Some Notes on Papyrus Ebers, Ancient Egyptian Treatments of Migraine, and a Crocodile on the Patient’s Head

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SUMMARY: Modern literature about the history of migraine treatments often starts with an ancient Egyptian remedy said to be from Papyrus Ebers that involves crocodiles that should be wrapped around the head. A fresh look on this treatment shows the need for revision on many points, including the source of the remedy, its content and meaning, and further implications for the history of Papyrus Ebers.

KEYWORDS: Papyrus Ebers, Papyrus Chester Beatty V, migraine, ancient Egyptian medicine
From a biological point of view it is highly likely that some ancient Egyptians suffered from the disease that is known today as “migraine.” The modern term “migraine” is derived from the Greek term ἡμικρανία, “disease of half of the skull,” which was probably borrowed from the ancient Egyptian medical term (mḥr.t m) gs-dp, “(pain/disease in) half-of-the-head,”¹ a pain that is mentioned in several recipes in Egyptian medical papyri. However, due to different concepts of symptoms, syndromes, and diseases, the features of the modern “migraine” and the ancient Egyptian “(pain in) half-of-the-head” need not necessarily match each other completely.² For this reason, I use the literal translation “(pain in) half-of-the-head” in this article in order not to distract from its central issue, namely the discussion of one specific ancient Egyptian treatment of this pain that is often said to be found in the Papyrus Ebers. For this discussion, a substantiated identification of the Egyptian disease in question is of minor relevance.

Some modern scientific articles and books on migraine refer to an ancient Egyptian remedy that mentioned the application of a clay crocodile as the earliest written evidence of this disease:

The oldest known medical manuscript, the Ebers Papyrus (dating back to about 1200 BC and discovered in the necropolis of Thebes), contains an ancient Egyptian prescription for migraine based on earlier medical documents including an Egyptian papyrus of 2500 BC. . . . Believing the gods could cure their ailments, a clay effigy of a sacred crocodile with herbs stuffed into its mouth was firmly bound to the head of the patient by a linen strip. . . . Admittedly, this process may have relieved the headache by collapsing distended vessels which were causing the pain.³

Similar descriptions can also be found in overviews of the history of migraine treatment:

The Ebers Papyrus, dated circa 1200 BC and said to be based on medical documents from 2500 BC, describes migraine, neuralgia and shooting head pains. It was practice at the time to firmly bind a clay crocodile holding grain in its mouth to the patient’s
head using a strip of linen that bore the names of the gods. . . . This technique may have produced headache relief by compressing and cooling the scalp.  

Here the treatment in question is not explicitly connected with Papyrus Ebers, but the text encourages such a connection by an ambivalent formulation. A rather free and embellished paraphrase of this remedy can be found in Gantenbein and colleagues’ “A Comprehensive View of Migraine Pathophysiology”:

First descriptions of conditions of what we would call migraine today date back to 3000–1000 BC. In the papyrus of Eber’s [sic] writings, the unilateral headache was attributed to ghosts and demons, and the treatment of choice was wrapping young crocodiles around the head.  

Publications as those quoted here are often accompanied with an Egyptian-looking depiction (see Figure 1), which illustrates how the treatment in question is interpreted. Although probably not always taken seriously, this depiction is sometimes described as an actual Egyptian source, so it is important to emphasize that it is in fact a modern interpretation by a certain P. Cunningham without an Egyptian antecedent. Several un-Egyptian features reveal its modern authorship: head mirrors were completely unknown to the ancient Egyptians (the mirror’s shape in this image is obviously inspired by the *Uraeus* snake of Egyptian crowns); the bag between the physician and his patient looks like a twentieth-century physician or midwife bag, rather than an ancient Egyptian one; and the so-called *ankh* symbol above the bag was not a medical instrument, but might have been added by Cunningham simply because its shape resembles the red cross of modern Western medical science.

