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и здравоохранение» и «История медицины» в качестве
учебника для студентов медицинских вузов

TEXTBOOK

Yu. P. Lisitsyn

HISTORY OF MEDICINE

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Chapter 2

THE DAWN OF CIVILIZATION. HEALING AND TRADITIONAL FOLK MEDICINE IN ANCIENT STATES: EGYPT, MESOPOTAMIA, JUDAEA, CHINA, INDIA AND TIBET

The dawn of civilization and, primarily, differentiation of labor and governing functions concerned all aspects of life of human communities transforming them into slave-owning states of the ancient world. And this process involved not only farmers, merchants, craftsmen, military men, leadership elite, but also the representatives of religious cults, developing on the basis of initial beliefs in extramundane, transcendental origin of all life phenomena and events — pagan diversity, multitheistic, not worshiping the one God, which became the implementation of major religions surviving to present day — Christianity, Buddhism, Judaism, Islam etc. Religion united people and under one government, permeating all the aspects of human life, moreover, claiming spiritual supremacy and quite often the authority in a state.

Certainly, the process of establishment of states, private property, differentiation of labor and civil and religious power could not but have an impact on healing practices of that period which became more and more qualified, developing the techniques and concepts of folk medicine of the primitive society. In the process of differentiation of labor craftsmen-healers evolved, who specialized in diagnostics and treatment of different illnesses and injuries — internal, external, skin diseases, etc., treatment of traumas, even in performing surgeries and obstetrics. They all were guided by reasonable experience of folk medicine, moreover, of temple medicine that appeared later in the first slave-owning states of antiquity, and of course they could not help but fall under the influence of theurgical, religious beliefs. It is known that in temples dedicated to numerous gods, priests themselves cured sick people, attributing the emergence

of diseases to the wrath of gods, intrigues of devils and demons. But I should emphasize again that the medicine at its root and in the first states (as well as in upcoming ones) originated from folk empiric medicine of primitive societies.

As already stated, folk medicine is called traditional, particularly in such states as China, Egypt and India. And this is true regarding these states, where up to the present day traditions of ancient folk medicine have persisted not only in healing practice but also in attempts to explain the essence, nature of diseases and human health. Despite thousands of years past, these initial, so to speak, theoretical beliefs and even doctrines continue existing and providing background for traditional folk medicine. Here is a piece of evidence to support this statement. An article by A. Alexandrov "How to receive treatment in China" was published in a popular newspaper "Argumenty i Fauty" (No. 46. 2002); the author visited Beijing and familiarized himself with traditional healing available to the majority of population in this country.

The article contains examples of medicines of plant and animal origin which were used by ancient Chinese healers even before the Common Era and which are in a great demand up to the present day. "Since ancient times Chinese doctors believe", the author cites one of the folk healers, "that the human body is something like a radio receiver: it comprises twelve channels, and temporal waves of twelve months pulse through them. After coming into this world, equilibrated voids of warmth and cold, darkness and light gradually become more and more unsteady due to roughness in reading of these particular waves by 360 key points of 12 channels. As a result, the balance of food and drinks intake, cold and heat, movement and rest is interrupted and because of this the body starts getting sick. And the doctor who gives a helping hand just tries to restore the lost balance". This example shows an interpretation of disease origin that survived up to our days. Next, we will dwell on the rise and evolution of the concept of traditional medicine in China and other countries where it enjoys the advantages of governmental rights along with contemporary scientific, alternative medicine. However, it is not correct to denominate all folk medicine as traditional, as it was explained above, because its ancient traditions have survived to our days along with theoretical beliefs of antiquity only in few regions and countries.

But it is rooted in fertile ground of folk medicine even in those countries, where traditions have been lost to the present day. It is considered, for example, that in South America the Maya created a well-formed system of medicine, however, it is not practiced currently as it is in China, India, and Tibet. In the past, one of the most complete implementations of traditions of folk medicine occurred in ancient Egypt, but nowadays Egyptian traditional medicine is not practiced, particularly since modern Egypt is populated not by descendants

of ancient Egyptians, but by representatives of other nations who conquered this country.

Nevertheless, despite these remarks on the definition of folk medicine, a great bulk of experience cumulated in diagnostics, treatment and prevention of diseases, which is rooted in folk medicine, needs to be thoroughly studied and used. Representatives of contemporary, i.e. alternative medicine, have begun to show such an understanding, because it uses means and practices of folk medicine more and more extensively, including methods of psychotherapy and diagnostics, and particularly the so-called dietary supplements derived from raw materials referred to in folk medicine sources.

2.1. TRADITIONAL FOLK MEDICINE IN MESOPOTAMIA, ANCIENT EGYPT AND OTHER COUNTRIES

The state of healing and the onset of natural philosophical ideas about human nature, his health and diseases are studied and quite completely represented in both old and new works, including textbooks. Doctor S. Kovner from Kiev, who analysed all sources of information about the history of medicine available up to 1950s and later, gave a classic example presenting medicine of this early period of civilization, primarily in Oriental states. Referring to the remarks of Rousseau that "the history of civil societies is at the same time the history of human diseases" (1782), S. Kovner has shown how, against the background of development of nations and societies, the medical practice of healing and original ideas about the essence of diseases and health were forming even in those distant times. He wrote that a lot of diseases, according to the views of ancient healers, depended on human living conditions and the way of life, while other diseases depended on natural phenomena and, of course, intervention of supernatural, theurgical powers.

"Along with disorders that emerged as a result of later civilization, there is a great number of such diseases that are by no means caused by an artificial way of life, but rather depend on natural environment and a wide variety of atmospheric and thermal effects"¹. Therefore, even in the history of medicine of ancient eastern civilizations three approaches to practice and interpretation of the origin of diseases were clearly identified: 1) practical healing as development of extensive experience of the past, i.e. diagnostics, treatment, elements of personal hygiene and prophylaxis; 2) making albeit primitive general conclusions regarding human nature, health and diseases by means and on

¹ *Ковнер С.* История медицины. Вып. 1: Медицина Востока. Медицина Древней Греции до Гиппократa. — Киев, 1878. — С. 8.

the basis of natural philosophy and 3) influence of theurgic religious beliefs. We should remark once again that empiric, simply materialistic ideas ever more ensphered in religious dogmata were at the very core of healing, including formation of traditional approach.

