

The Tale of Two Little Organs: the Spleen and the Pancreas

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This article could only have been written due to the opportunity provided by Annie Attia and Gilles Buisson for organising a workshop on medicine as part of the RAI held in Paris 2009, their generous invitation to come to that workshop and for their encouragement to pursue my anatomical investigations. For the past decade, I have been working together with Marcel Sigrist on the lexical list Ugu-mu¹ in order to deduce the anatomical knowledge of the ancient Mesopotamians.² In this article, I will concentrate on the conundrums and paradoxes arising from our study of two little organs: the Spleen and the Pancreas.

In his 2006 article “The Digestion of Food According to Babylonian Sources,” Marten Stol summarized the consensus among Assyriologists on the identification of the ‘spleen’. He stated (2006: 112) that the Akkadian word *tuḫmu* signifies “spleen”, supporting his statement with other Semitic etymologies.³ As its Sumerian equivalent, he accepted the logogram BI.RI which occurs in extispicy and in medical texts. He posited that BI.RI does not seem to be a Sumerian word but rather looks like an imitation of BIR, the sign for “kidney”, read in Sumerian as *ellag*. He pointed out (2006: 112 and note 83) that on occasion there may be confusion between these two terms, but they are usually distinguished. For example, he cited a namburbi on extispicy speaks of “either the kidney (BIR) has disappeared or the spleen (BI.RI) twitches” (Stol 2006: 112 correcting Maul 1994: 433).

Moreover, Stol observed (2006: 113) that there is another Sumerogram for “spleen”, ŠÀ.GIG as well as ŠÀ.GI₆ meaning “the black/dark inside”. He noted that this expression is attested in a bilingual lexical text from Ebla where šà.gi₆ is equated with *ti-’à-mu*, probably “dark” (cf. Akkadian *da’āmu* “to be dark”) and that the later lexical tradition (Hg. D 55f.) equates Sumerian “black inside” first with Akkadian “the black intestine” (*irru*

¹ The phonetic reality of the first-person possessive pronoun in Sumerian is most probably *ĝu*₁₀. The present transliteration maintains the traditional reading of the name of the series.

² For a review of this series, see Westenholz and Sigrist 2008. Even if Ugu-mu is just a list of names of parts of the body rather than an anatomical treatise, as pointed out to me by Miguel Civil, it still provides our only systematic source for these names.

³ Citing Militarev and Kogan 2000: 248f. no. 278 in footnote 78 and adding a citation of an Ugaritic omen text: “there is no spleen (*thl*) in it” see also del Olmo and Sanmartín 2003: 888). In footnote 79, he refers to Åke Sjöberg (1998: 246 note 15) who observed that the word may reflect the root **zlm*, attested in Arabic and Aramaic-Hebrew words and meaning “dark”.

šalmu), and then with *tuḫmu*. In addition, the complex UZU ŠÀ.GI₆ is attested in a medical text (BAM 305) in the meaning a “dark mood”. This range of meaning in the Mesopotamian sources has its echo in the Greek as pointed out by Stol (2006: 113): “The Greeks spoke of “black” or “dark” intestines and “black bile” originating in the spleen”.⁴

On the other hand, the identification of the pancreas has been passed over in silence.

Chart I summarizes present situation as regards to these two little organs.

CHART I: ACCEPTED CHART OF ANIMAL AND HUMAN ANATOMICAL NOMENCLATURE OF INTERNAL ORGANS

Body Part	ANIMAL (extispicy and meat cuts)		HUMAN	
	Sumerian	Akkadian	Sumerian	Akkadian
Spleen	BI.RI	<i>tuḫmu</i>	BI.RI	<i>tuḫmu</i>
Spleen	ŠÀ.GI ₆ ŠÀ.GIG	<i>irru šalmu</i> { <i>tuḫmu</i> }	ŠÀ.GI ₆ ŠÀ.GIG	
Kidneys	BIR (ellag ₂)	<i>kalītu</i>	BIR (ellag ₂)	
Pancreas				

A priori this situation of two Sumerian terms and two Akkadian terms for one organ seems illogical, especially since they both appear together in single texts. Therefore, the following investigation is undertaken to review the evidence beginning with human anatomy and then looking at animal anatomy.

HUMAN ANATOMY

Our prime source for human anatomy is provided by the lexical series Ugu-mu, which supplies two equations:

The first equation $bi-ri-ĝu_{10} = tuḫmī (tú-li-mi)$ is attested in two Ugu-mu manuscripts: SC 4146:8⁵ and HAG 5 ii 2’⁶. A third manuscript has $HAR-mu = tú-li-mi$

⁴ In contrast, the Babylonian Talmud (tractate Berachoth 61b) refers to the spleen as the organ of laughter (שוחק טחול).

⁵ The tablets, SC 4146 as well as MS 2888, belong to the Schøyen collection and are to be published by Miguel Civil who has generously given his permission to cite the relevant passages.

⁶ The siglum HAG denotes the Heritage Auction Galleries. This tablet was first spotted by Robert K. Englund in the March 2008 auction catalogue and I would like to thank Nick Veldhuis for bringing this text to my attention. Its present whereabouts are unknown, but photographs of it are accessible as <http://cdli.ucla.edu/P382664> as HAG 03.

MS 2888 ix 5'f.⁷ The equation of the sign HAR = *tú-li-mu* is attested in later lexical texts: Izi H 207 (MSL 13 207) and the S^a Vocabulary from Emar (VI/4 no. 537: 63, see Sjöberg 1998: 246 no. 63)⁸ as well as the first-millennium sign list Aa V/2 252 (HAR = [*f*]u-li-mu MSL 14 420). As has been noted, HAR is a common logogram for any internal organ of the body (Stol 2006: 112, Cohen 2002).

Some tangential remarks on BIR and BI-RI

Regarding the contention that bi-ri does not seem to be a Sumerian word and looks like an imitation of BIR (HI×ŠE), the sign for “kidney”, it should be taken into consideration that the sign for “kidney” is never read BIR but rather *ellaĝ₂* in the sign lists so there should be little room for phonetic confusion.⁹ The reading biri is limited to the Sumerian equivalent of *tulīmu*. The entry in OB Nippur Ura 3 475 (= Forerunner to HAR-ra XV, MSL 9 45:74) provides the missing link: HI×ŠE with auslaut-RI which indicates that this writing should be read bir.¹⁰ On the subject of the sign form, the archaic signs identified as BIR (ZATU 54)¹¹ resembles that of the pancreas with an elongated shape and a central vein line or veined cross-hatching. A propos its etymology, there do not seem to be any indications of non-Sumerian word formation.¹²

⁷ Collated by George 10/11/07: HAR “maybe”; note missing the horizontals seen in previous line 3' for ur₅.

⁸ Copy 1, Copy 2 has *bu-li-bu* which has been understood as a mistake for *tulīmu* (Arnaud Emar VI/4 p.12; Cohen 2002: 824). Perhaps, there may be an etymological relationship with the modern Hebrew word לבלב (*lbb*) “pancreas”. However, the entry *bu-li-bu* (11th entry for logogram HAR) does not come in the same order as *tú-li-mu* (3rd entry for logogram HAR).

