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REVIEW/DERLEME

Were Allergic Diseases Prevalent in Antiquity?

Antik Çağda Allerjik Hastalıklar Mevcut muydu?

Kürşat EPÖZTÜRK, Şefik GÖRKEY

Department of Medical History and Ethics, Marmara University School of Medicine, İstanbul, Turkey
Marmara Üniversitesi Tıp Fakültesi, Tıp Tarihi ve Etik Anabilim Dalı, İstanbul, Türkiye

ABSTRACT

Allergic diseases are attributed to modern times and urban lifestyle. This manuscript discusses the narrations mentioned about suspected allergic disorders within Egyptian, Chinese, and Greco-Roman texts that represent the prominent civilizations of antiquity and also the quoted symptoms observed in some historically important figures, which might be considered as rudimentary case reports. The symptoms mentioned in ancient texts are only suggestive of allergic diseases. The present evidence is not conclusive enough to assert that allergic diseases were prevalent –at least not as much as today- in that age.

Key words: Allergic rhinitis, asthma, history of medicine, urticaria

ÖZ

Allerjik hastalıklar modern zamanlar ve şehir hayatıyla ilişkilendirilmektedir. Bu yazıda antik çağların önde gelen uygarlıklarından Mısır, Çin ve Yunan-Roma metinlerinde geçen allerjik olabilecek hastalık tanımlarından ve ayrıca tarihsel öneme sahip bazı kişilerin olgu sunumu olarak değerlendirilebilecek -allerjik olduğu iddia edilen- belirtilerinden bahsedilmiştir. Antik çağa ait kaynaklarda geçen yakınmaların allerjik hastalıkları ancak düşündürdüğü söylenebilir. Mevcut veriler allerjik hastalıkların söz konusu dönemde de –en azından bugünkü sıklıkta- görüldüğüne dair kesin yargılara varmayı sağlayacak güçte değildir.

Anahtar kelimeler: Allerjik rinit, astım, tıp tarihi, ürtiker

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INTRODUCTION

The term *allergy* was first used in 1906 by the Austrian physician Clemens von Pirquet (1874-1929) to express a different from previous reaction (Greek *allos*: other, *ergon*: work) of an individual against a material to which the individual became sensitized (1). The diseases related to this altered response of the body include mainly allergic asthma, allergic rhinitis, allergic conjunctivitis, insect sting allergy, drug allergy, food allergy, and urticaria (2).

Allergic diseases are rather attributed to modern times and urban lifestyle. Decreased household size, increased hygiene, and environmental population are listed among the possible causes of allergic diseases (3). On the other hand, some suggest that the history of allergic diseases might indeed be traced back to thousands of years ago (4). Since there are no sufficient written and visual sources that could substitute medical records, it is challenging to investigate the presence of the allergic diseases in antiquity. Moreover, allergic symptoms including nasal discharge, shortness of breath, and itching are not specific to allergic diseases. Nevertheless, some inference can be drawn from the descriptions of patients and diseases.

The antiquity or the ancient period is defined as the period of the recorded history preceding the Middle Ages that began circa 5th century CE. This manuscript discusses the narrations mentioned about suspected allergic disorders within Egyptian, Chinese, and Greco-Roman texts that represent the prominent civilizations of the antiquity and also the quoted symptoms observed in some historically important figures, which might be considered as rudimentary case reports. From some other populations

Address for Correspondence/Yazışma Adresi
Kürşat EPÖZTÜRK
Marmara Üniversitesi Tıp Fakültesi,
Tıp Tarihi ve Etik Anabilim Dalı, İstanbul, Turkey
e-mail: kursatep@yahoo.com

of the period, several points relatable to allergic diseases are also briefly mentioned.

