

Useful known and unknown views of the father of modern medicine, Hippocrates and his teacher Democritus

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Abstract

Hippocrates is considered to be the father of modern medicine because in his books, which are more than 70. He described in a scientific manner, many diseases and their treatment after detailed observation. He lived about 2400 years ago. He was born in the island of Kos and died at the outskirts of Larissa at the age of 104. Hippocrates taught and wrote under the shade of a big plane tree, its descendant now is believed to be 500 years old, the oldest tree in Europe –*platanus orientalis Hippocraticus*– with a diameter of 15 meters. Hippocrates saved Athens from a plague epidemic and for that was highly honored by the Athenians. He considered Democritus –the father of the atomic theory– to be his teacher and after visiting him as a physician to look after his health, he accepted no money for this visit. Some of his important aphorisms were: “As to diseases, make a habit of two things –to help or at least to do no harm”. Also: “Those by nature over weight, die earlier than the slim”, also, “In the wounds there are miasmata causing disease if entered the body”. He used as a pain relief, the abstract from a tree containing what he called “*salycasia*”, like aspirin. He described for the first time epilepsy not as a sacred disease, as was considered at those times, but as a hereditary disease of the brain and added: “Do not cut the temporal place, because spasms shall occur on the opposite area”. According to Hippocrates, people on those times had either one or two meals (lunch and dinner). He also suggested: “...little exercise ...and walk ...do not eat to saturation”. Also he declared: “Physician must convert or insert wisdom to medicine and medicine to wisdom”. If all scientists followed this aphorism we would have more happiness on earth.

Keywords: Father of modern medicine – Democritus – Surgery – Athens plague – Philosophy

Hippocrates greatly contributed to modern medicine by declaring that medicine should stand on detailed observation, reason and experience in order to establish diagnosis, prognosis and treatment. After Hippocrates, medicine was no longer a mixture of superstition, magic, religion views and empirical treatment, excersised by priests-physicians, but became a real science with accumulating experience.

Hippocrates was born in Astypalaia the ancient capital of the island of Kos in 460 BC [1]. Kos is the second largest island in the Dodecanese, next in size to Rhodes. His father was an Asklepiad physician [1]. His mother was a descendant from the hero and semi-god Hercules, who returning from his labors at Troy, sojourned in Kos and established a dynasty

[1]. Hippocrates traveled to Samos, where he learned mathematics from Pythagoras, to Ephesus and Militos, to Memphis in Egypt, to Larissa, Thessaly and other Greek cities [1]. There is no certainty that all books related to Hippocrates were written by him.

Hippocrates is reputed to have practiced, taught medicine and written his books, in the shade of a great plane tree the descendant of which may still be seen in Kos today (*platanos orientalis Hippocrates*). This tree is now aged around 500 years and is probably the most ancient tree in Europe. It has a diameter of 15 meters and its branches are supported by marble pillars [1].

Pericles, the governor of Athens invited Hippocrates to save the city, suffering from a major epidemic of plague. Hippocrates went to Athens and noticed that the craftsmen were less than others, contaminated by the disease. He then ordered that the corpses of the dead be burned and so the epidemic abated. As a reward Hippocrates was credited with a golden wreath, was made a citizen of Athens and the children of Kos were given the privilege to be educated in Athens. Athenians also initiated Hippocrates into the Euleusian Mysteries, an honor never offered before to a non-Athenian, since the time of Hercules [2].

Hippocrates denied an offer to become the personal physician of the king of Persia because he didn't want to cooperate with a king who declared himself an enemy of Greece [1]. Hippocrates died on the road outside Larissa, Thessaly, on 356 BC, at the age of 104 [1]. He was found dead with his cloth covering his face. The museum of Kos has a fine statue of Hippocrates.

Democritus was a contemporary of Hippocrates and one of his teachers. Democritus lived in Avdira, in Thrace. Democritus was a scientific pillar of modern physics because he believed that there exists a multiple universe and that the universe is immortal and unfading. The universe as a whole and everything exciting in it i.e. *το όν* in Greek, consists of atoms which could not split any further. Atoms can not be sensed by us but are considered to exist by reason. Larger and heavier parts or atoms are pushed inside and the lighter at the outside portion of any existing part of the universe. Similar atoms adjust to each other and are gravitated by other similar atoms. Today we know that the heavier particles, neutrons and protons are inside and the electrons at the periphery of the mol-

ecule [3]. Sometime before his death, Democritus chose to live outside the city of Avdira studying birds and other animals and often laughing with his own thoughts. His co-citizens thought he was crazy and invited Hippocrates to examine him. Hippocrates came from Kos and after meeting with Democritus he said to the citizens of Avdira, that Democritus was his teacher and he was healthy and sound more than many other people in Avdira. Hippocrates refused to be paid for examining his teacher [2].

The views of Hippocrates about treatment relied on the power of Nature and were directed to the patient as a unique physical, mental and spiritual entity [1]. In agreement with Plato and Aristotle, Hippocrates believed that the soul of every man is a kind of energy coming out from his body.

In his book: “*The Aphorisms*”, the first aphorism reads: “Life is short and the art long, the occasion fleeting, experience fallacious and judgment difficult. The physician must not only be prepared to do what is right... but also to make the patient, the attendants and externals, cooperate”. A fragment of the Hippocratic Oath on a papyrus dating from the third century is kept in the Wellcome Library, London [4].

