

## DEBATE AND EDUCATION

**Hippocrates' humoral pathology in nowadays' reflections**

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**Ancient medicine integrated three components: experience (empirical observation), religion/magic and speculations of natural philosophers. The Greek medicine outachieved medicine of other ancient nations in starting to investigate the true causes of health and diseases and thus laying foundations for the diagnosis, prognosis and treatment.**

**Hippocrates, the most famous physician of the ancient times, made a synthesis of existing philosophical opinions from the point of view of a physician. His 58 writings were preserved in the collection „Corpus Hippocraticum“. The most relevant writing in it — „Peri fyseos anthropu“ (On the nature of man) — is ascribed to Hippocrates' son-in-law Polybos to whom we are grateful for the ancient humoral-pathological theory. In explaining human organism and its processes the author integrated ancient teachings on 4 basic humors (humoral theory), elements and qualities with observations of manifestations of health and disease. Normal condition (health) was defined as balance between the body fluids (eukrasia) and external environment. If this balance is disturbed, the result is dyskrasia, i.e. disease studied by pathology. According to Hippocrates disease causes can be understood only through empirical study. A man has a power to overcome disease, but to achieve it the right diet is necessary to keep harmony in body fluids of an organism. The role of a physician was just to support the nature. „Prognosis“, another writing included in „Corpus Hippocraticum“, reflects Hippocrates' understanding of prognosis as a necessary development of diagnosis based on past knowledge (anamnesis) and present observation.**

**Ideas of Hippocrates and his medical school are still valuable and inspiring especially for today's very sophisticated medicine — concept of fighting diseases by natural means: maintaining healthy lifestyle and harmony within the organism, or an effort for perfect understanding of human creature and for humanization of medicine. (Fig. 3, Ref. 14.)**

**Key words:** Ancient medicine, Hippocrates, sophisticated medicine, humoral pathology.

The ancient Greek medicine was not original. From earlier Asian and African civilisations the Greeks were readily taking over medical knowledge as well as concepts/views of the world and their impact on man. In Greek popular medicine healing powers were attributed to some gods, especially to Asclepius. In his temples, *asklepeia*, built throughout the Greek empire, while sleeping the ill were suggested the way of treatment that was further explained and performed by priests. Faith of the ill and psychologic experience of the priests serving in big temples were therapeutically very effective. Actually, in the temples of curing gods, sanitary-like practices were developed first through observations, then through thinking and investigations — this can be supported by the fact that some of great medical schools existed right within those temples and their founders came from the fa-

milies of priests. But the Greek medicine managed to liberate itself from religious influences. The Greeks were good at observing nature and human organism and tried to explain natural phenomena as well as health disorders empirically. Making use of the knowledge in natural philosophy, they were able to make significant progress in physiology, etiology and therapy.

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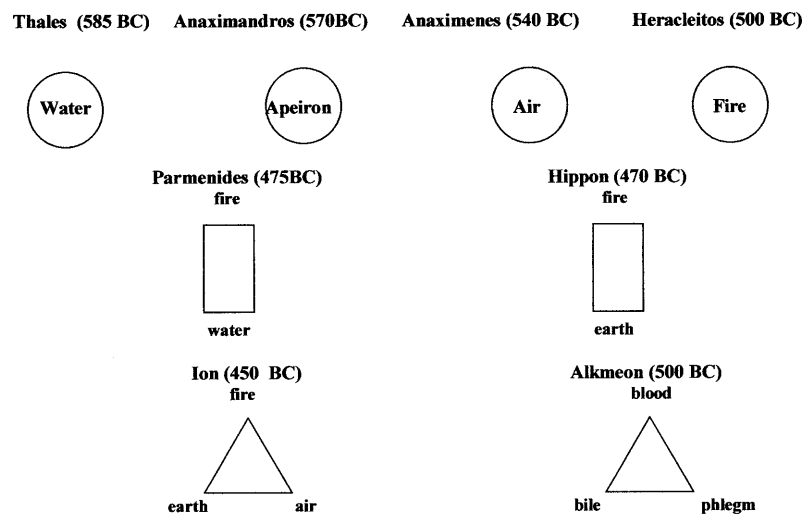


Fig. 1. Greek pre-Socratic natural philosophy — views of the world and nature adapted from Giessener Terminologen-Team (1990).

In their very beginnings, medical schools in ancient Greece were under the strong influence of philosophical schools and drew not only from their methodologies but also from conceptions. It was because some philosophers of those schools were also interested in medical observations. First it was an ancient natural philosophy which was in the prime of its development during the 6th—5th centuries BC. The philosophical schools and their representatives tried to discover some underlying matter supposed to be the substance of the world. They held that every substance (matter) is live and in constant movement. Greek pre-Socratic natural philosophy — views of the world and nature adapted from Giessener Terminologen-Team (1990) (Fig. 1).

