicine
994	6th	Capital city	great epidemic	dispatch official physician with medicine
997	?	Jiāngnán (江南)	epidemic	----------
1003	5th	Capital city	epidemic	dispatch court official with medicine
1006	5th	Xǐliángfǔ	many people were sick	dispatch official physician with medicine
1009	4th	Héběi (河北)	epidemic	dispatch official physician with medicine
1010	4th	Shǎnxī (陕西)	epidemic	dispatch delegates with medicine
	5th	Xīliángfǔ	miasma epidemic	send medicine and *Shènghuìfang*
1015	4th	Sìchuān	miasma epidemic	send *Shènghuìfang*

Source: Songshǐ; Deng 2006:83-92

Why did *Songshǐ* and *Goryeosa* record some epidemics as a miasma epidemic when the term epidemic was a more common description at that time? Is there a possibility that other epidemics could have been miasma epidemics? There's no easy answer. But it seems as if the people of Goryeo knew the epidemic of 1018 was the same as the miasma epidemic in China.

Was Goryeo's miasma epidemic the miasma epidemic of Xīliángfǔ or the malaria that had started in the southern part of Song? It is more likely that the former was the case. In general, malaria in Korea tended to spread most viciously from autumn (Shin, Kim, and Yeo 1999:614-5). The miasma epidemic of Goryeo broke out in early summer, the fourth month of 1018, just like the Chinese miasma epidemic.[7]

7. It is hard to say what the miasma epidemic of 1018 was in Western terms. But Xīliángfǔ (邢恕) described its symptoms as "headache, high fever, and acute gastroenteritis; vomiting and diarrhea" in his memorial to Shénzōng (神宗 r 1067～1085) (Song míngchén zòuyì 43). It might have been typhus or cholera.

It is very difficult to identify exactly how a miasma epidemic that started in China could have been carried to Goryeo.[8] The miasma epidemic of 1018 might have come by land from Khitan to Goryeo or by sea with delegates and traders between Song and Goryeo. There were also so many refugees from Khitan to Goryeo in those days as well as battles.[9] So there are many possibilities as to how it was carried to Goryeo.

During Hyeonjong's reign, Goryeo had close relations with Song and Liao, thus Goryeo was familiar with the epidemic situation and environment in China. Therefore, it seems likely that Goryeo knew the nature of the miasma epidemic as it originated from China. In 1020 Goryeo dispatched a delegation to ask once again for the medical text *Shènghuìfang* even though Zhēnzōng gave it Goryeo in 1015. Goryeo was enthusiastic to accept Song's medicine. Since the origin of the miasma infection was Chinese, Goryeo needed a medical text which included the most effective remedies.

When the miasma epidemic had spread throughout Goryeo, Prime Minister Yu Jin (劉瑨) asserted that a mismatch in the seasonal and penal administrations was the cause of the epidemic. He recommended that they check whether the administration of penalties had followed the monthly code (月令) which stipulated what should be done in each month. Supervising the monthly code and the penalties were typical reactions when epidemics spread in pre-modern East Asia (Kim 1988).

Hyeonjong made a regulation to establish provincial pharmacies (藥店司) in prefectures and counties throughout Goryeo in 1018 because of the miasma epidemic.[10] People who lived in Kaekyeong and Seokyeong could get medical attention, but those who lived in the countryside or small cities could not. Thus, Hyeonjong probably installed a provincial pharmacy recorder even in the countryside because there was not enough manpower or medicine to treat people in

8. In the written history of the Liao dynasty (907-1125), there are no records of epidemics except an epidemic of 1019 in ancient Yān territory. It doesn't mean there was only one outbreak during the Liao dynasty. Since *Liaoshi* was written during the late Yuan dynasty, it tends to be brief. While it is not possible to identify the link with any accuracy, the epidemic of 1019 might have been related with the miasma epidemic of Goryeo.
9. See *Goryeosa* during the reign of Hyeonjong. There were many records about Khitan's refugees.
10. A region which had over 1000 male adults (over 16 years old) should have four provincial pharmacies, a region with over 300 male adults should have two, and over 100 male adults should have one (Lee 2008:57).

those areas when the miasma epidemic was spreading. In other words, the spread of the miasma epidemic was the cause of the nationwide installment of the provincial pharmacy recorder.

Another epidemic broke out in the capital in 1030, the 21st year of Hyeonjong's reign. It was apparently not the same epidemic as 1018 because it was a winter epidemic, occurring in the 12th month of that year. The epidemic of 1030 was limited to the capital, as it seems to have spread throughout Goryeo territory for many years.

The epidemic of 1018 is the first and last miasma epidemic recorded in *Goryeosa*. But it does not mean that miasma epidemics disappeared from Goryeo society. *Siyong hyang-akbo (時用鄕樂譜* Scores of Contemporary Korean Music), published during Sejong's reign, includes one Goryeo folk song which mentions the great king of Samseong (三城大王) as a god who protected against a miasma epidemic (Yun 1981). In other words, miasma epidemics broke out occasionally in the Goryeo dynasty and Goryeo people sang this song to be cured and protected from the miasma epidemic.

