

Brain Diseases in Mesopotamian Societies

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Abstract

In ancient Mesopotamia were not practiced neither autopsies nor dissections, so the internal organs of human body were known only from occasional inspections on wounds and injuries. The brain was considered as a part of the head and was not related to mental activity. However, Babylonian and Assyrian physicians were able to identify the symptoms of many diseases that affect this organ. We will make here a brief overview of them.

Keywords: Brain, Mesopotamian Medicine, Akkadian Diagnostic Handbook.

1. Introduction

More than five thousand years ago, it was established in Middle East, close to the river mouths of Tigris and Euphrates, a people of unknown origin: the Sumerian. With the passage of time, this community imposed its culture and its language on the rest of the human groups seated in that place. They founded cities like Uruk, Ur, Isin, Larsa, Lagash, Eridu, arisen around a temple, where the local god was worshiped and whose monarch was exercising the power resting on an elders' council, and on other one integrated by warriors, as tells us Samuel Noah Kramer [1].

The Sumerian people invented the writing, from pictograms that little by little were stylized up to composing ideograms and phonetic signs. They were writing on small tablets of clay with a stylus, sliding it on the humid surface. Then, these tablets were left to dry in the sun or baked. The system of cuneiform writing spread over the whole region and was used by Assyrians, Hittites, Elamites and Canaanites, who adapted their language to the Sumerian signs. In the middle of the third millennium BC, Akkadian people advanced from the north and they occupied the Sumerian cities. Since then, the Akkadian language was displacing progressively the Sumerian, though this one remained in force in the palaces, temples and schools.

The Sumerian people also created a positional numerical system, in sexagesimal notation, where only two signs were utilized to express all quantities: one for the tens and other for the units. Though this happened from the Second Millennium, in the so called Old Babylonian Period (2000-1600 BC). They also had a stable metrology, with linear units, of surface, capacity, weight and volume, as it appears in the Codes promulgated by the kings Sulgi and Hammurabi [2].

The first schools of scribes were created during the Neosumerian period, founded by Ur-Nammu, about 2144 BC., but they had his major summit in the Old Babylonian Period. Most of preserved school texts come from this period [3]. In the scribe schools both Sumerian and Akkadian languages were taught; children also learning numeracy, geometry, laws, poetry, administration and accounting [4]. The Akkadian society was firmly structured: under monarch's power there were the officials, merchants, craftsmen, soldiers, peasants and slaves. Depending on the temple were, not only to the priests and scribes, also the astronomers, exorcists and physicians. As it looks like, there existed a civil education and religious other one, the first one given in the schools and the second one in the temples and places of worship [5].

We know all things thanks to the enormous quantity of documents that the archeologists have dug up in the ancient cities of Nippur, Uruk (Warka), Hattusa (Boghazköy), etc. In Nineveh it has found the library of the Assyrian king Assurbanipal (668-627 BC), which contained over

20,000 volumes, with the main literary, scientific, and sapiential texts, mostly proceeding from the libraries and files of the conquered cities. Many of these documents were copies of more ancient others, catalogues and references to more extensive works. Here we will discuss the medical treatises, and the practice conducted by the physicians and the experts in health care.

2. Texts and medical practices

So far we have not found any kind of the theoretical texts [6]. Professional and technical personnel in mathematics, astronomy, engineering and medicine, only left witness of their practical knowledge: like school problems and numerical tables; measurements of the relative positions of the stars, the Moon and the planets; sets of omens, prayers and exorcisms; and medical treatises [7]. We can distribute these last on three classes:

- Medicaments and remedies.
- Treatments and practical recommendations.
- Diagnostic and prognosis series