The Conjuration of “Half-of-the-Head” in Papyrus Chester Beatty V

The Papyrus Ebers was acquired in 1873 in Luxor, Egypt, by German professor Georg Ebers.
Ebers, who named the papyrus after himself, transferred it to the University Library Leipzig, Germany, where it remains today. It is the largest and by far most famous (although not the oldest) medical papyrus of ancient Egypt, which may be the reason why it is referred to in modern literature as a source for treatments for migraine. Actually, it contains a recipe against “(pain in) half-of-the-head,” namely recipe no. Eb 250 (lines 47.14–15):

(1) Another remedy, namely one) against (the pain in) “half-of-the-head”:
Head/Skull of catfish; (it) shall be annealed with fat/oil. The head (scil.: of the patient) shall be anointed therewith for four days.

But except for this remedy, Papyrus Ebers does not contain any others against this pain. The treatment with the crocodiles, which was related to Papyrus Ebers in the overviews quoted above, can in fact be found on Papyrus Chester Beatty V, verso, lines 4.1–9:

(2) Document for conjuring (the pain in) “Half-of-the-head”: “O Re, O Atum, O Shu, O Tefnut, O Geb, O Nut, O Anubis (who is) Presiding-over-the-divine-booth, O Horus, O Seth, O [Isis], O Nephthys, O Great Ennead, O Small Ennead, come and see your father entering, while he is adorned with faience, to [see] the contagion (?) of Sakhmet who came to them (adversely), (and) to remove the opponent, that one—whether a dead man or a dead woman, a male adversary or a female adversary—,[who is] in the face of NN, born of NN!”

(This Incantation is) to be recited over a crocodile of clay with grain of [. . .] in its mouth and with its eye(s) (made) of faience, (to be) placed [on] his head (?). One shall [tie] (?) and draw an image of the gods on a strip of fine linen to be attached on his head.

(And it is) to be recited <over> an image of Re, Atum, Shu, Mehyt, Geb, Nut, Anubis, Horus, Seth, Isis, Nephthys, and an oryx on whose back stands a figure <of Horus> (?) carrying his lance.

This papyrus originally belonged to the library of a certain Qen-her-khepesh-ef and his
descendants who lived in the Ramesside Period (thirteenth to twelfth centuries BC) in Western Thebes, who collected several types of texts: tales, love songs, wisdom texts, hymns to the gods, and magical spells as the one quoted above. After the library was rediscovered in the twentieth century, parts of it were purchased by Sir Alfred Chester Beatty and are now kept in the British Museum, London.¹⁸

In the incantation cited above a number of gods are requested for help against the pain, the cause of which was, for lack of a better explanation, regarded as a manipulation by a demonic “opponent.” The healer was advised to make a crocodile of clay with some grain in its mouth and with inlaid eyes, and to speak an incantation over this figure, as was common practice in ancient Egyptian magical spells. After that, a strip of linen should be inscribed with the images of the gods mentioned in the spell, and it should be attached to the head of the patient. Finally, the same recitation should be spoken over a second image drawn. From these instructions it becomes clear that what is described is not a simple bandage. So the questions are: What is the actual function of the crocodile? What is the function of the linen? And what kind of (conceptual or physical) connection exists between the two? The following sections will answer these questions separately.

The Crocodile

At first glance, one might regard the crocodile of the spell as an Egyptian amulet. Proper amulets, however, were usually made of faience and were too small to have their mouths filled with grain,¹⁹ or they were made of metal or precious and semiprecious stones. The crocodile described in the spell should instead be made of clay, as it is known from magical performances, where this material can replace requisites made from wax.²⁰ So it’s not a proper amulet, but a magical requisite. The specific choice of a crocodile is motivated by the
supposed demonic nature of the disease. Papyrus amulets as Papyrus Deir el-Medinah 45 (see Figure 2) show crocodiles as divine helpers attacking a human figure that is marked as a disease or pain demon by the color red, and which in this case is also tied up by Seth or a Seth-like figure.

