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On the Observation of the Pulse in Mesopotamian Medicine

A. L. OPPENHEIM - Chicago, Ill.

The meaning "sinew" of Akk. šer ānu (Sum. s a) is well attested (1) especially in early and in non-medical texts. In medical texts, however, a number of passages occur which show the word in contexts demanding a different translation. They come mainly from the "prognostic" omens of the series enūma ana bīt marṣi āšipu illiku and also from regular medical texts.

These passages speak either of red, dark-colored or "green" (i. e., blue) *ser*ānu, or indicate that the *ser*ānu have "taken (in)" blood (or blueishness), or that they are "filled with blood." The last formulation reminds one necessarily of the neuron enaimon "blood-filled sinew/nerve" of Hippocrates, referring to the vessels carrying blood through the body.

It is the purpose of this note to offer evidence for the translation "vein" for šer'ānu in certain specific contexts. In other instances one might waver between "ligament" and "vein" and in some only the former is indicated.

Among the omens derived from certain bodily features of pregnant women, which are believed to predict the nature of their labor pains, the sex of the child, etc., we read: DIŠ TU mu-uh UBUR-ša SA.MEŠ SA₅.MEŠ pur-ru-ku "if red veins are stretched across the upper part of the breasts of a pregnant woman" Labat TDP 204:52; note also DIŠ TU SA UBUR-ša ŠÚ.ŠÚ "if the veins of the breasts of a pregnant woman are dark" ibid. line 49, which is followed by

⁽¹⁾ Cf. H. HOLMA, Die Namen der Körperteile im Assyrisch-Babylonischen 4 f., who was the first to point out the semantic reach of šer ānu.

the elaboration GU, MEŠ DIB, DIB " (if they) are interconnected by capillary veins (lit. threads) " ibid. line 50. The same text then deals with the veins appearing on the abdomen: DIŠ TU SAG ŠĀ-šá SA. MEŠ SIG, MEŠ ŠUB-ů " if blue veins are delineated on the upper part of the abdomen of a pregnant woman " ibid. line 56, and also DIŠ TU SA, MEŠ-šá ana SAG ŠĀ-šá zaq-ru " if the veins of a pregnant woman protrude in the direction of the upper part of her abdomen " ibid. line 75, and with the alternative ana emšīša " towards her hypogastric region" (line 74), or simply " are numerous" in line 75.

The "taking (in)" of blood, referring to excessive size or coloring of veins, is mentioned twice: DIŠ SA GABA-šú SIG, il-te-qu-ú "if the veins (1) on his (the sick person's) chest have taken a blueish color" Labat TDP 100:6, and DIŠ GIG SA SAG.KI-šú ÚŠ iš-te-qú-u (2) "if the veins on the forehead of the sick person have taken in blood" Labat Syria 33 123 r. 12.

When examining a pregnant woman, the āšipu also had to observe the veins on her forehead (SA SAG.KI-šá SA₅ Labat TDP 200:9) and those on her legs: DIŠ TU SA ki-sil-li-šá ÚŠ DIR.MEŠ "if the veins on the ankles of a pregnant woman are full of blood" ibid. 208:93.

For veins appearing on the conjunctiva, we have DIŠ SA kak-kul-ti IGI.15-šū MI.MEŠ "if the veins on his right conjunctiva are dark" Labat TDP 52:14, with the subsequent lines also describing the veins as tarku "dark". A swelling of these veins, termed nowadays varicula, is described in DIŠ SA IGIII—šū GIM ŠU.SI kub-bu-[ru] "if the veins of his eyes are as thick as a finger" Labat TDP 50 iv 9, and the parallel passage Labat, Syria 33 125 r. 7.

A few passages refer to varicose veins on the legs DIŠ NA GIG ka-bar-tim GIG-ma eq-ba-a-šú SAR.SAR-[hu] SA.MEŠ GÌRII-śú kab-ba-ru "if a man is suffering from varicose veins and his heels (3) are swollen, the veins of his legs are very thick (and he cannot walk) "AMT 73,1:13, while the same text describes the veins of the "heels" as follows SA eq-bi-šú IM ma-lu-ú "the veins of his 'heels' are (as if)

(1) The word ser'ānu is nearly always considered a plural.

⁽²⁾ The writing iš-te-ku-û represents a hypercorrection for ilteqû.
(3) It seems that the designation eqbu includes the region above the heel, i.e., the back part of the calves. Note the equation eqbu || kutallu || qinnatu given in the Izbu Commentary cited CAD E sub eqbu.

For observation on the veins visible on other parts of the body one may cite here: DIŠ LŪ. TUR SA. MEŠ ŠĀ-šū SA, u SIG, ŠUB-ū if the veins on a small child's belly have red and blue spots i Labat TDP 220:32, also DIŠ ŠĀ. MEŠ-šū nap-hu-ma SA ŠĀ-šū SIG, ŠUB-ū ii f his intestines are swollen and the veins on his belly have blue spots ii bid. 120:49, etc. Mostly, however, the veins of the forehead and temples, arms and legs, and neck of the patient are observed.