⁹ el-lag BIR = *ka-li-tu* S^b I 34 (MSL 3 98 restored), bi-ir HI×ŠE = *sa-[pa-ĥu]* Ea V 101 and el-lam HI×ŠE = *ka-[i-tu]* Ea V 103 (MSL 14 400). For the definitive statement on the reading of the sign BIR see Civil/Landsberger MSL 9 47 note to line 74. The reading *ellaĝ₂* of the sign HI×U, later HI×ŠE, also has the meaning “bead”. For Ur III examples, see Hilgert 1998: 18-19, 300-301, no. 483: 26ff. (Ur III inventory of property of Ninĥursaĝa from Nippur). The Larsa stone list (Arnaud 1994: no. 1) includes various series of different types of stones, each of which are said to have a lagab ‘block’, kišib ‘seal’ and *ellaĝ₂* ‘bead’. For further examples of *ellaĝ₂* ‘bead’, see CAD T s.v. *tukpītu* “kidney-shaped bead” which combines the two meanings of the logogram *ellaĝ₂*.

¹⁰ The manuscripts for the line listed in DCCLT are:

[uzu bir]-ri	CBS 04843 r iii 4'
[...] bir	MSL 09, 41 V05 r ii 4'
uzu bir	MSL 09, 41 V08 r ii 11
[uzu] bir-ri	MSL 09, 41 V13 o 7
uzu <i>ellaĝ₂</i> U.-[...]	MSL 09, 41 V14 o 1
uzu bir-ri	MSL 08/1, 81 V04 r ii 5'
uzu bir(HI×ŠE)-[...]	SLT 037 + 046 + r v 1

¹¹ See also the forms cited s.v. BIR at:

<http://www.cdli.ucla.edu/tools/SignLists/protocuneiform/archsigns.html>.

¹² Compare the description of Sumerian lexemes and Semitic loanwords in Sumerian in Civil 2007.

To return to Ugu-mu and human anatomy — The second lexical equation provided by Ugu-mu is $ni\hat{g}_2-gi_6-\hat{g}u_{10} = ir-ri \textit{ša-al-mu}$ “my black/dark intestine”.¹³ The Sumerian compound is $ni\hat{g}_2-gi_6$ ¹⁴ “the black thing”. It is attested in one Ugu-mu manuscript: SC 4146: 7. Another partially broken attestation is $\textit{ša}[-gi_6-\hat{g}u_{10}] = ir-ri [\textit{ša-al-mu}]-um$ MS 2888 ix 1’-2’.

These lexemes present the following context in Ugu-mu:

HAG 05 ii (break)	SC 4146	MS 2888 ix
	6. $\acute{U}R- \hat{g}u_{10} = \textit{ha-šu}[-\acute{u}]-ti$	
	7. $ni \hat{g}_2-gi_6- \hat{g}u_{10} = ir-r[\acute{i}] \textit{ša-al-mu}$	1’-2’ $\textit{ša}^2[-gi_6- \hat{g}u_{10}] = ir-ri [\textit{ša-al-mu}]-um$
		3’-4’ HAR- $\hat{g}u_{10} = \textit{ha-šu-ti}$
2’. $bi-ri-[\hat{g}u_{10}]$	8. $bi-ri- \hat{g}u_{10} = \acute{t}\acute{u}-li-[mi]$	5’-6’ $bi-ri-\hat{g}u_{10} = \acute{t}\acute{u}-li-mi$
	9. $da-gan-a- \hat{g}u_{10} = ri-ik-[s\acute{i}]$	
3’. $z\acute{e}- \hat{g}u_{10}$		7’-8’ $z\acute{e}- \hat{g}u_{10} = ma-ar-ti$
4’. $\textit{c}lla\hat{g}_2 (BIR?)^1-m\acute{u}\acute{s}- \hat{g}u_{10}$		9’-10’ $\textit{c}lla\hat{g}_2-m\acute{u}\acute{s}-bar-ra- \hat{g}u_{10}$ $= ka-li-it bi-ir-ki-ia$

From their context, we can possibly infer that the ‘black intestine’ is related to the lungs while the *bi-ri* is related to the gall bladder, the bladder, and the kidneys.

Evidence from Other Lexical and Literary Texts

Earliest and only attestation of $\textit{ša-gi}_6$ ‘black heart’ in a literary text is found in a composition from Abu Salabikh (OIP 99 298 v 7), probably a hymn to the mother goddess (Krebernik 1998: 321 fn. 800) in a list of terms compounded with *ša*. The next occurrences are in the Ebla vocabularies, both monolingual and bilingual. The monolingual versions have two entries $ni\hat{g}_2-gi_6$ and $ni\hat{g}_2-gi_6-gi_6$ (MEE 15 232, and no. 28 rev. ii 10-11) In the bilingual vocabulary, there are two entries: $ni\hat{g}_2-gi_6$ ‘the black (organ)’ = *ir-ru*₁₂ ‘intestines’ VE 51; and $\textit{ša-gi}_6$ ‘black heart’ = *d\acute{i}-\acute{a}-mu* “dark-coloured (organ) or perhaps referring to an emotional state of depression, a black mood” VE 582.¹⁵ The interpretation of *d\acute{i}-\acute{a}-mu*, its etymology and phonetic realization, are uncertain. Conti (1990: 163) suggested /*dihāmu(m)*/

¹³ On the basis of *ir-ri* [*ša-al-mu*]-*um* (MS 2888 ix 2’) and *we-er-ra* *ša-al-mu-um* (A 3207: 18’), the *irru* must be considered a singular noun in this composite substantive.

¹⁴ The phonetic reality of this sign is uncertain; it has been read gig_2 and $gigg_i$. If so, it is homophonous with *gig* and this might have led to their confusion (see below).

¹⁵ See Sjöberg 2003: 530f., no. 51 and earlier scholarly discussions. There is a third term which may be related: $\textit{ša-gig-u}\acute{s}_x$ (LAK 672).

from Sem. **dhm* as did Sjöberg (2003: 531, note 8) while Militarev and Kogan (2005: 344, s.v. No. 278) posited /*ṭilḥāmu*/ in accordance with **ṭu/alḥīm-* (Militarev and Kogan 2000: 248f., s.v. No. 278) and thus regarded the Ebla form as an early antecedent of Akkadian *ṭulīmu*.