An intriguing parallel to the description and usage of the clay crocodile from Papyrus Chester Beatty V can be found in a spell of the so-called London Medical Papyrus, that is, Papyrus London BM EA 10059, lines 10.4–5:

(3) Another (remedy): . . . 
This incantation is to be recited over an ibis of clay, whose beak is filled with kernels of grain. Its beak shall be placed in the opening of the wound.

Significantly, only the beak of the ibis, not the complete figure, should be put into the wound. The attachment to the patient’s wound appears to have been temporary, because placing an ibis’s beak, even if made of clay, into an open wound for any period of time is hardly a pain-relieving treatment. A similar incantation from another papyrus supports the brevity of usage:

(4) Another (incantation, one) of a dwarf: . . . 
(This incantation) is to be recited 4 times over a dwarf of clay, placed on the vertex of a woman who is giving birth (under) suffering. (Papyrus Leiden I 348, verso, 12.2–6)

Since this spell is intended for a woman in labor who is doubtless writhing, it is unlikely that the clay figure would stay on her head the entire time. Rather, the incantation seems to have been spoken four times, with the clay figure each time being briefly put on the woman’s vertex. The same procedure may apply to the ibis of Papyrus London BM EA 10059 and the
crocodile of Papyrus Chester Beatty V: both are attached to the patient’s suffering body part only briefly during the conjuration proper. They did not function as compresses of cooling clay or the like, but the performance was meant to force the pain to be transferred magically into the figure:

(5) Another (incantation): . . .
(This incantation) is to be recited over a female figure of clay. As for anything he (i.e., the patient) suffers from his belly: The affliction will be sent therewith into this female figure (which is the goddess) Isis, so that he becomes healthy. (Papyrus Leiden I 348, recto, 12.2–4)²⁷

What happened to such a clay figure after it had been enchanted remains unknown. It “would not be an object that either the patient or the practitioner desired to keep,”²⁸ and it would even less be an object that the patient desired to be implemented into a bandage and fixed on his or her head over a longer period. Instead one expects that the disease would be rendered harmless after it was transferred to the figure, either by locking it up inside the figure and depositing the latter in a secure place, or by destroying the figure together with the disease.

Occasionally clay figurines have been found in the archaeological record, among them also some crocodiles (Figure 3). Many were made of Nile silt clay and obtained a reddish-brown color after firing or were given an artificial red wash.²⁹ Whereas in the past they were identified as toys, Quirke and Waraksa suggest identifying them as requisites for magical practices as described above.³⁰ Their red color in particular reminds Waraksa of the rites of “breaking the red vessels” or the breaking of red-colored execration figures, both apotropaic rites in Egyptian religion, and she assumes that the clay figurines from magical incantations were similarly broken after receiving the disease. This may be the reason why so
many of those figurines were found in pieces. On the other hand, none of the magical incantations—in contrast to the execration figures—explicitly advises destroying the figure, and Waraksa’s clay figures could also have been broken by natural causes (like pressure); yet she may at least be right that the figurines of the magical performances most likely were discarded.

The Linen

Strips of papyrus or linen inscribed with names and images of gods, as on the papyrus from Figure 2, are a special kind of Egyptian amulet. As with other amulets, they could have a preventive or a curative function: preventive amulets were worn around the neck, either as a necklace or in a tube on a string, which is a very practical way of wearing an amulet in everyday life:

(6) Copy of another (remedy): . . .
(This incantation) is to be recited over (images of the goddesses) Sakhmet, Bastet, (and of the gods) Osiris, Nehebkau, which are written down with myrrh(-mixed ink) on a strip of fine linen. (It) shall be given to a man at his throat. It will prevent asses(-demons?) from entering. (Papyrus Edwin Smith, verso, 19.2–12)

This text is intended to be used against a variety of general seasonal diseases, not a specific ailment of the throat. Hence, the mentioned strip of linen has an apotropaic function to prevent possible pains. Their curative counterparts, which were used when the patient was already suffering, could be applied directly to the wound or the suffering body part:

(7) Another papyrus-strip for repelling (the pain) “Half-of-the-temple”: . . .
(This Incantation is) to be recited over those gods which are drawn on a strip of fine linen. (It) shall be placed to the temple of the man. (Papyrus Chester Beatty V, verso, 4.10–6.4)