EGYPTIAN TEXTS

Several contemporary sources mention the pharaoh Menes as the first historic example of fatal anaphylaxis (5-8). In 1930, an explorer and amateur archeologist named Laurence Waddell (1854-1938) asserted that the pharaoh Menes had died suddenly after a wasp sting near Ireland (9). However, this assertion and its source have later been harshly criticized (10). Firstly, this pharaoh who was also named as "Narmer" or "Aha" and who was believed to rule in circa 3000 BCE, to be the founder of the first Egyptian dynasty, and to invent papyrus is a semi-legendary figure whose real existence is debated. His name was mentioned for the first time in hieroglyphs written about 1300 years after his alleged lifetime (11). Secondly, the generally accepted opinion among modern Egyptologists is that the so-called "wasp" symbol should be read as "hippopotamus" instead (12). Accordingly, the pharaoh was killed by a hippopotamus attack that could not be associated with allergy. Discounting the case of Menes, the first report of death after bee sting is from the 18th century (7). Epidemiologically, the five-thousand-year gap between these two cases casts doubt on the authenticity of the first incident.

In an Ancient Egyptian text, a royal physician named Nenekhsekhmet was mentioned to heal the nostrils of pharaoh Sahure (5th dynasty, 3rd millennium BCE) (13). The pharaoh was so content that he ordered a special door for the physician's tomb upon his request. The inscription on the door was as follows (14): "As these my nostrils enjoy health, as the gods love me, may thou depart into the cemetery at an advanced old age as one revered." This physician whose name was later read more correctly as Ni-Ankh-Sekhmet is considered as the first known rhinologist in history (15, 16). If the nasal disease of the pharaoh was allergic in origin, in this case, Ni-Ankh-Sekhmet could be considered as the first "allergist" as well.

The Ebers Papyrus, found by German Egyptologist George M. Ebers (1837-1898) in 1873, is one of the paramount medical documents of Ancient Egypt (17th dynasty, 2nd millennium BCE) and contains 21 prescriptions against coughing and shortness of breath (Figure 1). Recommended treatments include inhalation of myrrh and incense, desert date oil, juniper berries, cumin, honey, dates, celery, onion etc. (17). This papyrus contains a description of inhalator as well (12): "Take seven stones and heat them in fire, take one and put some of the medicament on it, cover it with a hollow container, insert a reed through the hole, inhale the smoke through that reed; the other stones likewise." Placing herbal medicine on hot stones help the alkaloids in it vaporize and become respirable. Inhaling the smoke of plants that are directly burned or indirectly heated has been a common method used by mankind in different regions including South America and India for several purposes such as treatment, rituals, and pleasure (18).

As for nasal discharge, rinsing the nostrils with date juice and rubbing the nose with mashed date and mint were the recommended treatments (19). Rinsing the nose with isotonic or hypertonic solutions is currently suggested as an ancillary treatment for rhinitis. Menthol within the mint is included in some medicaments we use today against common cold.

In that papyrus, approach to a hypothetical patient is narrated as follows (17): "If the man you examine for chest