The art of the healing was carried out in two different ways, according to the type of disease (*dimitu*) afflicting the patient [8]. There existed the exorcists, called *āšipu*, who did an exhaustive examination of the patient and of his environment, observing every detail: the pulse, the secretions, the color of the skin, the face, the tongue, the eyes, and the smells expelled by the patient. And as outcome of the observed, they announced a diagnosis of the disease and his forecast. Remedies and potions are prescribed only if the sufferer could heal; but they were abstaining from beginning the treatment if the patient was terminally ill. In last instance, the *āšipu* invoked the gods, because they were the real instigators of the evil or, at least, tolerant with it, since the reason of the same could be the infraction of a taboo or norm. In this case, the treatment was depending on the repentance of the sinner; afterward the "*āšipu*" raised prayers to the responsible god for the disease, while he was treating the patient with "*namburbi*" rituals and sorceries. The physicians (*ašu*) carried out a more empirical practice, by recommending therapies of plant, animal, or mineral; by supplying potions, applying balsams, treating wounds and injuries, restoring broken bones, administering antidotes against the bites of serpents and scorpions. Nevertheless, the patient was going to one or another specialist, depending on his illness and according to the confidence that the experience of these were offering him.

The most ancient Mesopotamian medical document that we preserve dates back of the period Neosumerian (2112-2004 BC). This is a pharmacological digest that gathers knowledge from the therapeutic Sumerian tradition. Concrete remedies are included here to relieve some ailments, but without detailing the proportions of the ingredients neither their respective dosage [1]. The named elements are of vegetable origin, and it used the seeds and the root, stems, bark and leaves of all these products. In this treatise we have identified substances proceeding from the myrtle, cedar, palm date-palm, fig tree, willow, etc. Also they are mentioned some food coming from animals, as the honey and the milk. Minerals: saltpeter, common salt, "clay of the river", and "oil of the sea". Some of these elements are not still known for us. One of the products most recommended in therapeutic practices, and that it acts as excipient, is the beer, the favorite drinking for diverse societies in Mesopotamia. In occasions, there appear references to elements of animal origin: skin of serpent, shell of tortoise ..., but these were used in the exorcisms and spells, to banish the causative demon of the diseases.

As we have previously said, the Babylonians healers wrote therapeutic treatises, in those the remedy, the name of disease, and its specific treatment are mentioned. All these texts have the same structure in three columns and they are of three classes, according to the nature (*šikinšu*) of the main ingredient: vegetable (*sammu šikinšu*), mineral (*abnu šikinšu*), or animal (*šeru šikinšu*).

Let's see an example taken from Erica Reiner [9], p. 29:

- Yellow saffron / for constricted bladder / to chop, to administer as a potion in fine beer.
- *Kaniš*-acorn / for the same / to chop, to administer as a potion in fine beer.

- Garlic / for the same / to chop, to administer as a potion in oil or fine beer.
- Pistachio-herb / herb for the lungs / to chop, to administer as a potion without eating.

Another class of medical treatise is the one that describes the symptoms of the diseases and their respective prognostics. We preserve a handbook with these characteristics, and as it is indicated in the colophon, it was written by Esagil-kin-apli, at Borsippa, a *āšipu* that it lived during Adad-apla-iddina's reign (1069-1046 BC), which brought here part of the medical knowledge accumulated till then. René Labat [10] was who translated and commented what we preserve of this work, originally consisting of 40 tablets, with more than 5,000 written lines, in whose incipit from the first tablet we read:

“When the exorcist goes to the house of the sick person...” (“*enūma anta bīt marsi āšipu illku...*”).

This text [11] is commonly called *Akkadian Diagnostic Handbook (ADH)*, and we know its English version, *Diagnoses in Assyrian and Babylonian Medicine*, edited and commented by JoAnn Scurlock and Burton A. Andersen [12].

The first two tablets of this handbook have a marked character exorcist, but the remaining ones are a precision example in the description of the symptoms, examination of the patient, and prediction: “he will die” or “he gets well”. This work includes neither treatments nor recommendations, with the exception of the warnings formulated in relation to certain type of diseases "fallen from heaven" or that owe its emergence to the "hand of a god or a ghost”.

Likewise, we have two copies of a catalogue of the *ADH*. In them there are registered the corresponding incipit to the 40 tablets, recording in addition the quantity of lines that there contains each of them. It is very important to observe that the author (possibly, the same Esagil) distributes the handbook in six sections, such as we believe that was ordered the original work [12]:

- (1) Tablets I-II: Omens
- (2) Tablets III-XIV: inspection from the head to the feet.
 - Tablets XV-XVI: Classification according to days that the disease lasts.
 - Tablet XVII: Disease states through the day.
 - Tablet XVIII: Study fever.
 - Tablets XIX-XXI: Distinction between illness with fever and without fever.
- (3) Tablets XXII-XXIII: Infectious diseases (XXIV and XXV are missing).
- (4) Tablets XXVI-XXX: Neurological syndromes (seizures, strokes, ghosts, and gods).
- (5) Tablet XXXI: Fever.
 - Tablet XXXIII: Skin lesions.
- (6) Tablets XXXVI, XXXVII, and XL (XXXVIII and XXXIX are missing): On the Woman and infants.