We are going to briefly describe these three principles on the example of traditional folk medicine of Oriental nations, including Mesopotamia, Egypt, China, India and Tibet. These countries retained the most of historical, archeological, written and other material evidence on the state and evolution of medical views.

The first more or less reliable information about the state of medicine in these countries, as well as in Assyria, Babylon, Sumer, Judea dates back to the III–II millennium BC, i.e. four–five thousand years ago. Material evidence of healing and understanding the nature of diseases — papyruses, cuneiform tables, hieroglyphics and other written symbols were discovered going back to about that time; they are now being decoded, since their content is not completely understood. However, even what is known allows suggesting a high level of medical practice and theoretical concepts of the time. It stands to reason that the armamentarium of remedies of herbal, animal and mineral origin created by the folk medicine in these and other countries is extensively studied and used in modern medicine.

"Ancient East", T.S. Sorokina writes in her textbook on the history of medicine, "was the cradle of the world history of human civilizations, class societies and nations. Here the transition from primitive communal society to the early slave-owning one was accomplished earlier than anywhere else on the globe. The first class stratification of society took place in Egypt and Sumer (IV millennium BC). In other regions of the globe, this process developed at a later date: in India — in the middle of the III millennium BC, in China — II millennium BC, in nations of the Eastern Mediterranean — III–II millennium BC, in Western and Central Europe — I millennium B, in America — in the I millennium BC"¹.

Speaking about the ancient Sumerian state and its people, it is known that city states were established around 3000 BC in the south of Mesopotamia. Here, and somewhat later in the North, trade and crafts were developed, cuneiform writing on clay tables was devised. One such table contains a description of 15 recipes of remedies made from plants, minerals: salt, oil, milk, animal organs. This Pharmacopoeia contains no references to wrath of gods and other supernatural forces — this is a practical guidance. Another table shows a personal doctor's stamp (all people had to carry around these stamps) with medical instruments and vials for remedies featured on it. It is known that

¹ *Сорокина Т.С.* История медицины в 2 томах. Т. 1. — М.: Университет дружбы народов, 1992. — С. 34.

the Sumerians had cultivated strict rules of hygiene — avoiding drinking dirty water, washing hands, shaving the head, and other. It can also be assumed that representatives of religious beliefs (priests and others) could be doctors.

2.1.1. Healing in Babylon and Assyria

In her textbook (later editions) T.S. Sorokina fairly notes that the Babylonian-Assyrian medicine as well as the entire culture had a great influence on the scientific knowledge of all Western Asia¹ and was many ages ahead of achievements of ancient medicine.

Assyrian-Babylonian culture reached a high level, particularly under the rule of King Hammurabi (1792–1750 BC). Assyrian king Ashurbanipal collected a large number of cuneiform tablets that formed the so-called "Library of Ashurbanipal", which was lost two centuries later. According to ancient Babylonians, the world was ruled by the supreme triad (the god of heaven — Anu, the lord of the land — Enlil and the god of waters — Ea (Enki)). This triad controlled another one: the god of the sun — Shamash, the god of the moon — Sin and the goddess of the morning star — Ishtar. Whereas, the goddess of healing Gula got her art from the supreme gods. There were a number of other gods such as Ningishzida, which was depicted with a staff entwined by a snake. Along with sacerdotal hieratic medicine, which was represented by conjurers — Ashipu, empiric medicine was developed with its representatives, healers — Alu or Asu. Doctors themselves collected medicines, prepared them and were not influenced by any theurgic ideas. They were representatives of the empiric folk medicine, although they could not give up the astral beliefs. Nothing is yet known about medical texts and special schools in Assyria and Babylonia. The most famous monument of ancient Mesopotamia was a basalt column 2.25 m high that was found in 1991. The Code of Hammurabi was carved on this column (Fig. 2.1).

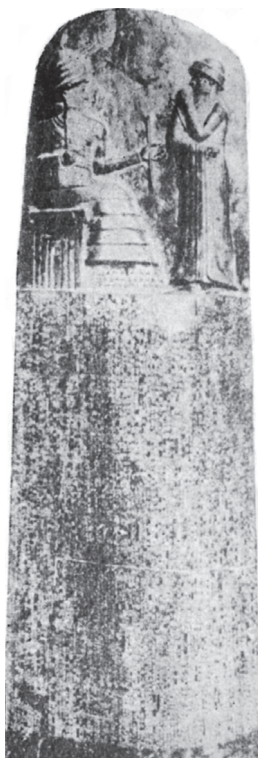


Fig. 2.1. The Code of Hammurabi, King of Babylon (Paris, Louvre)

¹ *Сорокина Т.С.* История медицины. 3-е издание. — М.: «Академия», 2004. — С. 62.

Some paragraphs of the Code of Laws are about the legal aspects of healers practice. They are widely known and mentioned in almost all textbooks on the history of medicine. Class and property implications of the laws are noteworthy. Remuneration for doctor's work and his responsibility is strictly defined by the wealth status of the patient. We usually refer to paragraphs 215–220 of the Code of Hammurabi: "If a physician operates on a man for a severe wound with a bronze lancet and causes that man's death; or opens an abscess (in the eye) of a man with a bronze lancet and destroys the man's eye, they shall cut off his arm". (par. 218). But if the patient is a slave, then the physician shall give another slave instead of that one (par. 219). "If he opens an abscess (in his eye) with a bronze lancet, and destroys his eye, he shall pay silver to extent of one-half of his price" (par. 220). If the surgery is successful, the doctor will receive a generous fee. "If a physician operates on a man for a severe wound (or makes a severe wound upon a man) with a bronze lancet and saves the man's life; or if he opens an abscess (in the eye) of a man with a bronze lancet and saves that man's eye, he shall receive ten shekels of silver (as his fee) (par. 215)¹. If the patient is anyone's slave, the owner is to give the doctor two shekels² of silver" (par. 217).