An enigmatic reference occurs to *ṭulīmu* in an Old Babylonian literary catalogue listing incipits of compositions: *lu-pi-iš-ši a!-a!-[r]a-am ṭù-li-ma-am pī* (KA) *na-ap-ša-ri* (George 2009: 72, No. 12:16) which George (2009: 73) translates “I shall deck her out with flowers(?): spleen, the mouth of the gullet”. While the use of body parts in various types of love lyrics is well known, this is the first metaphor containing *ṭulīmu* as well as *napšāru* ‘uvula’.¹⁶ It is also the first time that the *napšāru* has a mouth. Since this metaphor is not transparent as regards its literal sense, another possible reading of this line might be: *lu-bi-iš-ši¹⁷ ú!¹⁸-[r]a-am ṭù-li-ma-am pī* (KA) *na-ap-ša-ri* “I will cause her to smell bad: the vulva (like the) *ṭulīmu* (rising to) the mouth of the gullet”. It is common for body parts to smell bad in general, and in the erotic language of the so-called love lyrics and incantations in particular. The stench could be from regurgitation, bile or even fecal vomitus. Since the idiomatic Akkadian phrase commonly found in literary texts is *martam mâ’u* ‘to vomit bile’,¹⁹ there could have occurred some confusion in internal organs in this line. However, in pancreatitis, the inflammation of the pancreas, nausea and vomiting are prominent symptoms (Taber 1969: P-9f.). It is to be noted that the pancreas excretes pancreatic juice secretions to help in digestion (Taber 1969: P-9). The question is whether the ancient Mesopotamians were familiar with the cause and symptoms of this malady.

Evidence from Medical Texts

In the first millennium, there exist only a handful of medical texts that assign prescriptions for diseases of the *ṭulīmu*, occasionally also written BI.RI. These prescriptions are found in the therapeutic series *bulṭu É da-bi-bi*. Few symptoms are described. The most common symptom is that the *ṭulīmu ittanazzaz* “continually stands up / protrudes”. The organ is

¹⁶ CAD *napšāru* “uvula”. This lexeme is omitted in Militarev and Kogan 2000. The Ugu-mu equation is: ní-g-nu-[?]-mu = *na-ap-ša-ri* MS 2888 vi 19-20.

¹⁷ The probable consistent orthography of this text renders the syllable /pi/ with PI, consequently the syllable /bi/ rather than /pi/ should be represented by BI as George himself notes (p. 72) and therefore suggests an alternative interpretation of these lines: *lu-bi-iš ši-a!-a!-[r]a-am* “I will put the dawn to shame” from *ba’āšu* B. My suggestion is based on *ba’āšu* A.

¹⁸ The sign shape of ú apparently varies in this text, with a long final vertical (lines 10, 28), and short verticals (12, 27, 30). The instance in line 10 is very similar to the broken sign in line 16.

¹⁹ The phrase is considered to be an epic formula by Hecker 1974: 169.

written syllabically in the first prescription: *šumma amēlu tū-lim-šú* DU.DU-az (BAM 77:30'), and logographically in the second prescription: *šumma amēlu* BI.RI-šú DU.DU-az (BAM 77:33'). This description probably refers to an enlarged organ, palpable when the abdomen was examined. Another is that it is painful: "If an individual's *tulīmu* (*tū-lim-šú*) causes him pain (*ikkalšu*) and he does not sleep, day and night; his trunk (*pagru*) keeps 'heat' (*umma u[kâl]*) (BAM 77: [20'] // BAM 78:1). The prescription given is remarkable in that it adds a recommendation to visit a temple: "he shall visit the sanctuary of Marduk and he will recover" (BAM 77:21' // BAM 78:2). Whereas in most cases of problems with the *tulīmu*, plants are the prescribed medication,²⁰ in instances of these *tulīmu* / BI.RI infections, a concoction made from the *tulīmu* / BI.RI of a dog (frequently black), is prescribed (BAM 77:30'[*tulīmu*], 33' [BI.RI], 39'[BI.RI]) together with the *tulīmu* or BI.RI of a specific lizard, whose name is articulated as *tašlamtu* (e.g. BAM 77:30'f. and parallels).²¹ As Stol noted (2006: 113), this is an unusual remedy.²²

The text: DIŠ NA *tū-lim-šú* KÚ-šú (BAM 77:[20'] // BAM 78:1) was explicated in an Achaemenid or later period commentary from Nippur as follows: *ina ŠÀ ŠÀ.GIG : dSAG.ME.GAR : ŠÀ.GIG : tu-li-mu* (Civil 1974: 336, 11N-T4:7). The translation given in CAD T p. 124 lexical section is: 'If a man's spleen causes him pain, (comm.) in (the tablet with the incipit) "ŠÀ.GIG (means) Jupiter," (is found the lexical equation) ŠÀ.GIG (means) spleen". The first point to be noted in this late commentary is that the term ŠÀ.GIG means "sick innards or viscera" which are here identified with the planet Jupiter and secondly equated with *tu-li-mu*. The term ŠÀ.GIG as well as ŠÀ.GI₆ are identified with the organ *tulīmu* in late lexical equations in Hg. D 55f. (MSL 9 35).²³ These learned equations are not reflected in the medical texts.

The similar and possibly homophonous²⁴ term ŠÀ.GI₆ (CAD T *tulīmu*, usage a)—2') occurs in medical texts but in diagnostic rather than therapeutic context:

²⁰ BAM 78: 10-15 contains a list of herbal remedies, possibly for the cure of a splenic affliction.

²¹ ^dNIN.KILIM.EDEN.NA *ša taš-lam!*(wr. TE)-*tum* MU.NI (BAM 77:30'f.); *induhallatu ša* EDIN [...] *ša taš-lam-tum* MU.NE (BAM 77:34'); [*induhallatu*] *ša* EDIN *ša taš-lam-tum* MU.NE (BAM 77:40'); *tū-lim anduhallatu* [*ša* EDIN *ša ta*] *š-lam-tum* MU.NE (BAM 77:46'f.). Whereas the first two instances do not refer to any organ of the lizard, the organ is preserved in the fourth instance. The third citation contains a break.

²² Interestingly, the patient eats the concoction on an empty stomach (*balu patān* 32').

²³ These two lines are similarly restored in Hg. B which has two entries equated with *tulīmu*.

²⁴ They could be homophones depending on the phonological representation of GI₆. Note that the ePSD and DCCLT read the logogram for "black" as bisyllabic *giggi*. Stol (1993: 31f.) suggests that GIG in ŠÀ.GIG is an unusual writing for ŠÀ.GI₆ and he reads GIG written twice as bisyllabic *kūku* which ePSD reserves for MI (*kukku*₅) in the meaning 'to be dark'.

šumma irassu u šašallašu ikkalūšu kiširti ŠÀ.GI₆ irašši

If his chest and his back cause him pain, he is suffering from the constriction of the “Black Innards”.

(Labat TDP 180:28)

More often, it occurs as a term for a disease rather than a body part:

[*šumma amēlu ŠÀ.GIG.]GA maruṣ Š[À].GI₆*

[*šumma amēlu ku-u]k-ki maruṣ ŠÀ.GI₆*

If an individual is suffering from “Sick Innards”: It is “Black Innards”.

If an individual is suffering from *kukku*²⁵: It is “Black Innards”.

(Köcher Pflanzenkunde 22 i 13f., Uruanna IV, see Stol 1993: 32)

To combat this “Black Innards” affliction, pharmaceutical texts give lists of various herbs²⁶ and a medical text contains a fragmentary incantation and prescription for ŠÀ.GI₆²⁷ (Stol 1993: 32). In these references, ŠÀ.GI₆ refers to a malady rather than an organ.