Also we have recovered another text of diagnoses and prognostics more ancient than the previous one; according to the incipit: “If you approach a sick man”. But of this one we only preserve two fragments: one proceeding from Nippur, and other one found in the Sultantepe's excavations, an Assyrian enclave belonging to Turkey [13].

Magic and therapeutic remedies went often together. The Babylonians believed that the curative properties of the medicaments were depending on the ritual with these were elaborated. As Erica Reiner explains (p. 48), “the medicine has to be prepared under the stars’ benefic influence, and administered at a propitious time”. The physician advised: “you let (the preparation) spend the night under the stars”, or “at the night you place it in front of the *Goat* star”. *Goat* is the star Vega, associated with *Gula*, the goddess of the health. The *ašu* covered his head to collect the herbs, and he did it at night, in darkness, when the position of the stars was propitious. Also he covered the

plant with a cloth and he drew a circle of flour around it. Thus, the goddess poured her healing power on the herb.

3. Diseases of the brain

The Babylonians believed that the heart was the place where the mental activity is generated. Therefore, the diseases that nowadays we consider to be cerebral or nervous were imputed to this organ. Some of the symptoms would be: "not in full possession of his faculties", "difficulty speaking", "he wanders about (in a confused fashion)", and "he does not know where it is" (Scurlock & Andersen, p. 531). By contrast, the ailments afflicting the brain could only come from injuries and traumatism produced in this area. The brain was one more part of the head, together the eyes, the mouth, the nose and the ears. One of the most common sicknesses that they concern the head is the fever; others are the stained with blood eyes, headache, the cloudy sight, the sunstroke, etc. We read: "if a man's eyes are sick...", "if a man's brain contains heat...", "if a person's temples continually hurt him..." (ibid., p. 285)

Mesopotamian healers and physicians distinguished a group of diseases to which we identify with the epilepsy; these are examined in the fourth section of the *ADH*:

"If the patient continually turns his head to the left, his hands and his feet are immobilized, he closes and rolls his eyes and spittle flows from his mouth, (and) he makes rumbling noises, AN.TA.ŠUB.BA (seizure)." (ibid., p. 305)

This way, they named with the term Sumerian "AN.TA.ŠUB.BA" to one sudden seizure "fallen from heaven", while the disease of chronic character was admitted by the word Akkadian "*bennu*" (Stol, p. 92). But there are other Akkadian words related to this class of ailments: "*miqtu*" (something that have fallen down), "*ajjattu*" (fit), "*ibtu*" (seizure), though we do not know if they refer to different stadiums, modalities or degrees of intensity of these diseases. The term "AN.TA.ŠUB.BA" also appears when there are described ailments that concern the neck, back and heart [14]. According the texts, the variety "AN.TA.ŠUB.BA" is much more serious and has fatal consequences. The same thing happens when the "*miqtu*" attacks the children: They fail to suck the milk and, consequently, they die. We can read:

"If an infant as soon as he is born (and after) two or three days pass, (his stomach) will not accept the milk and *miqtu* fall on him as in hand of god, hand of *Ištar*. The thieving one has touched him; he will die." (Scurlock & Andersen, p. 316)

We see how some diseases were falling down from the sky or were provoked by the hand of a god or of a demon:

- "If a man is quivering all the time when lying down, shouts like the shouting of a goat, roars, is apprehensive, shouts a lot all the time, (then it is) the hand of *bennu*, the demon (*šēdu*), deputy of *Sîn*. In order to cure him, you shall..." (Stol, p. 8)
- "If the muscles of a person's neck hurt him, hand of a ghost." (Scurlock & Andersen, p. 285)
- "If his head continually afflicts him and he does not have a fever, hand of *Ištar*." (ibid., p. 285)