In a dialogue between Socrates and Crito about the Oath of Hippocrates, Socrates says [5]: “In the marketplace, physicians charge a large fee. They claim good will and unselfishness, but at the table I have never met a more misanthropic crowd.” “Doesn’t the Oath impose an impossible code of behavior on the weak of spirit?” Crito: “That is not so. Homer and the tragedians tell us that those who struggle are admired, even if they fail. The Hippocratic art can never become obsolete so long as its followers strive to be virtuous as well as skillful.”

Hippocrates also pledged never to participate in euthanasia and abortion. In his treatise: “*On the Epidemics*”, book 1(5) he stated the axiom “... as to disease, make a habit of two things –to do good, or at least to do no harm” [6].

Many diseases were described by Hippocrates exactly as they would have been described by a contemporary physician. In acute hepatitis Hippocrates in his book “*About Diseases*” described: “Acute jaundice rapidly spreading...urine has a red sediment...high fever, uneasiness and chills. The patient dies within 4 to 10 days.” [7]. He also described ascitis: “Liquid collection... around the abdomen becomes...” [8]. He also described acute cholangitis: “Hard and painful hypochondria, jaundice...bile in the urine...fever...bile in the blood.” [9].

In “*The Aphorisms*” part II, Hippocrates wrote: “those by nature over weight, die earlier than the slim.” [10].

Hippocrates was asked to find out why Scythian had male impotence. He noticed that the wealthier Skythians who were able to buy horses, had impotence because they passed a great part of their lives riding on horses, thus harming their genitalia. On the contrary the poor were unable to buy and ride horses and they were sexually competent [2].

For surgery and for treating wounds, Hippocrates in his book: “*About the Physician*” advised: “clean clothes or othonia-a word still used in Greece to day-...and old wine as anti-septic...” We know that old wine is richer than recently pre-



Statue found in the Odeon of Cos, probably representing Hippocrates (4th century B.C.)

pared wine, in alcohol. Also Hippocrates in his books: “*Of Surgery in the Clinic*” and “*About the Clinician*” wrote: “...the nails of the surgeon should be cut in a certain manner, there should be proper light coming from the proper direction...skilled assistants are necessary...and they should be silent...” [11].

Hippocrates knew that “in the wounds there are *miasmata* causing disease if entered the body...” Miasmata or miasma in single tense, is a word still used in Greece and meaning “something dirty” [12]. Twenty three ages later, Pasteur will describe with his microscope the *microbes*, a word meaning in Greek: “*small living*”.

Hippocrates described plectrodactelia (fingers like plectron or “*πλήκτρο*” in Greek) in cardiopathies and in lung cancer [13]. For the treatment of anaemia he suggested solutions of iron dissolved in wine [13].

For pain confront he suggested extract of “*salycasia*” a tree between acacia and leuki. This is the so called today salix tree or aspen or willow. Only on 1829 Leroux isolated *salycin*. On 1899 Felix Hoffman produced synthetic acetylsalicylic acid -aspirin from the word aspen [13].

In psychiatry, Hippocrates anticipated Freud by diagnosing that the cause of melancholy of the son of King Perdica II of Macedonia was that Perdica was secretly in love with his father’s mistress [2].

Hippocrates in his book: “*On the Sacred Disease*” described for the first time epilepsy not as a sacred disease as was considered at those times, but as a hereditary disease of the brain and added: “do not cut this (temporal) place, because spasms (on the opposite area) do attach the man who is cut” [6, 11].

He declared that all feelings have a seat in the brain, not in the diaphragm, as Homer had said before him [2]. From this belief of Homer's, the nerve of the diaphragm is still called "frenic nerve", frenes, meaning the soul.

For brain concussions he suggested operation by an iron drill, to take place early, within the first 3 days, in order to avoid infection [6, 11].

In his book: "On the Articulations" Hippocrates described "the tubercular spine" which is to day called: "Potteian illness" [11].

In his book: "On Haemorrhoids" he treated them by styp-tic suppositories, by operation or by cauterization. He used the first proctoscope or hedroscope which he called "katopter" meaning: to investigate downwards [11].

According to Hippocrates, people had either one or two meals (lunch and dinner) every day. He suggested that these habits should be strictly followed...in order to give time to digest... [14]. Today we take several meals every day which according to what was mentioned before, "does not give proper time to digest". Hippocrates also suggested : "...little exercise...and walk...do not eat to saturation" [6].

In order to increase the natural internal temperature of our body and to better adjust ourselves to cold weather, Hippocrates advised healthy men: "to cool their body during the winter by taking cold baths or by any other means... of long duration..." [15]. This is what the winter swimmers do today.

All the above indicate that Hippocrates observed and learned from Nature itself. As his teacher Dimocretus had said: "We must rather think a lot than learn a lot". Galen, after about 500 years said, that Hippocrates considered Nature as: "the teacher of all teachers" [2].

In his book "Mochlikon-Instruments of Reduction" Hippocrates uses the word "apoptosis" to indicate tissue death, detachment and fall from the body [17]. Recently in 1972, Kerr JFP et al re-used the same word "apoptosis" [18].

In "Decorum" (5) Hippocrates declares that: "when the physician is also a philosopher he is equal to God. Between the two there is no big difference. "Physician must convert or insert wisdom to medicine and medicine to wisdom" [6, 15].

If it was for the reviewers of this paper to choose the best of Hippocrates aphorisms (doctrines), we would choose the last one mentioned above, because if all scientists behaved in wisdom, we might have more happiness in our world.

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