In sum, as illustrated in Chart II, there are one human organ entitled the *níg-gi₆*, rarely *ša.gi₆* / *irru ṣalmu(m)* which occurs in texts in the third and second millennium, another organ is the *bi-ri* / *tuḫmu* which occurs in texts in the second and first millennium and last ŠÀ.GI₆ (rarely ŠÀ.GIG), is a term for a disease rather than an organ in the first millennium.

²⁵ Stol (1993: 32) suggested the *kukku* is a Sumerian loanword *kúkku* in Akkadian. Consequently, the patient in this case would be suffering from “Darkness”.

²⁶ BAM 164:10-12 (5 herbs for ŠÀ.GI₆), BAM 431 v 46' (9 herbs), v 49' // 430 vi 7 (5 herbs).

²⁷ BAM 305.

CHART OF COMPARISON OF ANIMAL AND HUMAN ANATOMICAL
 NOMENCLATURE OF INTERNAL ORGANS IN OLD BABYLONIAN PERIOD

Body Part	ANIMAL (extispicy and meat cuts)			HUMAN	
	Sumerian	OB Nippur Ura 3	Akkadian	Sumerian	Akkadian
Pancreas	[BI.RI in Akkadian context]	uzu.bir ^{ri}	(UZU). <i>tuḫīmu</i>	bi-ri ḪAR	<i>tuḫīmu</i>
Spleen	(ur ₅ /HAR). niĝ ₂ -gi ₆ šà-gi ₆ [ŠĀ.GIG in Akkadian context]	uzu.niĝ ₂ -gi ₆	(UZU). <i>werra šalmum šagikku</i>	niĝ ₂ -gi ₆ /šà-gi ₆	<i>irru šalmu(m)</i>
Kidneys		uzu.ellaĝ ₂ -múš uzu.ellaĝ ₂ -múš-ša-ga uzu.ellaĝ ₂ -múš-bar-ra	<i>kalītu</i> <i>kalīt libbi</i> = <i>kalītu</i> <i>kalīt birki</i> = <i>iški</i>	ellaĝ ₂ -múš ellaĝ ₂ -múš-bar-ra ellaĝ ₂ -múš-ša-ga	<i>kalīt birki</i> <i>kalīt libbi</i>

ANIMAL ANATOMY

Animal anatomy is known from information provided by lists of meat cuts and by extispicy texts. Meat cuts are listed in Tablet XV of the canonical lexical series Ura (HAR-ra). In the OB Nippur Ura (= Forerunner to HAR-ra XV, MSL 9 43-46) recension, there are two sets of meat cuts. The first set contains: uzu.ḪAR (mur) 'meat of the lungs', uzu.niĝ₂-gi₆ 'meat of the black organ' (OB Nippur Ura 3:446-7, DCCLT = Forerunner to HAR-ra XV 44-5, MSL 9 44).²⁸ Similarly, another OB exemplar (A 07895, DCCLT,²⁹ of unknown provenance, possibly Diyala) has a similar set:

viii 12' [uzu.šà]-sig meat of the small intestines

viii 13' [uzu].šà¹-gi₆ meat of the "black" innards

²⁸ DCCLT 447 uzu ni₂-giggi has the following references for the line:

uzu niĝ₂-mi MSL 08/1, 81 V04 r i 12'

uzu niĝ₂-mi MSL 08/1, 82 V58 o 10

uzu niĝ₂-kukku₅ SLT 037 + 046 + r iv 7 (on the photograph there seems to be room for only one MI sign)

²⁹ The text of this tablet (or tablets) A 7895A and A 7895B given in MSL 11 pp. 147 and 160-161 respectively, do not contain these lines.

viii 14' [uzu].ĤAR (mur)

meat of the lungs

The parallelism in the context of the animal meat cuts and the human anatomical features is clearly evident in these lists. The ‘black organ’ is mentioned together with the lungs. Note the secondary change from níg to šà.

In the Middle Babylonian exemplar from Emar, the same section occurs:

uzu.[...], uzu. niĝ₂.giĝ.gi.a, uzu.ĤAR (Hh. XV Emar VI/4 118, no. 552: 39’f.). The Emar text replaces the gi₆ ‘dark’ with giĝ ‘sick’ – a senseless substitution in the context of meat cuts. Who would eat a diseased organ? It is evidently a case of homonym replacement. This section is missing in the Canonical version of Ura/HAR-ra XV and has been restored according to Hg. D.³⁰ Hg. D 55-56 gives two Sumerian terms [uzu].šà-giĝ the ‘meat of the sick heart’ and [uz]u.šà-gi₆ the ‘meat of the black heart’. The former the ‘sick heart’ is not translated but akkadianized as ŠU-ku, i.e. *šagikku* while the latter the ‘black heart’ is translated as *ir-ru šal-mu* ‘the black intestine’. In the third explanatory column added in Hg, they are both explicated as *tuġmu* (see CAD I/J 182 irru: b 3’ and Sjöberg 2003: 531).

The second set of meat cuts are those composed with the sign BIR / ellag₂ (OB Nippur Ura 3: 475-478, DCCLT = Hh. XV Forerunner 74ff., MSL 9 45). There are four entries: uzu.bir^{ri}, uzu.ellaĝ₂-múš, uzu. ellaĝ₂-múš-šà-ga, uzu. ellaĝ₂-múš-bar-ra “meat of the biri, meat of the kidneys, meat of the inner kidneys, meat of the outer kidneys (i.e. the testicles)”. In the Canonical version of Ura/HAR-ra XV Gap A a4, two of these four entries are preserved: uzu.ellaĝ₂-múš-[šà-ga] = MIN {[ka-li-tum]} li-[ib-bi], ellaĝ₂-múš-bar-ra = MIN {[ka-li-tum]} bir-[ki]. The same two lines are partly present in Hg. B 19-20 (MSL 9 34). While the Sumerian column is completely missing, the first and second Akkadian columns are extant. Line 19 has [ka-lit] ŠÀ-bi = *ka-li-tú* “kidneys”, and line 20 [ka-l]it bir-ki = *iš-ki* “testicles”.

Evidence from Meat Cuts and Cuisine

Viscera were also consumed by the Mesopotamians. One literary composition contains a reference to the roasting of internal organs —Lugalbanda I / *Lugalbanda in the Mountain Cave*: ur₅ niĝ₂-gi₆ izi im-mi-ni-in-si translated by ETCSL as “he roasted the dark livers there” (Lugalbanda I 374 = Lugalbanda in the mountain cave ETCSL 1.8.2.1 line 381). Since there is no such thing as light livers, one possible translation would be: “he roasted the liver and the black intestines”. However, this lexeme occurs also in an Ur III

³⁰ [šà-gi₆] = [*ir-ru šal-mu*] in Canonical Gap A a₃ b (MSL 9 11), Hg B 52-53 gives two terms for *tuġmu* but neither extant.

administrative text allocating parts of carcasses for the capital: 1 ur₅-niĝ₂-gi₆ gu₄ (line 7) which Hallo translated “one ... spleen” (Hallo 2001: 164). Since the item is counted as a singular entry, it must be one organ. Consequently, ur₅-niĝ₂-gi₆ is one compound noun phrase. In this phrase, the term ur₅ / HAR could be considered as a determinative and the organ would be the “black organ”.

