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## Some prevalent pathologies in ancient Egypt

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### Abstract

This paper deals with some of the most prevalent pathologies in ancient Egypt; which were those and how were those prevented. They were mainly caused by diet and hygiene care, or the lack of it, plagues and infestations, and how the ancient Egyptian peoples dealt with them.

These people, in their majority, practised what we call today the Mediterranean diet; based on garlic, olive oil, beer, whole bread, vegetables, fruits, fish and not so much meat. There were also some malevolent substances contributing to the ill-being of ancient Egyptians. The body gathered in itself *metu*, which can be interpreted as respiratory duct vehicles, tear, glandular or sperm channels, ligaments, and substances that flow in all of them, also blood (*senef*) and urine (*weseshet*). They are assimilated as representatives of the Nile's affluents and they converge to the anus. They were mainly 'channels' that provided the 'current' of substances in the human body.

The *nekbedu*, were the carriers of disease, transmitters of pain and pathology; they were originated by a type of putrid process taking place in the intestine and these substances circulated all over the body while people were resting. Their removal was vital, and therefore ancient Egyptians carried out daily purges in order to get their bodies pure and clean of disturbing substances and infections of all kind. Diseases could also be caused by external conditions, controlled by humans and depending on their common sense such as, eating too much, drinking too much, also airborne or insect caused diseases.

**Keywords:** health, pathologies, prescriptions, diseases, Egypt

## Resumo

Este artigo trata das patologias mais prevalentes no antigo Egípcio, quais seriam elas e como se preveniam. Estas eram maioritariamente causadas pelos hábitos de alimentação e cuidados de higiene, ou a falta dos mesmos, assim como pragas e infestações. Refere-se também o modo como os antigos Egípcios lidavam com estas patologias.

Estes povos, na sua maioria, praticavam o que hoje chamamos de dieta mediterrânica, baseada em alho, azeite, cerveja, pão de trigo integral, legumes, frutos, peixe e pouca carne. Existiam algumas substâncias consideradas malélicas que contribuíam para o mau estar dos antigos Egípcios. O corpo albergava o que eles chamavam de *metu*, que podem ser interpretados como canais respiratórios, canais lacrimais, glandulares ou de esperma, ligamentos, e substâncias que neles fluem, mas também o sangue (*senej*) e a urina (*weseshet*). Estes eram assimilados como representantes dos afluentes do rio Nilo, que convergiam para o ânus. Eram interpretados maioritariamente como ‘canais’ que providenciavam a ‘corrente’ de substâncias no corpo humano.

Os *nekbedu*, ou transportadores da doença, transmissores da dor e patologias, eram originados por um processo pútrido no intestino, e circulavam depois por todo o corpo enquanto a pessoa descansava. A sua remoção era portanto vital, e como tal os antigos Egípcios faziam purgas diárias para libertar o seu corpo e torna-lo puro e limpo, livre destas substâncias perturbadoras e infecções de todo o tipo. As doenças podiam também ser causadas por factores externos, passíveis de serem controlados pelos humanos e, dependendo do seu senso comum, tais como comer e beber demais mas também as doenças transmitidas pelo ar e causadas por insectos.

**Palavras-chave:** saúde, patologias, prescrições, doenças, Egípcio



## Introduction

From the analysis of human remains, found at excavation sites, in museum and private collections, and also from the texts which constitute the legacy of ancient Egypt, we can study their diseases. Magic and medicine walked hand in hand, so we might infer, from the studied texts and art depictions showing physical conditions, that the ancient Egyptians were reluctant in recording disease. In art, we can see dwarfs, blind people, people with osteological deformations, but these are scarce examples. And those people born with 'different' physical appearances, such as the cases mentioned above, were considered to have magical powers, and thus treated as special individuals, given positions in the king's court and other high official professions in the society. The most valuable and reliable material to study and reach conclusions about diseases in ancient Egypt are still the human remains themselves.

## Plagues, infestations, and animal attacks

Hygiene was very important, and the routine for cleanness a daily habit. However, washing was done in the same water used for cooking: Nile water, which was also the carrier of so many infectious diseases. Hair was generally cut short or completely shaved off to avoid lice infestations. Especially priests and the military, they submitted themselves to a total depilation procedure, as a sign of upper status. For body depilation they used a mix of crushed bird bones, olive oil, sycomores' juice and gum, heated and then applied onto skin. After it cooled off, this hard crust was removed, and all hair came off with it.

Many insects tormented ancient Egyptians: flies, mosquitoes and grasshoppers. They disturbed first, at last they could cause severe famines, even though ancient Egyptians prayed intensively to their gods, a plague could not be stopped. Cattle were also under threat and harvests were invaded by the destroying scarab. Mosquitoes and other parasites were devastating for

populations, lodged in still waters from Nile channels and lagoons. Fresh *ben* oil or a net were considered efficient as insect repellents, as sleep was really disturbed by mosquitoes.