2.1.2. Ancient Egyptian medicine

The aspects of healing in Ancient Egypt have been explored best of all, provided a lot of evidence from written sources — papyruses and particularly the most detailed medical Ebers Papyrus and the so-called Hermetic books — a kind of encyclopedia of knowledge and religious beliefs. Among the 42 Hermetic books, which are attributed to the god Osiris, the book called Embre or Ambre tells about the structure of the human body, about diseases, surgical instruments, medicines, obstetric techniques, specifically about treatment of eyes and other common injuries. The remaining Hermetic books were preserved in the so-called Book of the Dead. Along with the Ebers Papyrus or Leipzig Papyrus, medical information is also contained in other papiruses, for example, in the so-called Edwin Smith Surgical Papyrus, which was found in Memphis by Brugsch. These papyruses mainly compiled descriptions of drugs, their recipes and symptoms of diseases that are accompanied by religious texts — spells, prayers, appeals to many gods. The more recent the text found in these written hieroglyphic sources, the more mystical, their-

¹ Страшун И.Д. Медицина. БМЭ, 2-е изд. Т. 17. — М., 1936. — С. 230–231.

² One shekel of silver was then equal to 8.4 g; one could buy 300 litres of grain (the grain was stored in vessels and measured in litres). — Author's note.

gic appeals it contains. Since the origin of the state of Egypt (five–six thousand years ago), the medicine of this nation transited from craftsmen–healers specializing in treatment of some organs or body parts, from the representatives of familial medical schools accumulating and using empiric knowledge on diagnostics, treatment, hygienic rules, to priests who worshiped a retinue of gods and forcing people to blindly follow the beliefs. Thus, the medicine of Egypt was becoming more magical, conservative, and dogmatic, with canons that were impossible to break under the threat of harsh punishment including the death penalty. It remained the same until the beginning of the new era when Egypt virtually ceased to exist as an independent state. And until that time the Greeks and other people worshiped the knowledge and wisdom of Egyptians, including medical expertise, but then the "disciples" became "teachers" of stagnant medicine of Egyptians. The natural environment and way of life of the Egyptian people were entirely determined by the state of main water artery — the Nile, with its floods and freshets that ensure yielding agriculture and cattle breeding in the flood meadows. Which, for its part, have determined particularities of religion and its powerful influence on the whole life of the population, moreover, on some customs that are not found in other countries, such as embalming of dead bodies. As people faced their dependence on nature forces and cattle breeding (oxen, cows, etc.), religious beliefs of the Egyptians, propagated and cultivated by numerous votaries, were particularly expressed in that the people had portrayed their own gods as animals or humans with animal heads and birds. Thus, the aforementioned god Osiris (Usiri) was depicted as a falcon or a human with a falconine head. The god of knowledge, who gave people the writing, medical tips, et, was depicted as a man with a head of ibis bird, and the goddess of healing, the wife of the supreme god of Memphis, Ptah appeared in the form of a lioness or a human with a lion's head; the patroness of women and new mothers' goddess Taurt was depicted as a female hippopotamus, etc¹.

Perhaps, the only god who was depicted as a man was the god of medicine. **Imhotep**, deified after his death, the famous physician and architect in the 28th century BC was depicted sitting with a scroll of papyrus on the rocks. He was even identified with Asclepiades, the god of healing in Greece.

Each city and region of Egypt worshiped its own gods in whose honour numerous temples were constructed. That was the place where the votaries treated their patients. In order to pay a fee or to express gratitude, patients

¹ *Сорокина Т.С.* История медицины в 2 томах. Т. 1. — М.: Университет дружбы народов, 1992. — С. 58–59.

often brought gifts for the temples — casts of impaired organs (liver, heart, etc.) made of gypsum and often silver and gold.

Despite the embalming of dead bodies, Egyptians had primitive ideas about the state of the body, especially since embalming was performed in few cases, because it was very expensive and it was nothing like autopsy. For example, the brain was removed through the nose with special hooks and, naturally, could not be used as an anatomical preparation. And animal autopsies did not give material for studying the structure of bodies, because buffaloes, oxen, cows, etc. were considered sacred and killing them was strictly punished. Nevertheless, they knew something about the liver, stomach, intestines and the heart, to which Egyptians attached particular importance as well as to the vessels; they must have seen and measured pulsation (pulse). The internal organs were usually eviscerated during the embalming. The cult of animal gods was reflected in numerous sculptures of bulls, sheep, dogs or dog-like people, etc. found in Egyptian temples up to now. The religious cult ordered worshipping them for their wrath, while the wrath of multiple demons tormenting the body, caused diseases and misfortunes. The main idea of religion was immortality of the soul, accompanying the man even after death, and transmigration of souls, into animal bodies as well. Hence the desire not to part with the soul, to enclose it into the body through embalming and protect, not to kill the sacred animals.

Egyptians just theoretically considered that there are some kind of channels between soul and body — "metu", which referred to blood vessels and nerves. They branch out in all parts of the body and there are between 24 and 32 of them. Egyptians believed that until the age of 50 the heart grows every day and then decreases proportionally and as a result death strikes old men. The heart was assigned particular importance, it was considered that its impact is transmitted to all parts of the body; it is possible that even Egyptians examined the pulse for diagnostics and treatment.