Among Akkadian sources, there are lists of meat cuts and culinary texts. While one OB list of meat cuts has both 1 UZU *tu-li-mu-um* 1 UZU *we-er-ra ša-al-mu-um* “meat of the *tuḫmu* and meat of the black intestine” (A 3207: 17f.), the other has just *tù-li-mu* (BM 29663: 25).³¹ The OB culinary texts give a recipe for preparing “bouillon of the *tuḫmu*” (*me-e tù-li-mi* YOS 11 25:40, see Bottéro 1995: 46). Modern cuisine does not help in the identification of these two organs. While German Milzsuppe (Spleen Soup) and Florentine crostino paté occur as names of dishes with the spleen as the main ingredient, the more common foodstuffs are those made of the sweetbread, the pancreas.³²

In the early Neo-Babylonian period, an unusual record was made of the cuts of meat to which the king and the temple personnel were entitled as shares from the sacrificial sheep offered daily to Ištar and Nanaya: [10] ZAG.LU A.RIA UZU.ELLAĜ₂ u ŠÀ.GIG LÚ.TU.É.MEŠ “a choice shoulder cut, a kidney and a ŠÀ.GIG (lit. “the sick Innards”) for the priests” (OECT 1 Pl. 20:5 and 29, see McEwan 1983: 187-198). In this citation as in the one cited supra, it is not a diseased organ but evidently a case of homonym replacement.

Evidence from Extispicy

Only one set of these lexemes is used regarding animal entrails in extispicy and that is BI.RI / *tuḫmu*.³³ The information provided by the manuals for the haruspex should be ample and sufficient enough to provide us with a good description of the organ. First, the manuals provide the position of the organ vis-à-vis the rumen (*karšum*) and the skeleton: If the [*tù*]-*li-mu-um* moves from its normal position, it may be found to the right of the rumen (YOS

³¹ Rather than meat cuts this list of parts of the sheep could be a lexical list, perhaps for the instruction of the diviner.

³² Sweetbreads are the thymus glands and pancreas glands of lamb, beef, or pork. The latter is called ‘heart’ sweetbreads. Among the many recipes are Italian Fried calf’s pancreas (*Animelle di vietello in frittura*) and French *ris de veau*.

³³ For OB ext. texts, see YOS 10 41 which contained 41 omens based on the *tuḫmu* (line 66), Jeyes 1989: 170-173, no. 15; Aro and Nougayrol 1973: 41-50. Regarding any occurrence in the extispicy reports, there is no present evidence. A propos YOS 10 11 ii 24, cited by Meyer 1993: 351, note 10 and Röllig 1994, the citation refers to a description of the *ubānum*: *šumma šrum ina šumēl ubānim kīma tuḫmim šakin* “if there is a piece of flesh on the left side of the ‘finger’ (that looks) like a *tuḫmu*”.

10 41:15) or beneath or on the gate of the rumen (YOS 10 41:13, 61). Similarly, if the BI.RI has left its (normal) location and is or located beneath the backbone (BM 22694:37', Aro and Nougayrol 1973: 42), or if the BI.RI has left its (normal) location and or approaching the left (side of the) ribcage (*bamtu*,³⁴ BM 22694:40'f., Aro and Nougayrol 1973: 42). Second, it provides a description of the organ. Its shape and size can vary, larger, thinner or smaller (BM 22694:43'ff. Aro and Nougayrol 1973: 44). It can be extended/elongated like a saw (*šaššāru*, BM 22694:10' Aro and Nougayrol 1973: 42), it can be curled (*kapāšu*, YOS 10 41:48) or it can lie flat (*naparqudu*, YOS 10 41:51). It can be spherical (*garir* YOS 10 41:20; BM 22694:9', Aro and Nougayrol 1973: 41 [like the agricultural tool *išqarrurtum*]). The colour of the BI.RI / *tuḫīmu* can vary: white (*peši* BM 22694:31' Aro and Nougayrol 1973: 42), yellow-green (*urruq*, YOS 10 41:22, Jeyes 1989: no.15:5'), red (*sūmam šarpa*, YOS 10 41:63; *sūmam itaddu*³⁵ BM 22694:32' Aro and Nougayrol 1973: 42), dark (*tarik*, YOS 10 41:29 [*mādiš*], BM 22694:47'ff. Aro and Nougayrol 1973: 44). The blood of the organ can become dark like dried malt (Jeyes 1989: no.15:10'). The organ seems to have two lobes, referred to as wings (*kappu*, YOS 10 41:31, BM 22694:6', 26', 28', 30', Aro and Nougayrol 1973: 42; and Jeyes 1989: no.15:12'). These wings can be red (BM 22694:30', Aro and Nougayrol 1973: 42), or be like the wings of a bat (*šuttinnum*, BM 22694:6', Aro and Nougayrol 1973: 41)³⁶ or an eagle (*erû*, YOS 10 41:31). They can be full of *liptātum* (moles) or *šarūru* (radiating features) (BM 22694:26', 28' respectively, Aro and Nougayrol 1973: 42). The BI.RI / *tuḫīmu* can be divided (*paris*, YOS 10 41:27), perforated in the middle, perhaps between the lobes (*pališ*, Jeyes 1989: no.15:15'). The features of the BI.RI / *tuḫīmu* are designated the *ruqqum* "thin part, concavity, narrow place"³⁷ (YOS 10 41:35f., 40, 45; BM 22694:55', 65', 76', 79', Aro and

³⁴ *Bamtu* (CAD B *bamtu* B) usually denotes ribcage, chest, thorax, cf. Ugu-mu [ti]-mu = *še-li*, [ti-ti-m]u = *ba-am-ta-a-a* (Ur bilingual UET 7 96 i 4-5). See discussion in Aro and Nougayrol 1973: 49, note to line 40'ss. For the equation of TI.TI = *bamtu* 'thorax, two sides or back of ribcage' see Kogan and Tishchenko 2003: 323f. who define *bamtu* as "back, breast, torso, trunk, body". For *bamtu* also possibly denoting an internal organ, see Kogan and Tishchenko 2003: 324 and note 16.

³⁵ This verbal phrase is commonly understood to referring to red spots rather than red colouring.

³⁶ Aro and Nougayrol (1973:48, note to line 6') suggest the similitude between the wings of the BI.RI / *tuḫīmu* and the wings of the bat is their thinness.