Therefore, its aetiology was of divine nature: they fall down from the sky or come from the stars; like "spawn of heaven", or "spawn of *Anu*". The most serious modality of epilepsy is blamed to "the spawn of *Šulpaea*". It was a secondary god tied to Jupiter, the star of the god *Marduk*. Those who offended the god were punished, though not directly by him, but across his lackey *Šulpaea*, who was spilling the evil on the guilty, or on his offspring. Some cases were so severe that

the *āšipu* was recommending getting rid of the affected one, to prevent the damage from spreading to the whole family:

- “[If spawn of] *Šulpaea* is born with him, the house of his father will be scattered at his feet; [in order for it no to be scattered], you throw him alive into the river and his evil will be carried away. [Its sign is that, from] the moment he is born, he does not wail (or) cry or stiffen up ...” (ibid., p. 247)
- “If an affliction afflicts him while he is going along the road and when it afflicts him he makes his hands and feet writhe in contortion against the earth, his eyes are dark, his nostrils are contracted, (and) he eats his garment, spawn of *Šulpaea*. As its sign, (it portends) destruction of the house of his father. His father and mother will bear his punishment. In order for it not to approach (them) you bury him alive in the earth; its evil will be dispelled.” (ibid., p. 335)

To some extent, the *āšipu* knew that this disease could be hereditary. Sometimes the patient senses his attack:

“If when (a confusional state) comes over him, his torso (feels) heavy and stings him (and) afterward it comes over him and he forgets himself, AN.TA.ŠUB.BA (seizure). (If this happens) in the middle of the day, it will be difficult for him.”(ibid., p. 321)

In other documents there was mentioned the demon LUGAL.ÛR.RA, causer of the abnormal movement of the eyes and the jerk’s tongue, proper of the seizures. LUGAL.ÛR.RA was known also as “the Lord from the Roof” (Stol, pp. 16 ff.). This one seems to be a slightly secure place for the persons, especially in the night. Here also it was stalking Lurker (*rābišū*), the demon that stalks and attacks its victims in the loneliest places (ibid., pp. 294 ff.):

- “If an *rābišū* seizes a person’s mouth so that he continually has inability to talk, his tongue is cramped, his breathing is difficult, his saliva flows and will not stop, his teeth are weak and ooze blood...”
- “If when he comes up from the water, his body is paralyzed and he (feels like he) is spinning and falls down, he was struck by the *rābišū* of the river...”
- “If the breast continually hurts him, he stops eating and drinking a lot (and) he lies down a lot, he continually *galātu*’s (seizure) and *parādu*’s (seizure), *bennu* afflicts that person. It afflicted him, either in the door or in the courtyard or in the river.”

The Hammurabi’s Code (article 278) regulates the sale of slaves who are afflicted with hidden diseases, like epilepsies ones: “If a man buys a male (or) female slave, and before one month has passed, *bennu* falls upon him, he (the buyer) will return (the slave) to his seller, and the buyer will take (back) the silver that he had paid” (Stol, p. 92). This law anticipates the frequency of seizures of this sickness and tries to compensate those who purchased in good faith

Some epileptic attacks are caused by deep wounds in the head. The *hands* of the gods are responsible for these ailments:

“If he was wounded on his head and, consequently, his eyes are heavily clouded, hand of *Ningirsu*.”

“If he was wounded on his skull and, consequently, his ears not hear, hand of *Ištar*.”

Assyrian *āšipu* knew the consequences caused by injuries localized in certain areas of the brain: A lesion in the left hemisphere will produce aphasia, while if the wound is located on the right side, the patient will suffer a paralysis on the left side of his body (Scurlock & Andersen, p. 307):

“(If) the entire [right side of] his body is tense (and) he is not able to talk (and) he is [not] able to [...] hand of *Šulak* (or) he was wounded with the wound of a stroke; the *āšipu* should not make a [prognosis as to his recovery.]”