4. Conclusion

The miasma epidemic of 1018 might have been a new type of epidemic in the Goryeo dynasty. It is likely that this miasma epidemic originated from Song China. It spread from the border area of Gānsù in 1010, to neighboring Sìchuān in 1015, and finally hit Goryeo in 1018. Thus, Goryeo could record the exact name of the epidemic.

The miasma epidemic took such a large human toll that no one but the government could bury the corpses and skulls that littered the streets. Not only did the government have to fight the miasma epidemic, it was also warring against the Khitan.

In addition to burying the dead, the government sent physicians and provided medicaments to the sufferers in the capital city. They made efforts to establish provincial pharmacies which could take care of the medical needs of local people at the same time. The medical care system of Goryeo was developed in order to cope with this new epidemic, and Goryeo was enthusiastic to accept the Song's medicine after this epidemic.

The fact that Goryeo people identified the epidemic of 1018 as a miasma epidemic means they understood the nature of the new epidemic. From the fact that

they mentioned the specific name of the disease rather than simply referring to it as an epidemic, we can infer that there had been an improvement in the recognition of epidemics. It brought progress to government medical policies in spite of the fact that the country was at war. This new epidemic stimulated the development of medicine in the Goryeo dynasty.

References

Goryeosa (高麗史 *History of Goryeo*)

Goryeosa jeoryo (高麗史節要 *Essentials of the Goryeo Dynasty*)

Liaoshi (遼史*The History of Liao*)

Samguk sagi (三國史記 *The History of the Three Kingdoms*)

Sòngshǐ (宋史 *The History of Song*)

Song míngchén zòuyì (宋名臣奏議 The Memorials of the Illustrious Retainers in the Song Dynasty)

Deng, Tietao, ed. 2006. *Zhōnggufángyìshǐ* (Chinese History of Epidemic Prevention). Nanning: Guǎngxī Kēxué Chūbǎnshè.

Grousset, Rene. 1970. *The Empire of the Steppes: A History of Central Asia.* Translated by Ho-dong Kim, Won-su Ryu, and Jae-hun Jung. Seoul: Sakyezeol.

Hong, Won-sik. 1984. *Jungkuk uihaksa* (History of Chinese Medicine). Seoul: Ilzungsa.

Husikawa, Ryu. 1904. *Nippon igakushi* (History of Japanese Medicine). Tokyo: Jioukabou.

Kim, Du-jong. 1966. *Hanguk uihaksa* (A History of Medicine in Korea). Seoul: Tamgudang.

Kim, Nam-ju. 1988. Goryeo sidaeae yuhaengdoen zeonyeombyeongui sajjeok yeonku (A Historical Study of Goryeo Dynasty Epidemics). Ph.D. dissertation, Seoul National University.

Kim, Yeon-ok. 1985. *Hangukui kihuwa munwha* (Climate and Culture of Korea). Seoul: Ewha Womans University Press.

Kiple, Kenneth E., ed. 1995. *The Cambridge World History of Human Disease.* New York: Cambridge University Press.

Lee, Hyeon-suk (Lee, Hyun-sook) 2003. Silla tongilki zeonyeombyeongi yuhaengkwa daeungckeck (Epidemics and Governmental Policies for their Control in Unified Silla). *Hankukgodaesa yeonku* 31.

_____. 2007. Jeonyeombyeong, chiryo, kwonryeok (Epidemics, Medical Care, and Power). *Ehwasahak yeongu* 34.

_____. 2008. Goryeo sidae yeokbyunge daehan insik (A Study on the View of Epidemics in the Goryeo Dynasty). *Hankuk sasangsahak* 30.

Miki, Sakae. 1962. *Josen igakushikiyu sitsupeishi*. Osaka: Sakae Miki.

McNeill, William H., 1976. *Plagues and peoples*. N.Y: The Chauser Press.

Mou, Zhonghang, and Caiping Wang. 2003. Zhōnggu Lìshǐshangde Zhàngqi K ǎoshì (Textual Research and Explanations of Miasma in Chinese History). *Shīdàdìlǐ yánjiūbàogào* 38.

Sin, Dong-won, Nam-il Kim, and In-seok Yeo. 1999. *Hankwoneroikneun donguibokam*. Seoul: Deul-nyeok.

Yun, Yong-ok. 1981. *Hanguk gosiga* (Korean Old Poems and Songs). Seoul: Hakmunsa.

Winslow, Charles-Edward Amory. 1971. *The Conquest of Epidemic Disease*. Wisconsin: University of Wisconsin Press.

Zhāng, Jianguang. 1998. *Sanānqiān yìqíng* (Three Thousand Years of Chinese Epidemics). Nánchāng: Jiāngxīgāoxiào chūbǎnshè.

Lee Hyun-sook is a research fellow at the Korea Culture Research Institute at Ewha Womans University and lectures at Yonsei University and Inha University. She received her Ph.D. from Ewha Womans University. Her research areas are ancient Korean history and culture and the history of Korean medicine.