Inspired by Pythagorean philosophical school (6th—5th BC), Croton medical school paid special attention to the study of medicine. Some time later, this school was considered the best one also on the Asian territory of the Greek empire where scientific medicine had been actually born. Pythagoras applied his theory of numbers to medicine and developed a new theory of critical days that was later adopted and modified by the Hippocrates school. For quite a long time it was also his teachings of harmony that had impact on ancient pathology. From the Croton physicians the most famous was Alkmeon, Pythagoras' contemporary and an original researcher, who claimed that scientific research had to be based on investigations of concrete data and was against any abstractism of natural philosophers who tried to define origin and regulatory principles of the world as we have presented above. Like all Pythagoreans, he also included the study of ethos in his study of human organism and emphasized the role of brain as a central organ in mental activities. In his doctrine *isonomia dynameon* (equilibrium of forces) he explained health as balance between opposites inside the body, e.g. warm — cold, wet — dry, bitter — sweet, and presented the so called *qualitative pathology*. The doctrine of *isonomia* in opposition to *monarchia* (predominance of one quality over other) was taken as a health norm for the body/organism of animals as well as for human spirit and society. This need for

harmony in all forms of life explains why Pythagoreans defined medicine as „the most noble of their arts“. Finally, we can present the well-known Alkmeon's statement which summarizes approach of the Pythagoreans to nature: „What is invisible and mortal only gods know for sure, people may just presume.“

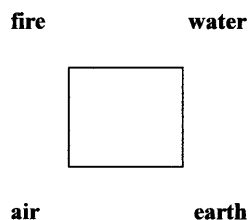
Great pre-Socratic natural philosopher Empedocles (about 493—433 BC) believed that everything in the world was generated through mixing and separating 4 elements: water, air, earth and fire.

Qualitative change of one element into another is not possible. Elements have no source of motion, hence its source according to Empedocles is love or strife. He explains the origin/birth of the world and living creatures in constant interplay of these forces: mixing (*mixis*) and exchange (*diallaxis*), attraction (*filia*) and discord (*neikos*). He understands health and disease as proportional balance and proportional imbalance in 4 elements, the so called *elementary pathology* (Fig. 2).

In the second half of the 5th century the intellectual richness of pre-Socratic natural philosophy and existing knowledge of medicine were adopted and upgraded by the greatest ancient physician who gave medicine a new orientation valid for long centuries that followed — Hippocrates. In their studies historians and philologists expressed their substantiated doubts about the authenticity of the Hippocrates' biographical data, mainly about the authorship of works bearing his name in the compendium called *Corpus Hippocraticum*. However, one thing is out of any doubts: Hippocrates, either directly or indirectly through his disciples, made his mark on it by his ingenious personality. An important part of the compendium is ascribed to Hippocrates' son-in-law Polybos, titled „*Peri fyseos anthropu*“ (On the Nature of Man) to whom we thank for the classical theory of humoral pathology. From the medical point of view his ideas present a synthesis of the concepts of natural philosophy of that time.

The organisms of all living creatures consist of elements that make up also external environment: water, fire, earth and air.

These four essential elements are in constant motion maintaining the elementary powers in balance (equilibrium) — *dynamis*. In the body they are effective in four body fluids/humors:



blood (*haima*) as an exceptional fluid, phlegm (*phlegma*), yellow bile (*chole*) and black bile (*melanchole*). They are bound together by four qualities: warmth and cold, dryness and moisture.

From Alkmeon and Pythagorean school Hippocrates adopted and perfected the method of investigation and synthesis — especially the pythagorean concept of symmetry that sees the world in the state of equilibrium due to the on-going processes of integration and disintegration. This system seemed very interesting when applied to the nature of a man, to the human mental behaviour, temperament, in which man manifests himself as sanguinic, choleric, phlegmatic and melancholic (Fig. 3).

Health is therefore nothing else than harmony of these four body humors, their normal composition, and thus their normal effect; such state is called *eukrasia*. A regulator for this very complicated balance is -- *fysis*; nature and physician are only its helpers. If this natural balance (harmony) gets disturbed, *eukrasia* disappears, and then we can speak about disharmony, disturbance, lost balance (disbalance) — *dyskrasia* or disease. In that way each disease originates from natural causes, and, as such, it can be treated by natural means — man possesses the power to fight the disease, but it requires such a lifestyle (i.e. diet) that maintains harmonic balance of the body fluids in his organism.

In Hippocrates' view disease is a process going in stages. Noxious elements or infects affect the organism first in their raw state, the state of *apepsia*, i.e. they are still not attacking and not ready, but even in this premonitory state they act latently. Improperly mixed fluids must be subjected to boiling — *pepsis*. In this way boiled humors get mature; this stage is manifested as fever

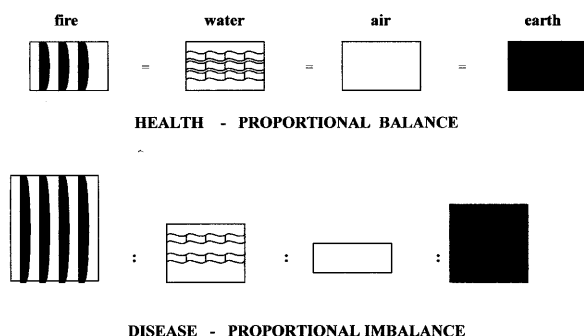


Fig. 2. Adapted from Giessener Terminologien-Team (1990).