Text 7 is of particular significance, for it directly follows the spell discussed in this article and is intended against the “(pain in) half-of-the-temple,” which may be similar to the “(pain in) half-of-the-head” of the text in question. It shows that in both cases a linen amulet is described, not a kind of bandage in its modern medical sense, that is, a device to fix dressings or body parts or to compress something. Once wrapped around the head, this amulet “may have relieved the headache by collapsing distended vessels which were causing the pain,” as Villalón et al. assume; yet this idea remains purely hypothetical and largely depends on the method of fixing, which is not described in detail: It is not clear whether it should be wrapped vertically around the chin (as Figure 1 suggests) or horizontally around the forehead, nor how tightly it should be knotted. And even if it was fixed so that it collapsed distended vessels, this outcome would have been a pure coincidence because it was not intended as such by the healer.

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One can conclude that the spell from Papyrus Chester Beatty V does not describe a cooling clay compress applied to the head by means of a decorated bandage. In reality, the clay crocodile was a magical requisite meant to absorb the pain during a magical performance and discarded afterward. The strip of cloth was a linen amulet for curing the suffering patient’s headache and was designed for being placed upon the individual’s head, as is made clear by the last sentence of the description. But whether there was ever a physical connection between this linen amulet and the crocodile or whether the crocodile was removed before the linen was
applied cannot be determined with certainty. Such a connection is usually assumed because of the advice “One shall [tie] (?),” which is to be found between the description of the clay crocodile and the advice to prepare the linen amulet. But usually the instructions of such spells are given in chronological sequence, as texts 6 and 7 show, and one wonders how the linen could be decorated appropriately if it was already tied to the crocodile and no longer spread out. It is furthermore noteworthy that this verb is partially destroyed by a gap in the papyrus, and although the extant ink traces allow such a reconstruction, it is not certain: both the orthography and the syntax would be unusual, because the Egyptian verb for “to tie” requires, as its English equivalent, the explicit mention of the object that is tied. Therefore, the assumption that the crocodile shaped magical device was once fixed by the linen amulet is possible, but the advices of Papyrus Chester Beatty V are not clear enough to take it for granted.

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Appendix: Consequences of the Confusion of Both Papyri

The wrong association of the treatment discussed here with Papyrus Ebers has a long tradition that can be traced back to 1968 at the latest, when Ritter writes: “Der Papyrus Ebers. . . . Vom diffusen Kopfschmerz unterschied man die Migräne, die ‘Krankheit im halben Kopf’. . . . Entsprechend der Therapieresistenz, von der diese Erkrankung bis heute nichts einbüßte, wurden auch Zaubersprüche zu ihrer Behandlung angegeben.”

This phrase is understandable only with the spell of Papyrus Chester Beatty V and possible other sources in mind because the recipe in Papyrus Ebers itself does not contain magical elements (cf. text 1). Over time, the confusion of both papyri led to further mistakes:

1. An incorrect present location: In the scientific literature, Papyrus Ebers is sometimes located in the British Museum, London. This present location is true for Papyrus Chester Beatty V; but Papyrus Ebers is kept in the Papyrus- und Ostrakasammlung of the University Library Leipzig (Germany), neither in the Egyptian Museum of Leipzig nor in the British Museum in London.

2. Incorrect date: The date 1200 BC quoted in the introduction is again the date of Papyrus Chester Beatty V, though in a highly compressed manner. In reality this papyrus cannot be dated more precisely than to the “Nineteenth Dynasty” (approximately 1292–1190 BC). Papyrus Ebers is dated to the sixteenth century BC, three to four hundred years earlier, by the shape of the hieratic signs. This dating was recently confirmed by carbon-14 dating.