We also find serānu referring to veins in texts which describe the exta, though only rather rarely. Cf. in YOS 10 31 xii 23 " if the basis of the gall bladder is narrow (seher)" [se-er]-ha-nu-su da-ma-am ma-lu-u " and its (the basis') veins filled with blood", also sum-ma [mar-tum] se-er-ha-[ni] ud-du-ha-[at] " if the gall bladder is covered with a network of veins" ibid. iv 40. Note furthermore [MAŠ] li-bu še-er-ha-aš-šu da-ma-am [lu-u]p-pu-tu " if the veins of the intestines are spotted with blood" YOS 10 42 i 14. The later extispicy texts mention serānu only exceptionally: summa kalīt imitti SA.MEŠ ne-ta-at " if the right kidney is enveloped (2) in veins" (3) KAR 152 r. 12 ff.

From passages describing the color, size and distribution of the veins, we may turn now to those in which certain characteristic verbs are used to refer to their normal and morbid conditions or functions.

⁽¹⁾ The term SA.MUD (the \$er'ānu of the heel) occurs quite frequently in medical texts, such as KAR 185 ii 6, AMT 70,5:4, RA 14 88 i 4, and could refer either to ligaments or to veins above the heel. For the former possibility speaks the use of \$er'ānu to designate a tendon taken from a gazelle and provided with three knots to be bound around the leg to provide magic help for a sick person, for the latter the use of the verb GUB.GUB in the same text (KAR 185) to describe a sympton observed in connection with the SA.MUD. This verb refers normally to veins (see below page 30). The inherent ambiguity of the word \$er'ānu prevents the definite understanding of such passages.

⁽²⁾ For netû in this sense, see M. Held in JCS 15 14.

⁽³⁾ It seems possible to interpret the passages from extispicy texts in the light of the Izbu Commentary line \$i-\$i-tu = \$\delta r-a-nu\$ (line 278) and take the word to designate some kind of membrane. However, no evidence is known to me that would support the unique commentary passage (\$i\delta itu is explained there by ipu, hillu, ibahu, quliptu and \$\delta r-a-nu\$) so that I propose to disregard it.

The most frequently occurring verbs of this group are alāku (GIN), tebū (ZI), uzuzzu (GUB), šakānu (GAR), tabāku and nāḥu.

The pertinent references group themselves readily in contrasting usages, showing alāku versus uzuzzu, tabāku versus tebū, alāku versus šakānu, etc. Cf. [DIS] LU še-er-ha-[n]u ša še-pi-šu it-ta-na-laku "if the veins of a man's feet 'go' constantly " AfO 18 62 iii 20, as against the same phrase with [it-t]a-na-az-za-z[u] " stand still" constantly " ibid. line 22 (physiogn. omens), also [šumma SA S]UII_šú tab-ku ša GIRII-šú ZI. MEŠ " if the veins on his hands are ' poured out', those of his feet 'raised'" Labat TDP 94:13, or [summa SA SUJII-šú GIN. MEŠ šá GÌR^{II}-šú GAR-nu ibid. 96:17, which renders the same contrast (hands-feet) by means of the verbs alāku and šakānu. Note in this context furthermore šumma SA SAG ZI-šú šá 15 u 150 GIN-ku-ma šá pu-ti-šú GAR-nu "if the veins to the right and the left at the front of his throat 'go 'but those of his forehead are 'set '" Labat TDP 100:7. For nahu the following characteristic passage may be quoted: śumma SA GÌR^{II}-śú GIN.GIN-ku-ma šá ŠU^{II}-śú ne-e-hu " if the veins of his feet 'go' constantly and those of his hands are quiet" Labat TDP 144:58'; it is followed by an identical sentence which, however, replaces nehu by GAR-nu (line 8).

Assuming that ser ānu denotes indeed veins in the references just cited, we may start from the last term (nēhu) which alone can be exactly established as to its meaning. From such passages in astrological omen texts as napāḥšu ne-eḥ ša alākšu la ḥanţu "its (the planet Venus') rising is nēḥ, which (means that) its progress is not fast" ACh Ištar 7:40, ina alākišu ne-eḥ "it (the moon) is slow in its progress" ACh Sin 3:45 and aAdad pāšu ne-eḥ "Adad's thunder is low" ACh Adad 17:7, we infer that nēḥ means "slow, low." Hence, if nēḥ describes a slow movement in the blood vessels, šaknu and uzuzzu should denote an arrest of movement, while alāku would have to refer to a quick motion. This means that all the verbs under consideration describe the movement of the blood within these vessels (1), rather than the vessels themselves. Hence the Mesopotamian experts

⁽¹⁾ The awareness of the fact that blood passes through the \$er'ānu is also seen in the following two passages from medical texts: SA.MEŠ-šú A.MEŠ ú-\$al-la-ku " (if) his (the patient's) veins (are as if) they let water flow through" KAR 197:9, and (if a woman) SA.MEŠ-šá kab-x-(x) (copy kab.meš) qir-bi-nu ÚŠ.BABBAR ú-kal " her veins are thick (?) and contain ' white blood ' inside " KAR 195:21.