³⁷ The translations that have been given are: AHW 995a s.v. *ruqqu* II: "dünn, schmale Stelle"; CDA 307 s.v. *ruqqu* II "thinness; thin place, part"; Aro and Nougayrol 1973: 47 "la partie bombée"; Meyer 1993: 352: "dünn Stelle"; Röllig 1994: 108: "Schmalstelle", Koch-Westenholz 2000: 63f. "Narrow Place". For discussion and references to other previous suggestions, see Koch-Westenholz 2000: 63f.. The CAD R 419 s.v. *ruqqu* links the two lexemes: the kettle and the hammered metal with the part of the exta and suggests that the *ruqqu* of the parts of the exta takes its name either from the thinness of the hammered metal or from the concavity of the shape of the cauldron but prefers the latter explanation on the basis of the occurrence of the *ruqqu* of the ear. Annie Attia

Nougayrol 1973: 44, 46), the *nibû* “protuberance”³⁸ (YOS 10 41:40, 45; BM 22694:55’, 58’, 61’, 63’ Aro and Nougayrol 1973: 44) and the *būdu* “shoulder” (YOS 10 41:35, 37). The first two features have yet to be identified; they could be either general non-specific or specific. These three sections, the *ruqqu*, the *nibû* and the *būdu* can be scared with a “weapon mark” (*kakku* YOS 10 41:37, 40, 45; BM 22694:58’, 61’, Aro and Nougayrol 1973: 42) or perforated (BM 22694:63’, 65’, Aro and Nougayrol 1973: 44). The *ruqqu* and the *nibû* can be reversed (BM 22694:55’, Aro and Nougayrol 1973: 46). The *ruqqu* can be curled (*kapāšu*, BM 22694:76’f., Aro and Nougayrol 1973: 44) or it can lie flat (*naparqudu*, BM 22694:79’f., Aro and Nougayrol 1973: 46). Significant abnormalities of the BI.RI / *tuḫmu* include: yellow-green, white, and red pocks³⁹ (*ziqtu*, YOS 10 41:59, BM 22694:17’, 20’, 22’, Aro and Nougayrol 1973: 42); warts (*uṭṭētu*, YOS 10 41:27); *šanūru*-radiating feature and *pappasu*-mush (BM 22694:24’, 25’, respectively, Aro and Nougayrol 1973: 42). Further, it can be strewn with white filaments (*qū pešūtu*, Jeyes 1989: no.15:14’) and even covered with shaggy hair (*šārtam laḫim*, YOS 10 41:30, BM 22694:46’, Aro and Nougayrol 1973: 44). The surface or sides can be “blunt as the foot of a bird” BM 22694:72’, 74’, Aro and Nougayrol 1973: 44). Scars, lesions and ulcerations (*mušnigu*, YOS 10 41:65, *šihhu*, YOS 10 41:53, *sahhum*,⁴⁰ BM 22694:67’, 69’, Aro and Nougayrol 1973: 44; *uṣurtum* YOS 10 41: 64) are found to occur in various momentous shapes (chains *širširī* YOS 10 41:19, 55 [red]; crenellations like a wall *kīma dūrim sī’ātim* YOS 10 41:33, BM 22694: 14’ Aro and Nougayrol 1973: 42; “footmark” *šēpum*, BM 22694:52’, 53’ Aro and Nougayrol 1973: 44, “cross-shaped mark” *pillurtum* BM 22694:54’ Aro and Nougayrol 1973: 44). Multiple organs are inferred (Aro and Nougayrol 1973: 47 note to line 1) from the first lines of BM 22694:1’, 3’, 5’ (Aro and Nougayrol 1973: 41) and in one passage in YOS 11 41 which indicates: [*šumma x tu-l*]i-mu iš-te-ni-iš iz-za-az-zu (line 57).

The SB *bārūtu* tablets have yet to be published. According to CAD T p. 124b., there are three extant tablets containing the chapter on the BI.RI: BM 79-7-8,97, K.11242, K.12472. One namburbi exists to avert the evil portended: *ulu kalītu* (BIR) *ḫalqat lu* BI.RI

suggested: il peut aussi désigner une partie anatomique fine, aplatie. Ainsi on le retrouve pour désigner une zone du foie, de la vésicule biliaire, de la rate, etc.

³⁸ The translations that have been given are: AHW 786a s.v. *nib/p’u*, *nibûm*, “das Aufsteigen, 2) eine Protuberanz auf der Milz oder Lunge,” CAD N/2 204 s.v. *nibû* (mng. uncert); CDA 252: *nibû* (a feature on the spleen, lungs); Aro and Nougayrol 1973: 47 “extrémité”; Meyer 1993: 351: repeats AHW; Röllig 1994: 108: “Vorsprung”. Meyer (1993: 351) suggests that the *nibû* is located in the middle of the organ.

³⁹ Meyer (1993: 352) identified the white *ziqtu* with the white pulp of the lymphatic tissue and the red *ziqtu* with the red pulp (of the venous sinuses).

⁴⁰ For the variation of *šihhu* and *sahhum*, see Richter 2003: 442.

išahhiṭ “(if when you sacrifice the sheep) either the kidney is missing or the BI.RI is twitching” (STT 231:4, see Reiner 1967: 186, Maul 1994: 433 and Stol 2006: 112).

Among Materia Medica

The BI.RI of an ox, a dog and possibly a lizard are used in medications. The BI.RI GU₄ *išāta qalliš tukallam* “you expose the BI.RI of an ox to the fire slightly” (BAM 237 iv 25) for the cure of female with *nahšātu*. As described above, the *tuḫmu* / BI.RI of a dog is prescribed (BAM 77:30’[*tuḫmu*], 33’ [BI.RI], 39’[BI.RI]) together with the *tuḫmu* or BI.RI of the *tašlamtu*-lizard (e.g. BAM 77:30’f. and parallels) for diseases of the *tuḫmu*.

In sum, there is one animal organ entitled the (ur₅/HAR).níg-gi₆ in Sumerian texts, there are two Akkadian words *tuḫmu* and *irru šalmu* and one logogram BI.RI, in second millennium Akkadian texts. In first millennium texts, there are only logograms BI.RI and ŠÀ.GIG (see Chart II).

Having analyzed the Sumerian and Akkadian lexemes, let us now attempt to pair them with modern anatomical terminology and with a possible representation.

ANATOMY

Human Anatomy

(fig. 1, Posterior View of Spleen and Pancreas)

(fig. 2, The Visceral Surface of The Spleen)

(fig. 3, Relationship of Liver, Gall Bladder and Pancreas)

The spleen is found in the upper left quadrant of the human abdomen beneath the 9th to the 12th rib. A spleen in a healthy adult human is approximately 11 centimetres in length. The spleen is part of the lymphatic system. It is elongate-oval in shape and of a dark purplish color (see fig. 1). Since the spleen is a dark organ, the organ termed the “black intestine” is more likely to be the spleen.

The pancreas lies transversely along the back of the abdominal wall, attached to the duodenum (see fig. 1). It is a yellowish organ about 17.8 cm long and 3.8 cm wide, larger than the spleen. It is an endocrine gland and an exocrine gland which functions as part of the digestive system. Its relation to the stomach (or vomitus) would suggest that the pancreas was designated the *tuḫmu*.