Nowadays, we have identified many of the symptoms described in the *ADH*. Scurlock and Andersen (pp. 333 ff.) relate them to diverse diseases of neurological origin:

- Parkinson disease:
“If his face seems continually to be spinning (and) his hands and his feet tremble (and he has been sick for) fifty-nine days, hand of *Dapinu*.”
- Dementia:
“[If] his [mentation] is continually altered, his words are unintelligible, and he forgets whatever he says, a wind from behind afflicts him; he will die alone like a stranger.”
- Chorea:
“If the patient (is sick) and his ears ring (and) (his) right hand and foot jump to the left and (his) left (hand and foot jump) to his right, hand of *Šulak*. He will not get well; he will die.”
- Gilles de la Tourette Syndrome:
“If his illness enters and leaves (and when his confusional state comes over him), he continually talks in a frightful manner, hand of *antat lilī*.”
- Autism:
“If a woman gives birth and (the child) rejects its mother...”
- Fainting:
[“If something like] a stupor continually afflicts him and his limbs are tense, his ears roars, (and) his mouth is seized so that he cannot talk, hand of an evil *alû*.”
- Coma:
“If he trembles (and) makes (the pupils of) his eyes constrict, the one who strikes him stands at his head and consequently he will die.”
- Narcolepsy:
“If a person goes to sleep and his sleep is pleasing to him (but) when he gets up, he feels exhausted and goes back [to sleep]; to cure...”
- Cataplexy:
“[If] something like AN.TA.ŠUB.BA (seizure) continually flows over [a person] (and) he cannot move his hands and feet by himself, a *gallû* afflicts that person.”

One of the most serious neurological diseases is the Huntington illness, with prognosis of death:

“If his affliction afflicts him in the evening and when it afflicts him, a mournful cry roars to him and he continually answers it, he continually cries <without> ceasing: ‘My father (and) mother or my brothers and my sisters will die’ [without] recognizing anybody, [he continually wails] (and) when he has wailed he goes to sleep and does not get up (and) when his affliction has left him, he does not know what he wailed, ‘spawn’ of *Šulpaea*; it cannot be removed. In his illness, you burn him with fire.”

Assyrian physicians defined mental illness in a very precise: “a person who is well but his behaviour is sick”. Among these we find those caused by stress and worry, like headaches, the restless sleep, insomnia, nightmares, teeth grinding, dreaming of dead people, sleep talking (Scurlock and Andersen, pp. 367 ff.): “I cannot sleep at night because of worry about you.” However, the feeling of anxiety was attributed to the abandonment of the personal god or goddess:

“If a person continually has crushing of the heart (and) day and night he has fearfulness, his god is angry with him; in order to make his god at peace with him...”

We can recognize in this *Handbook* many other mental disorders, such as paranoia, psychosis, depression, moods swings, antisocial personality, etc. It even makes a subtle description of *love-sickness*, which disturbs the mind and body, causing restlessness, poor appetite, and irritability (ibid., p. 372):

“If he continually flutters about, he is continually insolent, he continually talks with himself, (and) he continually laughs for no reason, he is sick with the love-sickness; it is the same for a man and woman.”

4. Conclusion

The oral and written tradition accumulated over several centuries by healers and physicians of Mesopotamia demonstrates the ability into observation and analysis of diseases carried out by these specialists. Particularly interesting are the texts that describe mental illness and seizures. Hippocrates of Cos was the first physician who located in the brain this kind of sickness, and he took away their *sacred* provenance. Until then, many diseases whose origin was unknown were attributed to the influence of evil spirits, or to the infringement of a social rule: the hand of a ghost, a god, or a goddess was behind this illness. In such cases, the *āšipu* could only prescribe remedies of magical nature, while specific treatments for the most common diseases were prepared and dispensed by the *ašu*. The examination of the brain could only be made when it was wounded or injured. On these occasions, the *āšipu* could see how the infections, swellings, and the trauma affecting the skull generated a collection of ailments as pain, fever, paralysis, tremors, and seizures. Some of these symptoms were very similar to those manifested when evil came from a divine punishment. Therefore is not surprising that the physicians blamed Istar, the goddess of war.

Assyrian healing wisdom probably influenced in the pre-Hippocratic medicine, mainly at School of Cnidus [15].

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[14] We write Sumerian logograms with small capitals; words in italics are Akkadians. Phrases or words in parentheses are added by editors to a better understanding of the text; square brackets are used to add missing words in the original text.

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