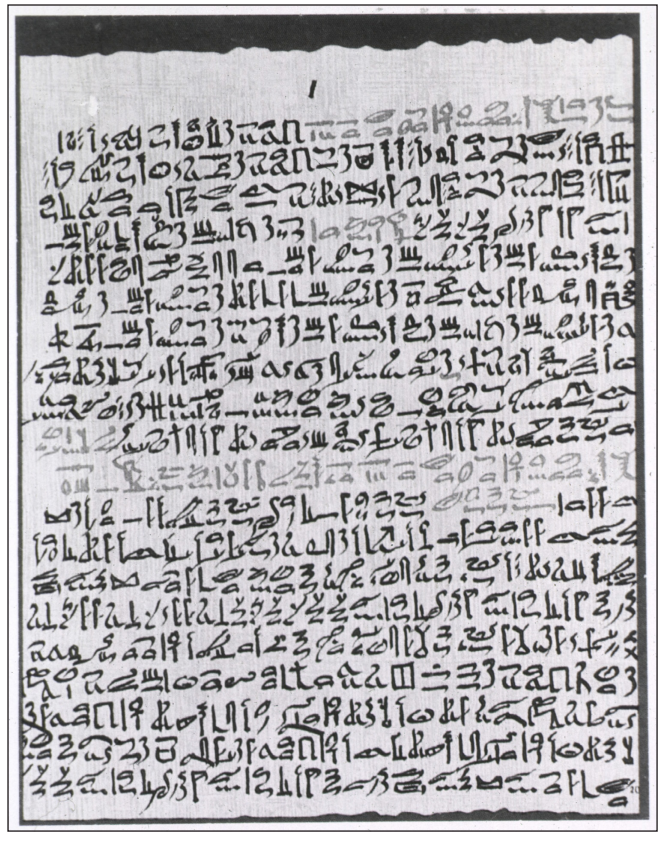


Figure 1. A segment of the Ebers Papyrus (Courtesy of the National Library of Medicine).

pain has copious discharge and it is located in forehead, if both of his eyes are watery, and if he has a runny nose, tell him that…" These symptoms could be suggestive of nasal discharge and epiphora observed in patients with allergic rhinoconjunctivitis.

CHINESE TEXTS

In Chinese sources, the fruits of a plant named "*ma huang*" (*Ephedra distachya*) are reported to be used for a kind of autumnal catarrh during the rule of legendary Chinese emperor Shennong who is believed to have lived four thousand years ago (20). The active ingredient of this plant, ephedrine, is a sympathomimetic that can decrease nasal discharge. In Ancient China, the treatment for cough included some plants such as henbane (*Hyoscyamus*), devil's trumpet (*Datura*), and wolfsbane (*Aconitum*) which have antimuscarinic proprieties that could dilate bronchi (12).

The first definition of asthma-related symptoms in Chinese texts could be traced back to the book entitled *Huangdi Neijing*, dated to 3rd century BCE. In this book, the legendary ruler Huangdi (Yellow Emperor) discusses noisy and difficult breathing with his minister in the form of dialogue (17): "Emperor said: One is ill when he could not rest and breathes noisily. He is like an old man both standing and at rest, and his breathing makes sounds. There are those who could not rest and those with difficult breathing although rested." However, difficulty in breathing mentioned in this text could not be attributed solely to asthma.

Furthermore, the following passage of the book is argued to represent the seasonal nature of allergic asthma (12): "Lung illness ameliorates in winter. If not, it will be worse in summer. If death does not occur, *qi* is protected by the end of summer and the patient recovers in autumn." Asthma severity can vary through seasons, e.g. in spring and summer when pollens are dispersed by air. However, when the book is investigated comprehensively, it can be observed that all diseases and normal bodily functions are explained with a complex system involving specific associations between seasons, elements, and organs (for example autumn, metal, and lungs). In this context, similar seasonal characteristics are established for other organs as well (21).

It was reported that urticaria was defined as *Feng Yin Zheng* (rash hidden in wind type) in the same book and that winds were blamed in traditional Chinese medicine as the main cause of hives (12): "These are swellings caused by cold *qi*; changes in eight winds are responsible." Eight winds mentioned in the text originate from eight main directions accepted in Chinese culture (21). Exposure to cold air is a known cause of a typical type of physical urticaria (22). However, whether the "swelling" mentioned in this passage was urticaria or edema is not clear. Therefore, inferring an allergic disease from this passage is difficult.

GRECO-ROMAN TEXTS

The famous historian Herodotos (5th century BCE) narrated that Hippias who had guided the invading Persian army in the road to Athens in the year 490 BCE, had been stricken with a sudden episode of sneeze and cough (23): "He had an extraordinarily severe sneeze and cough. Because he was old, a tooth of his fell due to the severity of the cough." This event can be suggestive of an acute episode of allergic rhinitis.

Hippocrates of Kos (c.460-c.377 BCE) is considered as the founder of Western medicine. More than sixty texts attributed to him are compiled in a collection entitled *Corpus Hippocraticum*. In this written work, typical symptoms of hay fever are not described. However, Hippocrates hypothesized that a bodily fluid named *phlegma* flows into the nose and lungs, causing a congestion of the lungs named *catarrhus* (literally, downflow) (24). The reason of the absence of seasonal rhinitis in the entire *Corpus Hippocraticum* might be the absence of the disease in that region during that period. Another reason might be the transience of disease such that it was not worthy enough to be considered by physicians travelling from town to town (12).