3. Incorrect source: The treatment in question is said to be based on sources from 2500 BC. In some instances Figure 1 is regarded as a reproduction of this source, but the fact that this depiction is a product of the last century has already been mentioned. The assumption that
there existed a source of the treatment in question that is as old as 2500 BC must be challenged as well. It is based on recipe Ebers no. 468, which claims to have been created for the mother of king Teti (late twenty-third century BC), and on recipe group Ebers no. 856–877, which claims to have been found at the feet of a divine statue and to have originally been brought to king De(we)n, also known as Usaphais (ca. 2800 BC). But Papyrus Ebers is a compendium of several more or less independent recipe groups, so that such claims bear witness neither to sources of other recipe groups of this papyrus nor, of course, to sources of Papyrus Chester Beatty V with the treatment in question. In fact, they should not be taken literally even in their own context, because in ancient Egyptian culture, old age was regarded as an indication of higher authority, so that assigning an early date to texts with strong medical, magical, or religious effects or with judicial implications was an ancient Egyptian way of increasing their validity. As for recipe group Ebers no. 856–877, it is indeed older than Papyrus Ebers because a second version of this group can be found on the medical Papyrus Berlin P 3038; and since both parallels differ slightly, they must have been copied from a third, yet unknown version. Although this third version of course predates the Papyri Ebers and Berlin P 3038, it was most likely not as old as 2500 BC, but was composed many centuries later. This can be concluded from the king’s name, which was misspelled in the same way as in other sources from the New Kingdom onwards (i.e., starting from approximately 1539 BC). If the text were actually copied from a source from the Old Kingdom, one would expect a spelling that corresponds with the name form of this period. So the Egyptian scribe selected the name of a king from a time long ago in order to suggest an early date for the text, but, quite the contrary, the chosen orthography reveals that the text was much younger.
Figure 1. Modern interpretation of the spell of Papyrus Chester Beatty V. Source: https://commons.wikimedia.org/wiki/File:Papyrus_Migraine_Therapy.png.

Figure 2. Papyrus IFAO no. 37 = Papyrus Deir el-Medinah 45. © IFAO.

Figure 3. Clay crocodile as may have been used as magical requisite, Petrie Museum, UC7196. © Petrie Museum—UCL.
I would like to thank Professor Dr. Hans-W. Fischer-Elfert for discussing some topics with me, the reviewer of the *Bulletin of the History of Medicine* for valuable comments, and Dr. Peter Dils and Dr. Andrea Sinclair for improving my English. All remaining errors are those of the author.


2. For the preconditions under which both terms and the diseases determined by them can be paralleled, see Tanja Pommerening, “Von Impotenz und Migräne—eine kritische Auseinandersetzung mit Übersetzungen des Papyrus Ebers,” in *Writings of Early Scholars in the Ancient Near East, Egypt, and Greece: Translating Ancient Scientific Texts*, Beiträge zur Altertumskunde 286, ed. Annette Imhausen and Tanja Pommerening (Berlin: De Gruyter, 2010), 153–74, esp. 164–72.