It is difficult to establish a kind of theoretical origins of beliefs about the nature of the human body, but sometimes one stumbles upon information that in Egypt (and not just in China and India, and moreover in Greece, which is discussed later) there were the beginnings of the humoral doctrine about the four main elements of the space — water, earth, air, fire, which make up the human body and determine its health. Along with such views there was a doctrine of pneuma — a special substance that flows from air into the lungs, from thence to the heart and from thence to the whole body by vessels. It is not known to what extent these essentially natural philosophical beliefs were used in healing, especially since dogmatic, mystical, religious postulates dominated

here as already stated. Of much greater importance was the armamentarium of drugs, practical methods and treatment which included some surgical procedures in traumatic injuries (splints, etc.), castration, circumcision, and cesarean section on living and dead women. A variety of plants were widely used for preparation of medicines in different formulations — solutions, ointments, powders, pills, etc.: opium, cedar oil, poppy seeds, date, onions, pomegranates, lotus, aloe, grape, etc., parts of the body of many animals — liver, brain, excrements, as well as honey, milk, palm wine, vinegar, beer (which was cultivated in Egypt since ancient times), minerals (sulphur, iron, antimony, sodium carbonate, alabaster, lead, nitrate, clay, etc.). Ebers' Papyrus, as the book on preparation of medicines was called, contains nearly 1000 formulations of drugs for treatment of almost all organs and parts of the body. Some of the formulations are complex and include 30 or more ingredients. The Egyptians tended to have a certain remedy for each organ, hence appeared such a diverse pharmacopoeia, which is still far from being explored and mastered by modern medicine, particularly now that preparation of the so-called food supplements is quite widespread and in demand. Preparation of these very popular substances, which are not medicines (and hence their name), is based on the use of vegetable, mineral, and other ingredients, which were widely used in folk medicine in Egypt.

As it has been pointed out on numerous occasions, treatment procedures were accompanied by magic spells, prayers and suchlike rituals. These sacramentals as medicines and medical procedures themselves were aimed at mitigating the wrath of gods, casting out demons, and using a wide variety of means and methods liberating the sick body from toxins, all kinds of pathogenic worms and other foreign substances through emetic and evacuant remedies including enemas, bloodletting, cupping-glasses made from animal horns, and clysters.

The strong points of Ancient Egypt were hygienic regulations, compulsory for all, and primarily for priests. These rules pointed out the need for clean linen underwear (not wool, not fur), cleanliness of the body, regular washing, bathing, massage with various ointments and oils, circumcision, moderation in eating; the children had to walk barefoot; intake laxatives and emetics was prescribed three times a month and even more often to purify the body; certain hours were recommended for bowel movement and sexual intercourse. It was compulsory to fight the insects; people even shaved their heads every other day as a cure for lice infestation.

Despite the relatively high level of culture, there were no special institutions for medical education in Egypt at that time. Medical knowledge was passed from father to son.

2.1.3. Medicine in Judaea

Medicine in Judaea was strongly influenced by Egyptian medicine, provided that the Israelites were essentially prisoners of the pharaohs and lived on the territory of Egypt for 400 years. As we know from the Old Testament, Moses, who proclaimed the law of the country, was saved from Herod, who had ordered to murder all male Israelites, by Pharaoh's daughter and brought up by Egyptian votaries. Religious canons, the basics of belief and the legislation that he proclaimed also included medical information. As opposed to Egyptians and other adherents of polytheism (belief in more than one god), the Jews worshiped only one God — Jehovah. In the Bible, God declared: "I am the Lord, who heals you". All diseases were interpreted in keeping with theurgic beliefs as they were sent down to people as punishment for deviating from God's commandments. Therefore, healing was in the hands of priests — the Levites, who called for prayers and sacrifices, aimed at the healing power of the soul through faith. In the Bible Moses provides quite a clear description of the plague, fever, scabies, jaundice, madness, leprosy and other diseases. As previously noted, they were cured with commandments, prayers, etc. and with remedies made of figs, fish bile and other. Surgical treatment included circumcision and castration by crushing or evulsion of testicles. It is known that Jewish women gave birth more easily than Egyptian ones, because there were midwives who used the birthing chair. According to the legend, Solomon the Wise compiled The Book of Medicines, however, the king Hezekiah hid it, so that patients believed more in God than in medicines.

In more recent times there appeared a so-called **Talmudic medicine** (Talmud, which has undergone several revisions until the Babylonian edition, is a code, a collection of religious interpretations, traditions, rabbi's decisions; it was originally called "Mishnah"). About 150 BC a mixing of different interpretations and views of Talmud resulted in formation of religious sects of Sadducees, Pharisees and Essenes. The latter are known for their medical activities in the field of internal medicine. The Talmudists used numerous medicines from olive oil, aromatic herbs, onion, pepper, goat milk, as well as cranberry tree, alumen, etc. Therefore, the Talmudists used external and internal medicines, and, of course, magical means — spells, prayers, etc. They recommended doing the bloodletting systematically (every month) even for healthy people in order to purify the body; they made dissolving instillations and instillations of turpentine oil into the urinary bladder to treat lithiasis. They knew the curative properties of mineral waters. From post-mortem examination of animals, less often people, the Talmudists knew that the human body contains 252 bones, that the spinal cord begins with the *foramen magnum* and ends as *cauda*

equina, that the lungs are enclosed in two membranes, kidneys have their own capsule, that resection of spleen is not lethal, etc. Of certain interest is the doctrine of crises — sweat, sneezing, bowel movements, pollution were considered crisis events. The Talmudists correctly believed that jaundice develops as a result of bile retention, and dropsy — from retention of urine. They were aware of various injuries of the spinal cord, trachea, perforating wounds of internal organs. Pregnancy was diagnosed by examination of breasts and genitals, gestational age was assessed starting at 270–273 days; they knew such obstetric operations as podalic version, cesarean section on a living woman and on a dead body. The Talmudists compared the female body with a closet and uterus with a bedroom, they called the body of uterus the vestibule, vagina — the external chamber, and clitoris — the key. Like in medicine of the Old Testament special attention was paid to cleanliness of clothes and body, washing, bathing, etc. They advised eating more food and drinking water until the age of 40 and after that a person was to be more moderate in eating, resting, sexual intercourse and drinking wine.