The word *asthma* is derived from the Ancient Greek word "ααζειν" (aazein) that means breathing through mouth. It was reported that this meaning of the word was utilized in the works of Homer, Pindar, Aeschylus, and Plato (25). In the translation of Corpus Hippocraticum made by Emile Littré (1810-1881), the words '*asthma*' or '*asthmata*' (plural form) are used ten times (Figure 2) in the sense of increased frequency of breath or panting (24). In this context, it is difficult to identify if the word meant a disease or a symptom (25).

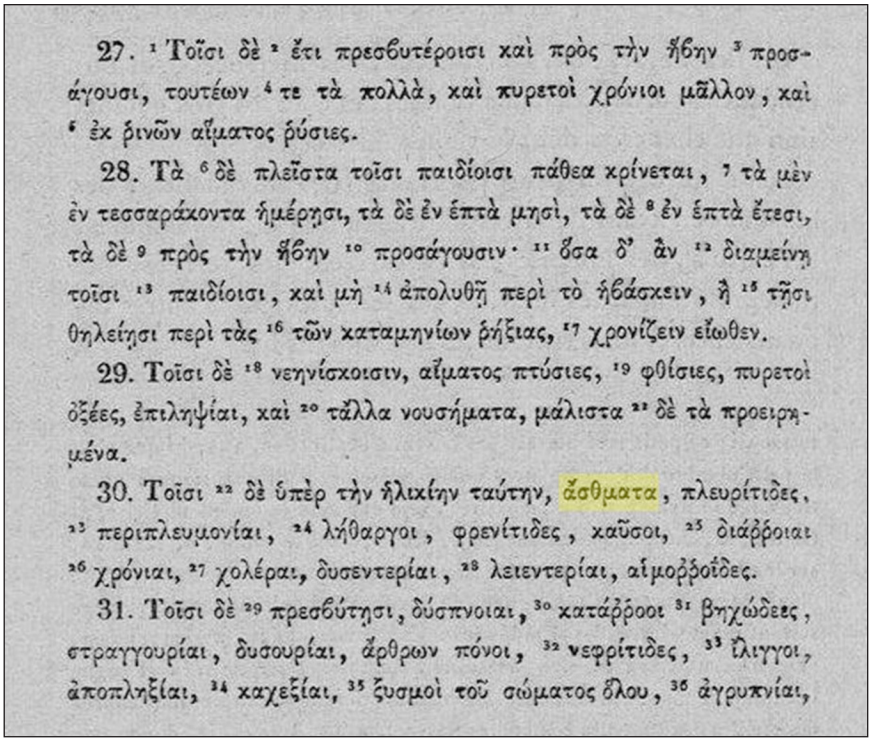
Urticaria (hives) has always been easy to identify due to acute, transient rash similar to those occurring

after contact with stinging nettle (*Urtica dioica*). It was reported that Hippocrates mentioned similar episodes (12): "The son of Euphranor was suffering from skin rash resembling mosquito bites but lasting a shorter time." and "After exercise, various areas on chest and back were covered with redness like that with stinging needle." These descriptions accord with aforementioned characteristics of urticaria. Furthermore, it is known that one of the triggers of urticaria might sometimes be exercise (22).

Ancient Roman poet and philosopher Lucretius (99-55 BCE) tried to explain various subjects including natural events and human senses in his didactical work entitled *De Rerum Natura*. Although most of his conclusions were found wrong or even absurd, his effort to comprehend the nature was appreciated. However, it was also reported that the sources of some modern theories such as the natural selection of species and the tendency of elements to form stable compounds could be traced back to his work (26). A phenomenon suggestive of pollen allergy was reported from this book (27): "The shadow of some trees is so dangerous that a person lying beneath them will usually get a headache." Headache may be present in patients with allergic rhinitis, especially if complicated with sinusitis (28). Nonetheless, the text did not mention the symptoms more characteristic for respiratory allergies such as nasal discharge, sneeze, and shortness of breath. Furthermore, some trees such as juniper were believed to poison the air and their shadow was believed to harm the crop in antiquity (27). For these reasons, the effect of the trees mentioned in the text is difficult to associate with allergy.