6. E.g., Villalón et al., “Migraine” (n. 3), 72, figure 1, and see the literature cited in note 41.

7. The bags of ancient Egyptian physicians were of a simple rectangular shape with some compartments. See Georges Daressy, “Une trousse de médecin Copte,” Annales du Service des Antiquités de l’Égypte 10 (1910): 254–57 with plates 1 and 2 (a case from Roman Egypt, now in the Egyptian Museum Cairo, JdE 37617). A painting in the tomb of Ipuye (Theban Tomb no. 217, time of Ramses II) probably shows a physician with a combination of a case and a bag: Wolfhart Westendorf, Erwachen der Heilkunst. Die Medizin im Alten Ägypten (Zürich: Artemis & Winkler, 1992), figure 12, and for the context of this painting Norman de Garis Davies, Two Ramesside Tombs in Thebes (New York: Metropolitan Museum of Art, 1927), plate 37. Richard-Alain Jean, La chirurgie en Égypte ancienne. À propos des instruments médico-chirurgicaux métalliques égyptiens conservés au Musée du Louvre (Paris: Cybèle, 2012), 124, figure 310.a–c depicts three boxes with tools from the tomb of the “chief of physicians” Hesy-Re in Saqqara from the Old Kingdom (tomb no. S2405), alluding that they are physician bags (for their contexts, see James Edward Quibell,
Excavations at Saqqara, 1911–1912. Vol. 5, The Tomb of Hesy (Le Caire: Institut Français d’Archéologie Orientale, 1913), plate 16, no. 12, and plate 21, nos. 65 and 67). Yet pace Jean, this isn’t medical equipment: his figure 310a depicts razors in their sheaths and may be a box with barber’s equipment; and figure 310.c depicts a saw, an axe, chisels and other carpenter tools. Figure 310.b depicts tweezers and bodkins, but the identity of the instruments in the upper row is not clear: Quibbell, ibid., 34 suggests trowels or similar tools. One may at least state that all the boxes have a simple rectangular shape, and nothing suggests that a box with medical equipment would have looked differently in this time. In general, see also Kamal Sabri Kolta and Doris Schwarzmann-Schafhauser, “Medizinische Kästchen aus dem Land Ägypten,” J. Coptic Stud. 5 (2003): 107–14.

8. A detailed description of the circumstances of acquisition as well as other technical data and a running annotated translation by the author can be found at http://sae.saw-leipzig.de/detail/dokument/papyrus-ebers/. A photograph of the complete roll, digitally remounted, can be found at http://papyrusebers.de.

9. The Egyptian term k.t, “another,” is a typical introductory word of remedies of the same group of diseases in medical texts, even in cases where different diseases are treated. Therefore the use of “another” in Eb 250 does not imply that the preceding remedies also dealt with the “(pain in) half-of-the-head.” It only implies that Eb 250 is part of remedies against different kinds of headaches. NB: It is perhaps worth mentioning that the same recipe of Eb 250 should be used to remove a thorn in Eb 730.

10. Egyptian papyri are usually written with black ink. Passages that should be marked for some reason, such as the beginnings of chapters in literary texts, the beginnings of remedies in medical texts, and the quantities of drugs, are written with red ink. Those red passages are marked in the translations given here by small capitals. In the following quotes,
round brackets indicate modern additions to make something more comprehensible; square brackets indicate destructions and possible restorations; angle brackets indicate corrections of ancient scribal mistakes.


12. Egyptian gods are sometimes grouped in so-called enneads, groups of nine. The gods Atum, Shu, Tefnut, Geb, Nut, Osiris, Isis, Seth, and Nephthys formed the Heliopolitan ennead.

13. The Egyptian word for “faience” means literally “the radiant one,” and in this context it is certainly used as a metaphor for the radiance of the sun (thus the translation of Fischer-Elfert, Altägyptische Zaubersprüche [n. 11], 39), with which the “father” of the Ennead, the sun-god Re, is adorned.

14. The Egyptian term ṣb.w is etymologically related to the verb ṣb, “being pure,” and means literally “impurity” or the like. For different attempts to translate this noun, see Jürgen Osing, in Jürgen Osing and Gloria Rosati, Papiri geroglifici e ieratici da Tebtynis (Florence: Istituto Papirologico «G. Vitelli», 1998), 207–8, n. ai (with further literature).

15. Here the name of the individual patient is to be inserted by the magician.

16. Here the name of the patient’s mother is to be inserted.

17. Both Gardiner, Chester Beatty Gift (n. 11) and Fischer-Elfert, Altägyptische Zaubersprüche (n. 11) take the verb wḥ, “to place, to lay down,” as predicate of a clause “its eye(s) of faience are set [in] his head,” in which the pronoun “his” refers to the noun
“crocodile,” which is masculine in Egyptian. However, when the paragraph is translated as here proposed, the description of the crocodile contains a syntactical parallelism and a semantic chiasm (jw npr [. . .] m rʿf jw jr.tsf m ṭḥn.t). The Egyptian spell here translated as text 4 further supports the proposal to take the clause “placed [on] his head” as advice on how to use the crocodile.