2.2. MEDICINE IN ANCIENT CHINA, INDIA, AND TIBET

The traditional medicine in China, India, and Tibet is as ancient as that of Egypt, Mesopotamia, and according to certain data it is even more ancient than that. Anyway, Chinese traditional medicine is supposed to date back to 3–4 millennium BC.

I have already mentioned that traditions of ancient medicine in China have been preserved until, in not only practice, diagnostics and treatment of diseases, but also, so to speak, in the theoretical foundations of medicine, so it is safe to say that traditional Chinese medicine originated from folk medicine and natural philosophy of the past and has persisted until nowadays.

According to the ancient medical treatises written in hieroglyphs invented in China, and above all to the famous many-volumed "**Nei Ching**" ("The Book About the Inner Man") attributed to the doctor Wang Shuhe (before 9th century BC) the human nature is a reflection of space, consisting of five main elements: earth, water, fire, wood (plants) and air, which must be in a state of harmony, balance, as well as in the outside world (outer space). A disturbance of this balance under the influence of various forces inside the man and outside him leads to impairment of body function, i.e. to disease; and restoring the balance means healing, health. Earth, water, fire, wood (plant) enter the body with food and then get into the stomach, which prepares the food for digestion turning it in the small intestine into an amorphous mass — chyle.

Chyle turns into blood in the heart, but it is viscous, dark, heavy, inert until the fifth element — air — permeates the blood from the lungs. Blood becomes light, clear, fluid; through the heart and by way of respiration it penetrates into all organs and parts of the body, bringing it nutrition and material for building tissue. Remnants of food are removed from the colon. However, the concept is not limited to these beliefs, which were essentially derived from the natural philosophy views of that time. They are considerably supplemented by the doctrine of two principles: mobile, light male yang and passive, heavy, dark female principle, yin. Philosophic tracts of ancient China teach that the relationship of these principles determines the interaction and fate of five space elements. Moreover, these elements and parts of the body encapsulate these principles to a greater or lesser extent: "the blood has the property of yang and returns into the arteries together with air; and yin flows in the veins, irrigating the bones and tendons and nourishing the soul"¹.

The causes of disease are divided in external ones: air, heat, moisture, dryness, food, drink, and internal ones: passions, grief, fear, hatred, as well as also evil spirits, which Chinese doctors do not deny, and the more the medicine of the country developed, the more the influence of religion became apparent (Confucianism, Daoism, Buddhism, etc.). All diseases in ancient Chinese medicine (along with contemporary traditional medicine, i.e., former ancient one) are classified into: 1) diseases from miasmatic poisons (typhoid, cholera, four kinds of smallpox, scrofula, carbuncles, etc.); 2) intoxication with mineral, herbal and animal poisons (arsenic, cinnabar, opium, poisonous mushrooms, meat of sick animals, etc.); 3) diseases from sudden cooling of the body (rheumatism, gout, palsy, epilepsy, uterine diseases, headaches, jaundice, etc.); 4) inflammatory diseases (cough, lung abscess, diseases of urinary bladder and kidneys, piles, dysentery, worms, brain inflammation, etc.); 5) external diseases (venereal diseases, leprosy, bewitchment, lichen, burns, wounds, frostbite, etc.)².

The primary focus in recognition of the disease was on the condition of the pulse and tongue — its colour, moisture and other characteristics. Thus, white tongue, according to Chinese physicians, indicated pulmonary disease, yellow — spleen and stomach diseases, blue — liver diseases, black — urinary bladder and kidney diseases, and so on.

¹ Ковнер С. История медицины. Ч. 1. — Киев, 1878. — С. 100.

² The use of modern names of diseases here does not prove that in ancient China these particular names were used to denominate disorders and injuries, but the symptoms of these very diseases were named then. — Author's note.

The Chinese developed a teaching and art of pulse diagnosis. They distinguished 28 types of pulse. One of the founders of the pulse diagnosis was doctor Bian Que. He also established the arrangement (order) of diagnostic techniques (history taking, auscultation, examination, palpation, including pulse measurement). It was considered that the pulse "like the strings of a lute" is intended to distinguish harmony and disharmony in the body. There was developed an integrated system and classification of different types of pulse associated with manifestations of yang and yin. When yang predominates in the body, the pulse is rapid, shallow, full, strong, tight, producing a feeling of a taught string. When yin predominates, the pulse is irregular, weak, short, scattered, and intermittent. Chinese physicians identified hundreds of types of pulse, and not only on the arm, but also on the foot; a certain type of pulse was recognized for each disease and organ, hence its diagnostic value. It was considered that on average the pulse of adult people makes 80 beats per minute, in elderly people — 76 beats per minute, and in children — 96 beats per minute. The doctrine of the pulse was set out in detail by the famous physician **Wang Shuhe** in "The Pulse Classic". Along with the doctrine of the pulse, Chinese medicine used its own invented methods of needle therapy (acupuncture) and moxibustion from ancient times (Fig. 2.2). Hollow needles were made for acupuncture: first from stone, then from bone and metals — silver, gold, steel. There were (and still exist) different sets of needles with sharp, blunt, oval and other tips, short needles, long needles for penetrating internal organs. This medical technique was based on the same theoretical concepts about the regulation of balance of yin and yang in the body, and patients had to release an excess of yang or to eliminate its deficit through the air, thus restoring the balance of these principles. Acupuncture was also used for pain killing during surgery and to treat pain in various parts of the body.

The technique of moxibustion was used with the same purpose; moxa sticks were made of wormwood leaves rolled like a cigar or with rags. They were placed directly on the patient's body or at some distance from it, and then medications were laid between them. Acupuncture and moxibustion were performed precisely in the most sensitive areas that had been explored hundreds of years earlier. According to information from various sources, the number of these points ranges from 360 to 1000. To study acupuncture and moxibustion, special atlases of such points were compiled and dummies were made with the points designated on them (Fig. 2.3). Often the dummy was covered with glue and paper, then paint was poured into it, and the trainee had to hit the corresponding point under control of the paint that was pouring from the dummy.