Another quotation from the same work of Lucretius, the line "what is food to one is to others poison", is cited in several sources as the first written account on food allergy (29-31). However, this is a forced interpretation of one passage out of context. When surrounding passages are examined, it is obvious that physiological differences between species are meant; e.g. hellebore (*Helleborus*) being poisonous for humans but nutritious for quails (27).

Ancient Roman medical writer Aulus Cornelius Celsus (25 BCE-50 CE) gave a simple definition of asthma (32): "Asthma is the inability to breath without noise." Wheezing is still one of the main findings in physical examination of asthma patients. He classified the shortness of breath into three categories: *dyspnea* defined as rapid breathing after running or exercise, *asthma* defined as shortness of breath at rest, and *orthopnea* defined as the most severe stage in which patients should sit upright for breathing. This classification made by Celsus has continued to be used until 18th century (12, 33).


27. [1] Τοῖσι δὲ [2] ἔτι πρεσβυτέροισι καὶ πρὸς τὴν ἥβην [3] προσάγουσι, τουτέων [4] τε τὰ πολλὰ, καὶ πυρετοὶ χρόνιοι μᾶλλον, καὶ [5] ἐκ ῥινῶν αἵματος ῥύσιες.

28. Τὰ [6] δὲ πλεῖστα τοῖσι παιδίοισι πάθεα κρίνεται, [7] τὰ μὲν ἐν τεσσαράκοντα ἡμέρῃσι, τὰ δὲ ἐν ἑπτὰ μησὶ, τὰ δὲ [8] ἐν ἑπτὰ ἔτεσι, τὰ δὲ [9] πρὸς τὴν ἥβην [10] προσάγουσιν· [11] ὅσα δ' ἂν [12] διαμείνῃ τοῖσι [13] παιδίοισι, καὶ μὴ [14] ἀπολυθῇ περὶ τὸ ἡβάσκειν, ἢ [15] τῇσι θηλείῃσι περὶ τὰς [16] τῶν καταμηνίων ῥήξιας, [17] χρονίζειν εἴωθεν.

29. Τοῖσι δὲ [18] νεηνίσκοισιν, αἵματος πτύσιες, [19] φθίσιες, πυρετοὶ ὀξέες, ἐπιληψίαι, καὶ [20] τἆλλα νουσήματα, μάλιστα [21] δὲ τὰ προειρημένα.

30. Τοῖσι [22] δὲ ὑπὲρ τὴν ἡλικίην ταύτην, ἄσθματα, πλευρίτιδες, [23] περιπλευμονίαι, [24] λήθαργοι, φρενίτιδες, καῦσοι, [25] διάῤῥοιαι [26] χρόνιαι, [27] χολέραι, δυσεντερίαι, [28] λειεντερίαι, αἱμοῤῥοΐδες.

31. Τοῖσι δὲ [29] πρεσβύτῃσι, δύσπνοιαι, [30] κατάῤῥοοι [31] βηχώδεες, στραγγουρίαι, δυσουρίαι, ἄρθρων πόνοι, [32] νεφρίτιδες, [33] ἴλιγγοι, ἀποπληξίαι, [34] καχεξίαι, [35] ζυσμοὶ τοῦ σώματος ὅλου, [36] ἀγρυπνίαι,

Figure 2. One of the passages mentioning asthma/asthmata in Corpus Hippocraticum (24).

The treatment of asthma that Celsus recommended was as follows (32): "Sit in a semi-upright position, wrap the chest with warm cloth, drink some wine containing sulfur and pulverized fox lungs." Sitting in an upright position eases the use of accessory respiratory muscles and help the patient breathe during an attack. Since cold air can induce asthma attacks, keeping the chest warm might provide comfort. Fox lung (*pulmo vulpis*) has no scientifically proven effect in modern medicine; on the other hand, it is recommended in homeopathy for the treatment of shortness of breath (34, 35).