Yvan Koenig (personal communication) suggested regarding the color red in Egyptian magic not as marker of “evil” things, but as additional device to bind these things. See already Georges Posener, “Les signes noirs dans les rubriques,” *J. Egyptian Archaeol.* 35 (1949): 77–81, 78.


who thinks that this is an amulet.


30. Stephen Quirke, “Figures of Clay: Toys or Ritual Objects?,” in *Lahun Studies*, ed. Stephen Quirke (Reigate: SIA Publications, 1998), 141–51 (the crocodile depicted here as figure 4 is listed there on 143); Waraksa, *Female Figurines from the Mut Precinct* (n. 28), 164–65.

31. Waraksa, *Female Figurines from the Mut Precinct* (n. 28), 102–13; see also 146–47 and 165.


33. The way of keeping the amulet in tubes is restricted to papyrus amulets, Dieleman, “Materiality” (n. 32), 12–14.


35. This is supported by the last sentence of the Chester Beatty spell discussed here: There a second strip of linen should be prepared, which would be useless, because a single bandage seems to be enough, once it is long enough.
36. Villalón et al., “Migraine” (n. 3), 71.

37. Peter Eschweiler, *Bildzauber im alten Ägypten. Die Verwendung von Bildern und Gegenständen in magischen Handlungen nach den Texten des Mittleren und Neuen Reiches*, Orbis Biblicus et Orientalis 137 (Freiburg: Universitätsverlag, 1994), 35, suggests that the linen should be attached to the head of the crocodile and not of the suffering patient. In this case, the final product would resemble Egyptian crocodile amulets with tied snouts, as they are mentioned by Angelika Lohwasser, “Die Macht des Krokodils,” in *Tierkulte im pharaonischen Ägypten und im Kulturvergleich*, Internet-Beiträge zur Ägyptologie und Sudanarchäologie 4, ed. Martin Fitzenreiter (London: Golden House Publications, 2005), 131–35; and Morenz, “Das Krokodil als göttliche Waffe” (n. 22), 72. Yet this interpretation of the spell should equally be excluded for the reason mentioned above.

38. The still extant classifiers at the end of the word are unusual for this verb. For the usual spellings of this verb, see the basic dictionary of the ancient Egyptian language: Adolf Erman and Hermann Grapow, *Wörterbuch der Aegyptischen Sprache*, vol. 5 (Berlin: Hinrichs, 1931), 396–97. Further spellings can be found in the slip archive of this dictionary, slip nos. DZA 31.286.180, DZA 31.286.190, 31.286.200, 31.286.210, 31.286.220, 31.286.230, 31.286.240, 31.286.240, to be consulted online at the Thesaurus Linguae Aegyptiae, http://aaew.bbaw.de/tla/index.html. In all texts and periods, only two other instances with this classifier can be found.


40. E.g., Frank Clifford Rose, “The History of Migraine from Mesopotamia to Medieval Times,” *Cephalalgia Supplement* 15 (1995): 1–3, 3, note 1. I thank Dr. Susanne Radestock for pointing out this article to me and the one from the previous footnote.
41. Villalón et al., “Migraine” (n. 3), 71–72 with figure 1, and Arulmani, “Calcitonin Gene-Related Peptide and Migraine” (n. 3), 8. Silberstein, “Historical Aspects of Headache” (n. 4), wrongly presents Papyrus Chester Beatty V as this old source on 13, and on 14, figure 1.3.


44. One may imagine a modern medical recipe that claims to be a direct copy from the time of the Frankish king Clovis, but writes the king’s name as “Louis” and not in its contemporaneous form “Chlodovechus.” For posthumous documents of king De(we)n/Usaphais, see Dietrich Wildung, Die Rolle ägyptischer Könige im Bewußtsein ihrer Nachwelt. Teil I, Posthume Quellen über die Könige der ersten vier Dynastien, Münchner Ägyptologische Studien 17 (Berlin: Bruno Hessling, 1969), 21–31. For the writing of his name in much later sources, see ibid., 239.