Fig. 2.2. Procedure of moxibustion

Various massage techniques and special Chinese gymnastics with exercises that imitated animal postures and movements were also used to influence yang and yin.

Another invention that is worth mentioning is variolation for prevention of smallpox that was widespread in China.

Smallpox vaccination was probably performed using dry pus or crusts from smallpox pustules, which were rubbed into the nose.

Chinese medicine is rich in therapeutic agents of plant, animal and mineral origin. In actual fact, not only tea, but all the plants of the country were used in preparation of medicines.

However, the most famous one was (and still remains) the "root of life" — ginseng, which was used in solutions, tinctures and other forms (more than 70 dosage forms in total) as a multi-purpose medicine, stimulating the vital processes, invigorating and anti-aging. For good reason it is called "miracle of the world", "gift of immortality", etc. Besides ginseng,

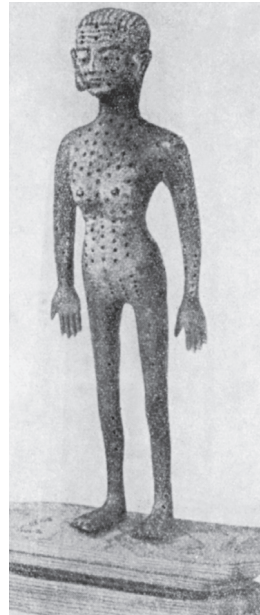


Fig. 2.3. Human body model with acupuncture points

Chinese medicine has widely used velvet antlers — unossified antlers of young deer, which contain a large set of biostimulants. Classification of medicines included: 1) invigorating agents (tonics) (tea, tobacco, meat of various animals, asbestos, etc., apart from ginseng); 2) astringent agents (oak buttons, lotus seeds, poppyheads, nutmeg, date seeds, quince, plum, gold, silver, etc.); 3) resolving agents (mimosa, nutmeg, ginger, camphor, emetics: white hellebore, seeds and roots of turnip, sulfuric oxides of copper); warming resolving agents (pepper, ginger, sandalwood, mustard seeds, clove, camomile, dried silkworm, etc.); 4) laxatives (soapstone, sage, amber, red beans, rhubarb, sodium sulphate, ice water, human excrements, etc.).

Exotic remedies were often used: dried spiders, moles, lizards, snakes, bones, teeth, nails, ears, tongues, heart, and liver of a lion, tiger, elephant and other animals. The famous doctor Hua Tuo was known as a surgeon, although surgery was underdeveloped in Chinese medicine, even bloodletting was not performed. Amputations were not performed either. Sprains and fractures were treated using bamboo splints and kneading, abscesses were punctured with needles to evacuate blood and pus. Most surgical procedures, including treatment of fractures and sprains, were in the hands of barbers and chiropractors.

Facilities like common pharmacies were established to store and sell medicines. In order to take care of the imperial court, and quite often to fight epidemics, state public health institutions were established, which also handled the problems of public hygiene, i.e. healthcare, albeit in rudimentary form. However, personal hygiene in China, as well as in other eastern countries, was fairly widespread. Particular attention was paid to keeping the proper lifestyle, diet control, and clean habits. Preventive recommendations included massage, therapeutic exercises, and respiratory exercises. A treatise on hygiene written by the physician Ganga Singh gives instruction on how to be healthy: get up early, have a little porridge for breakfast, a moderate dinner at noon, drink only water, avoid salty food, afternoon sleep not more than 2 hours, moderate supper, rinse mouth and teeth with tea before going to bed, massage the soles of the feet.

Religious influence, prohibitions interfered with information on anatomy and development of surgery, although the country had a famous surgeon Hua Tuo, who practiced acupuncture and used herbal medicines for pain relief, who successfully treated injuries of the head, chest and abdomen.

There were special medical schools in China, but they appeared too late, in the 5th century A.D. **Medicine of India** has even more ancient roots than medicine in China, its traditions are well known due to decoding of Ayurveda,

a major medical text *The Knowledge of Life*) in three editions attributed to Charaka, Atreia and particularly to physician Sushruta, as well as other sources, and above all the set of laws of Manu (1000–500 BC) and other Vedas (*Rigveda*, *Samaveda*, *Yajurveda*), dedicated to religious texts.

The theoretical basis of medicine in India resembles the Chinese one, but there are some differences. Like in ancient China, it is dominated by natural philosophy beliefs about the primary elements of space, with the exception of wood, replaced with ether (most likely it is the widely known *pneuma*). These elements: earth, water, fire, air and ether are derived from some tiny particles — anu entering the body with food, which is converted into chyle in the small intestine, then the latter rises towards the heart and turns into blood there. By means of respiratory movements, the blood flows along vessels to all organs and parts of body for their nutrition and reparation of tissues. As you can see, it is almost the same concept as in Chinese medicine, but the Hindus have no idea of yin and yang. Ancient Indian natural philosophy with its notion of space elements which comprise not only the Universe, but ultimately the human body, is not the only theoretical fundamental of medicine. Sushruta and other physicians do not give up faith in supernatural forces — gods, demons and so on. Along with its development the medicine in India was progressively more influenced by the dominant religion — Buddhism (Buddha, 622–543 BC)¹.

Transformations of space elements from food convert phlegm, bile, air principle; the harmony of primary elements in phlegm, bile and air principle determines health, and its disturbance means disease. The balance and composition of the primary elements determine the nature of various diseases. Treatment methods were focused directly on these principles, including the widely practiced Indian gymnastics with appropriate postures imitating animals — *asanas*, breath-holding, massage. Therapy of this kind is closely associated with the philosophical and religious teachings of yogis, particularly the so-called *hatha yoga*, which are still widespread in modern traditional medicine of India.