Aretaeus of Cappadocia (81-138 BCE) was the first writer who described asthma as a disease (12, 36): "The initial signs are chest tightness, inability to do ordinary work, and shortness of breath during running or walking uphill. The disease is worse at night." Although Aretaeus addressed asthma as a disease and not as a symptom, his description is beyond the scope of the asthma that we know today (25). Several diseases such as chronic bronchitis and cardiac failure may cause a similar clinical picture.

Aretaeus was a follower of the pneumatic medicine school; he thought that health was related to a state of balance in the body (*eucrasia*), which was established between the basic characteristics of elements (warm, cold, dry, and humid) and the *pneuma* that was the vital power or soul banding the elements together (37). Aretaeus suggested that the reason of asthma was the coldness and humidity of the *pneuma* (36). In his work, he reported that asthma was more prevalent among women but more fatal among men (38). Current epidemiological data also show that asthma is more frequent among women during adulthood (39). However, his thoughts were based on the theory of the four humors and not on clinical observations: women were prone to asthma because they were humid and cold (38). Unfortunately, the treatment part of his work on asthma could not reach the present day (25).

Galenos (129-210 CE), one of the prominent names of Ancient Greek medicine who later worked in Rome, lived long after Aretaeus but did not address asthma as a distinct clinical entity but as the more severe and striking form of dyspnea (25). Roman physician Caelius Aurelianus (circa 400 CE) was the first author who differentiated asthma from pneumonia and orthopnea (17). He listed audible breathing, chest pain, and feeling of anxiety as asthma symptoms. He recommended the patients to reside at the seashore (40).

Allergic diseases are seen more frequently in individuals with a family history of atopy and Ancient Rome could be the homeland of the first atopic family known in history. In the book entitled *De vita Caesarum* by Suetonius (69-130 CE), Emperor Augustus (27 BCE – 14 CE) was mentioned as follows (41): "He had diffuse rash due to continuous scratching. He had some disorders repeating the same period of every year: he got weak just before his birthday every year, he had chest tightness every spring, and he had coryza in the season of southern winds."

From these descriptions, it can be inferred that Augustus had episodes of seasonal allergic rhinitis and asthma, accompanied by eczematous rash (42). Emperor Claudius (41-54 CE), the nephew of Augustus, was reported also to have runny nose usually and eye redness occasionally. Considering the family history, it can be suggested that Claudius had perennial allergic rhinoconjunctivitis (12).

NOTES FROM OTHER POPULATIONS

On cuneiform script tablets from Mesopotamia, some herbal remedies including ryegrass and rose powder were recommended against cough. In Ayurvedic medicine, Indian physician Vagbhata recommended to sit in the erect position in order to relieve breathing difficulties. Although direct records of medical practice in the indigenous populations of America are scarce, Spanish colonialists narrated that some plants such as ipecacuanha and coca were used against cough and coryza (12). In Hebrew holy texts, several passages mention sneezing as a good sign or a bad omen for the health (43).

CONCLUSION

Some signs and symptoms attributable to allergic diseases such as allergic rhinoconjunctivitis, allergic asthma, urticaria, and atopic dermatitis were mentioned in ancient texts. Nevertheless, those symptoms including sneezing, shortness of breath, and itching are commonly seen in the population and are not always associated with allergy.

Moreover, tools such as skin tests and blood analyses forming the diagnostic workup to confirm allergy have been utilized for just a century. Therefore, it can only be stated that the symptoms mentioned in ancient texts are just suggestive of allergic diseases. The present evidence is not conclusive enough to assert that allergic diseases were prevalent –at least not as much as today- at that age.

On the other hand, it is known that various allergic diseases can manifest separately or together in different periods of the lifetime in atopic individuals. In this regard, the clinical picture of Emperor Augustus including the dermatological, nasal, and respiratory symptoms seems to be the most convincing evidence –as a case report- for the presence of allergic diseases in antiquity.

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