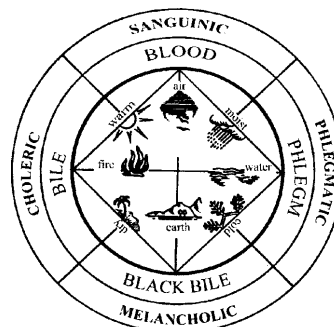


Fig. 3. Adapted from Schipperges (1970).

which represents the stage called crisis in the course of a disease, and the crisis predicts soon recuperation. However, the boiled mature humors must first leave the organism either through natural ways — by urine, stool or phlegm, or by means of artificial manipulation — venipuncture or by both. In all local diseases also the body as a whole is affected — it must overcome its crisis, either at once or gradually in the course of *lysis*, i.e. disintegration, releasing, freeing.

Essential notion in all critical processes of a disease should be „*metabole*“, mentioned already by Heraclitus. *Metabole* is a shift from one stage to another. All the stages and processes of the disease have to get over this critical phase.

In Hippocratic school physiology and pathology were considered the prerequisites of the treatment of a sick person who should be examined as thoroughly as possible — from physical point of view but also from the point of view of his mode of life, occupation, past and present diseases and complaints. Here belong also age, sex and behavioral features, simply the entire personality of patient obtained from history-taking. Only then may come establishment of a reliable diagnosis and prognosis — prediction of further course of a disease and its most probable end. Hippocrates summed up his understanding of prognosis as the necessary consequence of the diagnosis in one of the most important parts of Corpus Hippocraticum — Prognosis: „I consider it an excellent thing if a physician tries to predict (*pronoia*); if by virtue of his knowledge he elucidates and explains to his patients their present, past but also future conditions and reveals what still has not been told to him, then patients will even more believe that he is indeed able to identify their disease and they will feel free to disclose to him all about them.“

**What is the message of Hippocrates and his medical school for today?**

The ideas of Hippocrates and his disciples, although highly valued from the historical point of view, cannot be considered as merely historical, outdated and old fashioned even today (Đuriš et al., 2001).

What is worth following is for example the ability of ancient Greeks to accept and absorb without any restraints medical knowledge from other civilizations, their readiness to share knowledge and experience, using all available means of those times, and to integrate them into their own learning.

Though initially the ancient Greek medicine was under a strong religious influence, they managed to abandon the „temple medicine“ and the pointless philosophical speculations. Already from pre-Hippocratic times, but mostly from Hippocrates and his school onwards, the Greek physicians became keen observers of nature and devoted followers of empirical methods. Judging from the present point of view, Alkmeon, a protagonist of the Croton medical school and a predecessor of Hippocrates, as well as Hippocrates himself, were the true precursors of the modern Evidence-Based Medicine (Sackett et al., 2000). Well known is the already quoted Alkmeon's statement that about the invisible and mortal only the gods are certain and man can only assume. Today it appears as if he in his statement had foreseen the numerous unsubstantiated speculations that kept discrediting medicine over the long centuries that followed. Today, however, we have to add that a lot of the previously invisible have been visualized by means of advanced science and technology. Problems about „the mortal“ persist since that still remains on the level of beliefs and assumptions.

The present times are addressed also by the Hippocratic concept of fighting diseases by natural means of maintaining healthy lifestyle and harmony within the organism. However, in our daily portion of information we learn that the somatic and mental harmony can be achieved only through probiotics bearing this or that trademark.

Remarkable from medical point of view and indispensable for the diagnosis, treatment and prognosis are also the Hippocratic works on the importance of the thorough history taking — physical, psycho-social, epidemiological and, of course, the complete history of past and present diseases. Furthermore at present, on the basis of comprehensive data and by means of modern technology it is possible to work out more or less accurate prognoses on the state of health and disease on the Earth.

The Hippocrates' learning emphasized also the holistic concept that is currently loudly articulated by both — medicine and nursing: „The role of a physician is to focus not only on the affected organ but on the whole body.“ Today, in addition, also the psycho-social and spiritual fields are emphasized as an integral part of perception of health and wellbeing (Kozier et al., 1991).

And last but not least, the Hippocrates school recommended as indispensable for medicine and philosophy the perfect understanding of human creature. In their time they could not assume that 25 centuries later man will penetrate down to microcosmos much deeper than to that time known smallest particles of matter — *atomoi* (Šanc, 1946). The molecular biology and genetic engineering, the latest achievements of science, and prospectives for the 3rd millennium are signalling the advent of genomic era, implants of gene chips, roboted biopsy, etc., even though these terms are still familiar only to a limited number of professionals.

And, here again we can learn from the Father of Medicine — Hippocrates who in his learning struggled for humanization of „ars medica“ and for the more respectful place of medicine in the eyes of the entire human race — not only the prosperous but also the poor and suffering ones.

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