¹ Indian society was stratified in castes. The leading role belonged to the caste of Brahmins — the priests, followed by the caste of Svans or Kshatriya, caste of free peasants, craftsmen and merchants or Vaishya, then slaves or Sudra, untouchable. For the latter, there were stringent restrictions in communicating with other castes. Religion of Hinduism preached by the Brahmins, exercised tight control over the caste system in the country. The spread of Buddhism was a kind of reformation of religion and public foundations. It opposed the caste system and declared equality of all human beings, particularly at first: "the way to salvation is opened to everyone equally, birth does not condemn anyone to ignorance and sorrow", and "the most despicable slave is equally born by a woman" — taught the Buddhists. — *Author's note*.

Along with similar philosophical and religious beliefs, which penetrated the medicine of ancient times, there was a practical teaching about main types and subtypes of physique and temperament that gave a physician a landmark in the diagnosis and treatment of diseases. The type of body is nature according to Sanskrit. In Ayurveda it is outlined that there are mediators — doshas between the body and mind, which are responsible for certain types of activity: vata dosha — for movement, pitta dosha — for metabolism, kapha dosha — for body structure. According to the doshas, there are three basic types of physique and temperament, or constitution, although all the doshas are present in every human being, and maintenance of health depends on their balance.

Each type of constitution is characterized by its own particular qualities, expressed in body structure, human behavior, and consequently, in their effect on health. Determining the type of constitution, physician could already presuppose the diagnosis of the disease. He had to take into account the preferential localization of doshas: kapha is located in the chest, pitta — in the small intestine, vata — in the rectum. Moreover, the three doshas embody primary elements: vata — air (space) and ether, pitta — fire and water, kapha — earth. Each dosha has its subdosha located in different organs; like the doshas they regulate the condition of the body, its health and impact on diseases. For every type of constitution, doshas and subdoshas Ayurveda offers techniques to achieve the balance of primary elements comprising the body and principles, and therefore, to achieve health. For example, to balance out the vata, the following is recommended: proper daily routine, peace, careful intake of fluids, reducing response to psychoemotional exertion (we would say — stress), long rest, warmth, regular and proper nutrition, oil massage.

To balance out the pitta, moderation, freshness, emphasis on balance between to rest and activity, and reduction of stimuli are prescribed. To balance out the kapha, the following is recommended: stimulation of body activity, regular exercise, control of body weight, a variety of activities, warmth, dryness, moderate consumption of sweets.

Healing in India was integrally connected with the doctrine of yogas, particularly hatha yoga — physical yoga, which propagated a great role of different postures (exercises) — asanas.

In the present context the doctrine of Ayurveda has undergone modernization, it provided the basis for developing the concept of "quantum body", i.e. types of constitution and temperament, consisting of quanta.

Therefore, it offered techniques of meditation, therapies and other effective methods, which became widespread not only in India but also in other coun-

tries under the name Maharishi Ayurveda, i.e. reconstructed ancient Ayurveda. Hundreds of schools of modern system of Ayurveda were established¹.

Indian medicine took a step forward in comparison with China and other Oriental countries in research of human body structure. Autopsies were not prohibited, although they were carried out in a specific way, by maceration. The corpse was placed for 7 days in running water and soft tissues were scraped off with brushes or bark; sometimes they just observed the dead body decomposing in water. Of course, this method is not similar to vivisection, but it allowed obtaining some anatomical information, particularly regarding the location and size of internal organs and skeletal bones. Indians distinguished 500 muscles, 900 ligaments, 90 tendons, 300 bones, 107 joints, 40 major vessels and 700 branches, 24 nerves. The navel was considered the main location and centre of life, from which all vessels and nerves originate.

The cause of diseases is disharmony of space elements acting through lack or excess of food, unhealthy water, unfavourable climate, weather conditions, self-neglect, dirty clothes and homes, insufficient or excessive exercise, emotional tension, cold, heat, human sins in the face of gods, etc. Thus, all diseases are divided into natural and supernatural or demonic. Sushruta divides natural diseases into accidental (wounds, poisoning, etc.), physical (disorders during childbirth, due to climate, due to seasons, due to deterioration of body fluids and so forth) and mental (because of sorrow, fear, passions, melancholy, and others). He distinguishes primary illness, complications, prodrome (pre-disease, so to say), as well as internal disorders. Sushruta believes that air produces 80 diseases, bile — 40, and mucus — 20. Common diseases include fevers, epidemic typhus, smallpox, erysipelas, leprosy, gout, jaundice, obesity, scrofula, even diabetes mellitus (diabetes that is recognized by the taste of urine). Sushruta defines such local diseases as brain diseases — syncope, apoplexy, insanity, headaches, pain in the ear, nose, eyes, mouth, neck, and abdomen, cholera, vomiting, dysentery, spleen and liver tumours, helminths, rectal diseases, 12 different skin diseases, swelling and so forth.

Diagnosis was based on a thorough examination of the patient; the physician had to pay attention to body temperature, skin colour, appearance of tongue, feces and urine, strength of voice, respiratory sounds, and had to ask the patient about his general condition in details. Oddly enough, pulse diagnosis was not practiced. The Hindus knew a method of variolation, not the same as in China, but by rubbing pus from the human pustule into a puncture on the hand, i.e., in blood.

¹ See: Гопра Дирак. Идеальное здоровье. ППК «Аюрведа». — М.: «Древо жизни», 1992.

The Hindus, like Chinese healers, used many medicines of plant, animal and mineral origin. Garaka provided facts about more than 600 remedies. It should be noted that they were aware of the healing properties of mercury. The following is written in Sushruta's Ayurveda: "The physician who is familiar with the curative properties of roots and herbs is a man; one who is familiar with the properties of knife, fire is a demon; one who knows the power of prayers is a prophet; and one who is familiar with the properties of mercury is a god".

Among herbal remedies more than 760 medicines were known, provided that the plants were harvested and prepared by the physicians themselves. All medicines were divided into sudorific, emetic, laxative, ptarmic, diuretic, astringent, invigorating, narcotic, oily, accelerating labor, stimulating; methods of drug application included rinsing, infriktion, bathing (smoke, instillations into the urinary bladder, enemas, powders, pills, solutions, etc.).