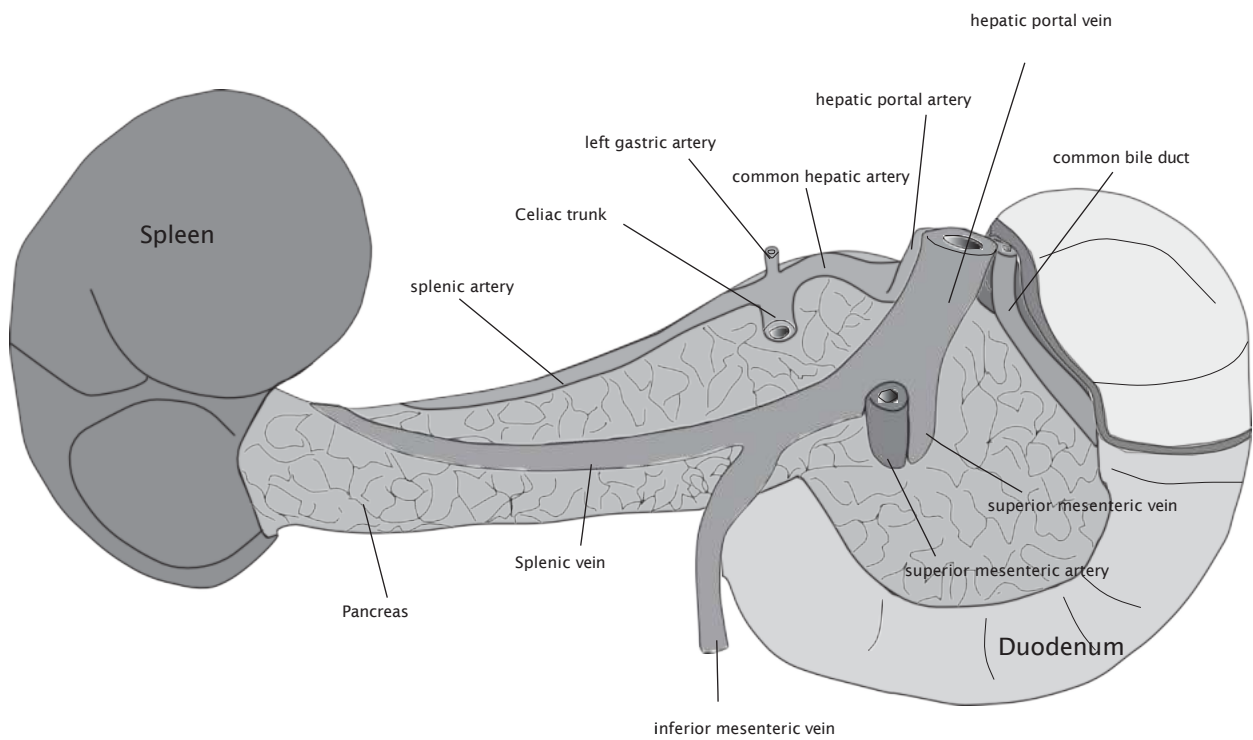


Fig. 1, Posterior View of Spleen and Pancreas

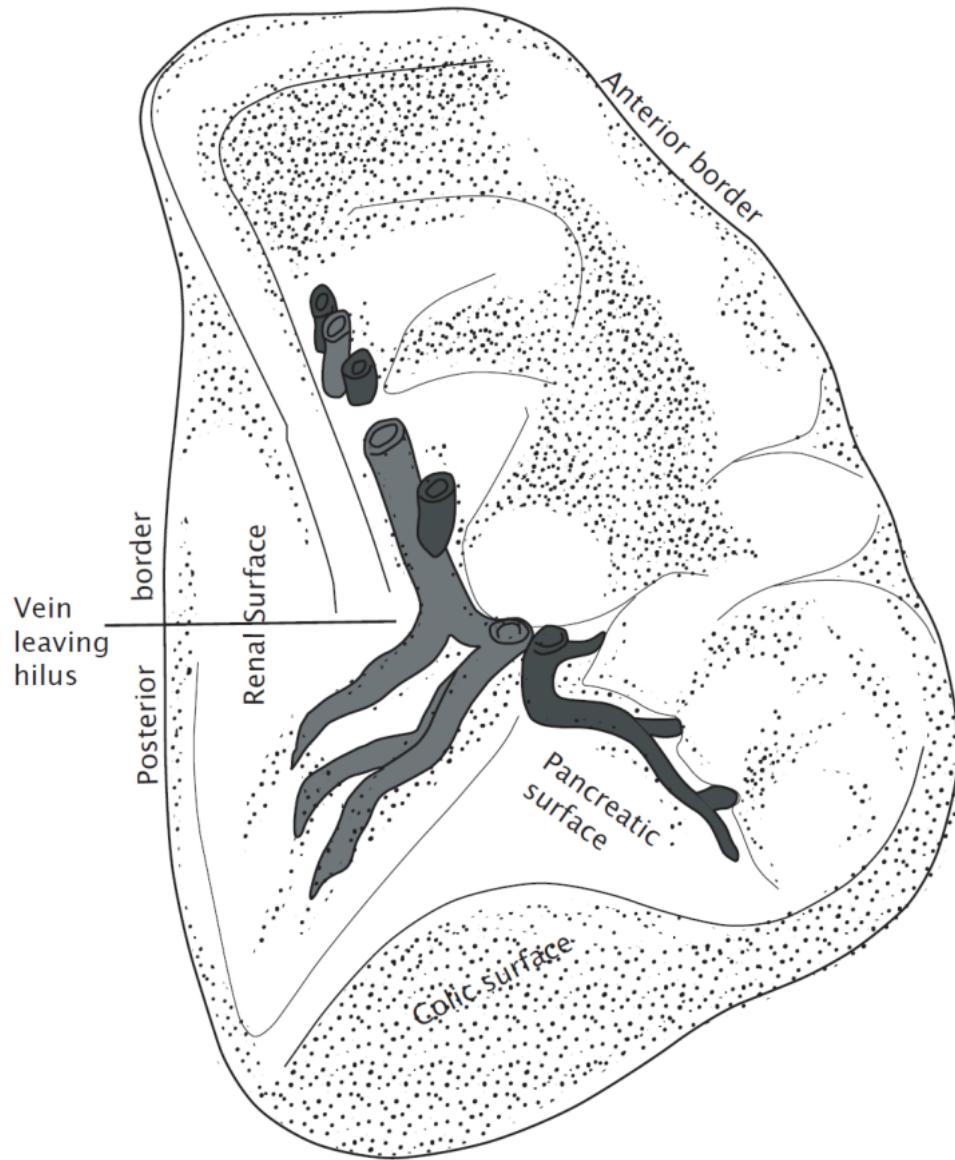


Fig. 2, The Visceral Surface of the Spleen

Nevertheless, Scurlock and Andersen (2005:135-136) posited that the *tuḫīmu* is probably spleen in medical texts, since the diseases related to *tuḫīmu* seem to be those of the spleen. In particular, ‘Standing up’ is an apt description of an enlarged spleen. It is apparent that the anatomical terms were confused or not understood in the first millennium sources.