(āšipu) not only observed color, size and arrangement of the veins on the body of their patients but were also cognizant of the pulsating movement located in these vessels. Moreover, they seem to have known where to feel that movement and developed a terminology to describe in a rather general way the rate of the pulse.

This does not mean that the āšipu was in any way aware of the circulation of the blood. Babylonian medicine never realized as the Egyptian did that "the heart speaks in all the limbs of the body." The pulse was carefully observed, as well as the conditions of the veins, but not with much more interest than were other features of the body of the sick person, such as the temperature, which was taken in several places, the coloring of the skin, etc. All this was done to derive predictions as to the nature of the sickness, the life expectancy of the patient, etc. The āšipu was as careful and articulate an observer of ominous features and happenings as the bārû and other diviner specialists.

Still, although the observation of the pulse in Mesopotamia is not to be considered an achievement in the history of medicine, there are indications that the observation of the veins for mantic purposes was considered rather important. Somehow Mesopotamian "neuroscopy" seems to correspond in this respect to the no less unscientific uroscopy from Byzantium that invaded medieval European medicine.

Quite revealing in this respect is the following passage from a bilingual text sa.lú.tu.ra.šè zu.zu.dè.[mu.dé]á.šu.gìr.bi bad.bad.da.mu.dè: šér-a-ni mar-şu ina la-ma-di-ia meś-re-ti-šú ina pu-uq-qu-di-ia "when I (the āšipu is speaking) investigate (lit. learn about) the veins of the sick person, when I check his limbs "CT 16 5:180 f. Here we see the āšipu at work inspecting the body of the patient to learn (lamādu) about the chances of the patient to survive the disease.

Equally important are the occurrences of the word sakikkû which represents an obvious loan from Sumerian sa.gig. There are, however, two meanings to this word. The first is quite unproblematic, it refers to a disease characterized by sore ligaments, arthritic pains, etc. The second meaning is far more complex and its range has recently been pointed out by J. V. Kinnier Wilson in Iraq 18 140 f.

Here is a summary of the pertinent passages as assembled by Kinnier Wilson. The reference from Ludlul (Lambert BWL 44 ii 108 f.) runs "my sakikkû's (wr. SA.GIG-ki-ia) have worried the maśmāśu, (extispicy) omens concerning me have confused the extis-

picy expert (barû). " Then we have a phrase in the letter ABL 391 in which the famous medical expert Arad-Nana (1) declares, "He (the king) did not inform me of his sakikkû (sa-kik-ki-e-sû)," in order to excuse his failure to establish the exact nature of the king's illness. The occurrence of the term SA.GIG in the colophon of the eleventh (TDP 110:28) and 35th tablets (TDP 212:117) suggests that it refers in some way to all "prognostic" omens of the corpus; they seem to have been called SA.GIG, after the apparently most characteristic divinatory signs on the body of the patient. This is confirmed by the Nimrud tablet (ND 4358), published by Kinnier Wilson in Iraq 18 pl. 24 and p. 131 ff., which offers a catalogue of such omens and has in line 14 the summary, "Total 860 (entries of the series) 'If, after one day's illness, etc. 'SA.GIG-ú [...]" which recurs in a similar context thid, line 20. This interpretation of sakikkû is in harmony with a passage in KAR 44 which contains the entire curriculum of the masmāšu expert and lists in line 6 SA. GIG-ú between the hemerologies and the collections of what we call physiognomic omens.

In all these passages sakikků ranges in meaning from observation of the veins and diagnosis based on the observation of diseased veins (as to color, distribution, internal movement, hence sa.gig = sick vein) to omen and omen collections based on such observations. The reason why two meanings evolved from the Sum. term sa.gig is simply that sa (as well as šer'ānu) had, on the one hand, the meaning "sinew," etc., and, on the other, "vein," the former used mainly in practical and also in medical contexts, the latter characteristic for a special type of divination.

The aim of this article is not to investigate the complex semantics of šer'ānu (2) nor the technical terminology of the āšipu for the

(1) Arad-Nanâ is never called an asû. The sole indication of his medical status may be gathered from the fact that in his letters to the king the introductory benedictions always mention the goddess Gula.

⁽²⁾ It will always remain difficult to separate the passages in which ser'ānu refers to ligaments and sinews, and those in which blood vessels are meant, since Mesopotamian medicine uses the same term for both. Even the sciatic nerve was termed sa.gal, as shown by the following passages summa SA.MEŠ sūnišu ištēniš ītakkalušu [GUB]—za u GIN.MEŠ—ka la ile'i SA.GAL, MU 2 " if the ser'ānu of both his hips hurt him and he can neither stand nor walk, (this is) the SA.GAL—disease, (it lasts) two years "CT 23 1:1, also AMT 42,6:2; but note summa TA ÜR.KUN—sū adi sēpēšu SA.MEŠ—šū ītakkalušu SA.GIG " if his ser'ānu hurt him from his coccyx to his feet: SA.GIG—disease " Labat TDP 108:18.

the valley of the two rivers as an important member of the South-

west Asia complex.

⁽¹⁾ All mentioned characteristic terms (ZI, GUB, GIN) occur in medical texts as well as sporadically in physiognomic texts. It will take quite some work to disentangle the usages.

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