Sushruta made particular emphasis on surgery; even his Ayurveda is called surgical. A doctor performed dozens of operations: amputation, laparotomy, herniotomy, lithotomy, cataract extraction, treatment of wounds, fractures (splints, tires), sprains, burns and so forth. They knew reparative operations for reconstruction and correction of defects of the nose, ears, etc. with skin grafts (what is called Indian method). The manuscripts described more than 120 surgical instruments that were made of steel by skilled blacksmiths. Indian doctors performed such obstetric operations as podalic and cephalic version, craniotomy, embryotomy, etc. The following signs of inflammation — redness, swelling, fever, pain, functional disorders were described in Ayurveda long before Celsus. Here one can find methods of treating wounds with boiling oil and needle therapy (acupuncture) typical of Chinese medicine.

Unlike other nations, Indian physicians paid much more attention to the mental state of their patients, to meditation training, ability to enter nirvana in accordance with Buddhism, i.e. what is called psychotherapy in modern terminology. As already noted, this kind of psychological impact on patients corresponds to techniques and ideas of yoga doctrine, including hatha yoga.

Like in other Oriental countries, much attention was paid to hygiene — the impact of climate and weather on health, cleanliness, regularity and moderation in eating, appropriateness of food to the season (e.g., in hot summer weather meat diet was not recommended). Remnants of food, feces were to be brought away from the housing and so forth. But not only personal hygiene was a subject of concern. Archeological excavations in the place of the ancient city Mohenjo-daro, in the north-west of the country discovered evidence of elements of public hygiene — keeping the cities tidy, construction of water pipes,

swimming pools, bridges, control of sanitary state of markets and public buildings and so on.

Many sources and above all Ayurveda reflect ethical guidelines and rules of behavior for physicians, who were required to exercise high professionalism, politeness, modesty, tidiness and neatness in clothing and appearance, attention to patients, etc. Sushruta said: "The doctor, who is successful in practice, should be healthy, neat, modest, have a close-cropped beard, carefully cleaned and cut nails, wear white clothes scented with fragrances, go out of the house only with a walking-stick or umbrella, and above all avoid chatter and jokes with women and not sitting on the same bed next to them. His speech should be calm, pleasant and encouraging. He should have a pure, compassionate heart, strictly truthful disposition, calm temperament, and should be distinguished by the greatest moderation and sobriety, constant desire to do good. You can be afraid of father, mother, friends, teachers, but should not feel fear of the doctor, the latter should therefore be more kind and attentive to his patients than the father, mother, friend and mentor. On the other hand, the good doctor must diligently attend and carefully examine the patient and should not be fearful or hesitant"¹.

The influence of Indian medicine extended to traditional Tibetan medicine, particularly. Its fundamentals are outlined in the multivolume treatise Gyushi ("The Essence of the Curative"); its authorship is attributed to Indian physician Yo-Zhed-Shon-Nud (4th century BC), and in numerous comments and additions to this work. Physicians in Tibet were priest Lamas, headed by the Supreme Dalai Lama. Gyushi consists of 4 volumes with the third volume the most essential one comprising 92 chapters; it describes the means and methods of treatment of 404 chest diseases and their symptoms. It outlines (in sections) treatment of body diseases, treatment of pediatric diseases, treatment of gynecological diseases, treatment of diseases caused by evil spirits (neuropsychiatric), treatment of wounds and injuries, treatment of poisoning, treatment of weak and elderly people, treatment of libido disorders. The other volumes expound on the fundamentals of medicine, pathology, anatomy, pharmacognosy, medical ethics, pulse diagnosis, urine analysis, acupuncture, pharmacotherapy and other. In brief, Gyushi and other texts of Tibetan medicine implemented the main provisions of medicine of India and China, and added a number of their own recommendations and concepts. This is particularly so with a differentiated approach to the diagnosis and treatment of children, women and elderly people, diet therapy and, by all means, pharmacological

¹ Ковнер С. История медицины. Ч. I. — Киев, 1878. — С. 43–44.

therapy, which is a great treasure of Tibetan medicine: There is no such substance in nature, which would be inappropriate for use as a medicine. If you look at nature from the viewpoint of a doctor, looking for medicines, one can say that we live in a world of medicines"¹. The main principle of treatment in Tibetan medicine is to treat opposite with the opposite. Special attention is paid to diseases of the gastrointestinal tract, considering that the first human disease was catarrh of the stomach and boiled water was the first drug. It should be noted that Tibetan physicians — Lamas — treating children considered it necessary to examine and, if necessary, treat their mother. Lamas also believed that a puerperant woman should be treated the same way as any patient. Mercury was used in treatment of lues (it is interesting that the Hindus and Tibetans called lues "the Chinese disease"). Like in China, there were widely used restorative and stimulating velvet antlers — young antlers of a sika deer that grow after old ossified horns.

In texts of Tibetan medicine attention is drawn to ethical requirements imposed on physicians. Thus, Gyushi indicates that six qualities comprise the basis of a good doctor, according to which he should be entirely wise, straightforward, fulfil commitments, be skilful in demonstration of his profession, diligent and wise in sciences.

In the epilogue to a book by E. Bazaron on Tibetan medicine, the academician V.P. Kaznacheiev estimates it: "...Tibetan medicine developed as a part of cultural traditions of the peoples of Central Asia, and developed effective methods of treatment of diseases, which are of interest even for modern medical science. The heritage of Tibetan medicine attracts by its highly efficient sources of therapeutic agents, as well as a variety of mental manipulations that contribute to prevention and treatment of human diseases. Pharmaceutical therapy of diseases included a sequence of multicomponent medicines of general and particular therapeutic purpose (depending on the individual characteristics of the organism). This approach in traditional methods of treatment is quite important from a practical perspective too"².

¹ *Базарон Э.* Очерк тибетской медицины. — Улан-Уде, 1984. — С. 160–161.

² *Страшун И.Д.* Медицина. БМЭ. 2-е изд. Т. 17. — М., 1936. — С. 235.