Animal Anatomy

IMAGES

The spleen of the sheep is found beneath the backbone in the abdomen above the rumen under the 12th rib (Popesko 1979: Abb. 73, 76). This position of the spleen next to rumen, as pointed out by Meyer 1993: 349, reflects the description of the position of the BI.RI = *tuḫīmu* in the extispicy texts vis-à-vis the rumen (*karšum*) as well as its position in reference to the ribcage. The pancreas of the sheep lies close to its liver and kidneys on the right side of the abdomen behind the ribcage (Popesko 1979: Abb. 70, 73). The descriptions found in extispicy texts such as the colour yellow-green would match the pancreas rather than the spleen. Consequently, the anatomical identity of the BI.RI = *tuḫīmu* cannot be definitively determined.

The Model

In 1993, Jan-Waalke Meyer identified an uninscribed object from Mari as a model of a healthy sheep spleen although noting that it had earlier been identified as a model of a pancreas. He maintained that the shape and appendages could be identified with distinct parts of the sheep’s spleen. In particular, Meyer (1993: 349, note 7) considered that the lack of lobular formations shown on the model negate its identification with the pancreas. According to Meyer, the lateral protrusions on the model are the strip-like protuberances of the *hilus lienis*¹ and the four central protrusions represent the cut-off stumps of the mesenteric ligaments. He then applied the terms known from extispicy sources describing the BI.RI / *tuḫīmu* to the model (fig. 2): identifying the *kappu* with the lateral protrusions,

¹ This description of the *hilus lienis* differs from others which refer to the *hilum* as a fissure along the median plane of the gastric surface of the spleen giving passage to the splenic vessels and nerves: *hilum splenicum*, *hilum lienis*, *porta lienis* as can be seen on Popesko 1979: Abb. 76. For an image of the human *hilum splenicum*, see fig. 2.

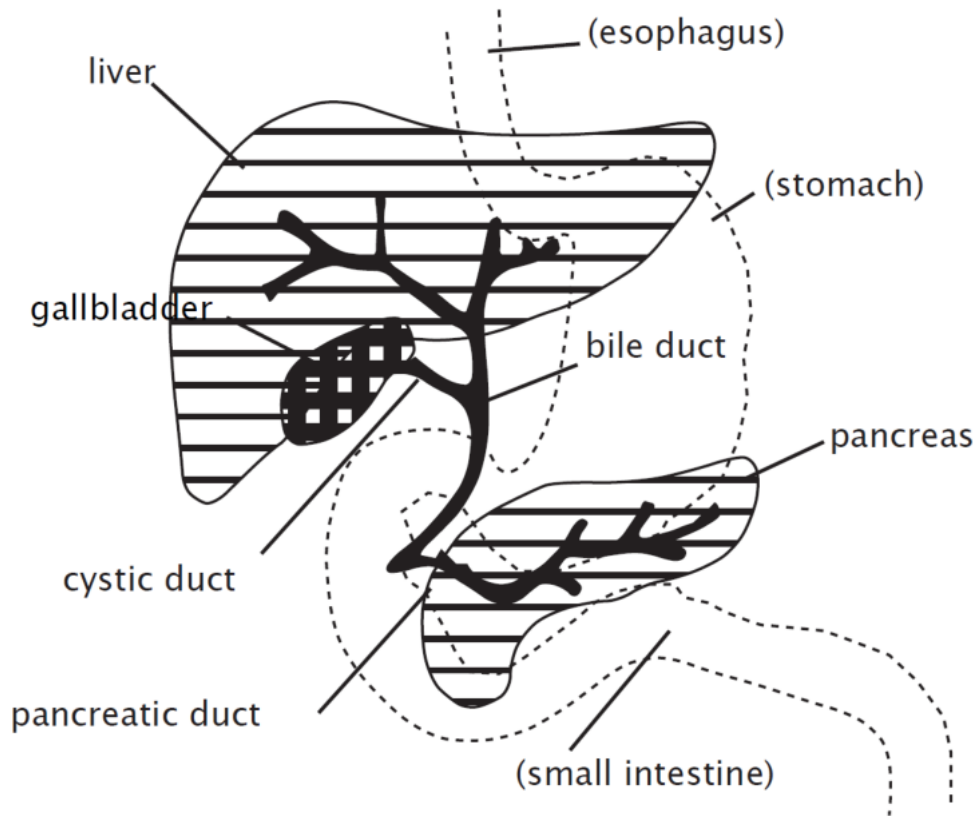


Fig. 3, Relationship of Liver, Gall Bladder and Pancreas

locating the *nibû* in the middle of the model and as the designation of the four stumps (351) and positioning the *ruqqu* in the tapering region below the two projections (352). He did not mention the *būdu*-shoulder and thus did not identify all the elements of the BI.RI / *tuḫmu* on the model. Consequently, his identification is flawed because the lateral protrusions and the four stumps are not the significant physiological markers of the sheep's spleen and his comparison with the description of the BI.RI / *tuḫmu* does not agree fully with its known parts.

CONCLUSIONS

As in Chart II, the tentative identification of the two small organs are bi-ri = *tuḫmu* “pancreas” and niĝ₂-gi₆ = *irru ṣalmu(m)* “spleen” (lit. “the black thing” [Sum.] / “black intestine” [Akk.]). At some point, another logogram šà.gi₆ was introduced. Finally, ŠÀ.GI₆ and ŠÀ.GIG, which may have originally been different lexemes connoting different meanings, fell together because of their homonymity and their meaning shifted to a description of a disease. Thus, there was only one lexeme left in the first millennium for the description of the organ: bi-ri = *tuḫmu*.

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¹ The abbreviations in this article follow the conventions of *The Assyrian Dictionary of the University of Chicago* (CAD), and *The Sumerian Dictionary of the University Museum of the University of Pennsylvania* (PSD), with the following additions: CDA, *A Concise Dictionary of Akkadian*, 2nd ed. [SANTAG: Arbeiten und Untersuchungen zur Keilschriftkunde 5], edited by Jeremy Black, Andrew George, and Nicholas Postgate, Wiesbaden: Harrassowitz Verlag 2000; CDLI, *Cuneiform Digital Library Initiative*, directed by Robert K. Englund (University of California at Los Angeles) and Peter Damerow (Max Planck Institute for the History of Science [MPIWG], Berlin) (http://cdli.ucla.edu/index_html); DCCLT, *Digital Corpus of Cuneiform Lexical Texts*, directed by Nick Veldhuis of the University of California at Berkeley (<http://psd.museum.upenn.edu/dcclt>), Berkeley, 2003 on; ETCSL, *The Electronic Text Corpus of Sumerian Literature*, Black, J.A., Cunningham, G., Ebeling, J., Flückiger-Hawker, E., Robson, E., Taylor, J., and Zólyomi, G., (<http://etcsl.orinst.ox.ac.uk/>), Oxford: 1998-2006.

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