To fumigate the house with incense and myrrh was recommended, but not accessible to all, and for that *kyphi*<sup>1</sup> was manufactured; a compound of incense used for religious and medical purposes. The word is Greek; *kyphi* is the transcription of the ancient Egyptian *kepet*.<sup>2</sup> The instructions for *kyphi* preparation and its' ingredients lists are found in wall inscriptions at the temples of Edfu and Dendera.

Even so, in the Egyptian prescriptions, there were ingredients that are still unknown today. The result of this mix was placed as burning balls in order that its perfume would exhale.<sup>3</sup>

Talking about insects, besides plagues, they also stung. The first record of a human death related to a wasp sting was king Menés or Narmer, who unified Upper and Lower Egypt.<sup>4</sup>

It could have been a fig-wasp (*Blastophagus psenes*). This species is an auxiliary to polinization of figs, and it appears in the majority of areas cultivating fig trees (*Ficus carica*).<sup>5</sup>

Stings and bites from other animals were also frequent such as serpents, scorpions. To treat those we have medical-magical prescriptions such as the ones found in the *Brooklyn Papyri*; BM 9997, BM 10309, BM 10085, and BM 10105.<sup>6</sup>

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<sup>1</sup> Cf. Manniche, L., *An Ancient Egyptian Herbal*, 57-58; Loret, V., *La Flore Pharaonique d'après les documents hiéroglyphiques et les spécimens découverts dans les Tombes*.

<sup>2</sup> Cf. Pujol, R., 2004 <http://www.egiptologia.com/content/view/513/45/1/2/>

<sup>3</sup> Cf. Manniche, L., *Op. Cit.*; Plutarch, *Isis e Osiris*.

<sup>4</sup> Cf. Krombach, J., Kampe, S., Keller, C. A., Wright, P. M., «Pharaoh Menes death after an anaphylactic reaction - the end of a myth» *Allergy*, 59 (2004): 1234-1235.

<sup>5</sup> Cf. Ramirez, W., «Host Specificity of fig wasps», *Evolution* 24 (1970): 680-691.

<sup>6</sup> Cf. Leitz, Ch., *Magical and Medical Papyri of the New Kingdom*, 3-30, 85-92.

The best way to keep a house clean of rodents was constant cleaning, and a cat. In some houses the walls show the attempt of the inhabitants to fill up holes with rocks, so that rats could not come inside. The *Ebers Papyrus* mentions some methods for the prevention of rodent plagues. Cat's grease was also a rat repellent<sup>7</sup> and, to protect barn crops, burnt excrement of deer was also used.

Home insects could be killed by washing the house walls with natron (salt) or crushed coal.<sup>8</sup> As insects are less active in lower temperatures, barns were frequently found underground.

Natron, an onion bulb or a *Tilapia nilotica* dried fish were also used to cover holes stopping serpents from invading the houses.<sup>9</sup>

Geese grease was also efficient against flies, and fish eggs drew away fleas. And these should be abundant, as the *Ebers Papyrus* has two prescriptions against those.<sup>10</sup>

Incense ashes scattered around cereals at the mill killed scarabs.

Protection against feline beasts was done planting an acacia near the house. And of course, using the right enchantment you could also enhance the protection even more.

### Infectious, parasitic, and viral

The *metu* or different 'channels' of the body, as they were understood by ancient Egyptians, are not solid cords, they make the current flow of

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<sup>7</sup> Bardinet, T., *Les papyrus médicaux de l'Égypte pharaonique, traduction intégrale et commentaire*, 362 (Ebers, 847); Lisboa, J. V., «A Medicina do Egipto Antigo», *Boletim Clínico dos Hospitais Civis de Lisboa* 38 (1978): 284; Ebeid, N. I., *Egyptian medicine in the days of the pharaohs*, 353.

<sup>8</sup> Ebeid, N. I., *Op. Cit.*, 351 (Ebers, 840).

<sup>9</sup> Bardinet, T., *Op. Cit.*, 361 (Ebers, 842); Ebeid, N. I., *Op. Cit.*, 356; Koenig, Y., «Un revenant inconvenant? (Papyrus Deir el-Medineh 37)», *BIFAO* 79 (1979): 108.

<sup>10</sup> Lisboa, J. V., *Op. Cit.*, 284.

substances (the movement, as in a machine). Through them all nutritive elements move through different fluids, and the breath of life.

There were also malevolent substances, the *uekbedu*, the transmitting agents of pain and pathology. Therefore, ancient Egyptians thought that the anus was the centre in the majority of treatments. Cure of all pathologies lied in rest, appropriate diet and the administration of the right medicine accompanied by frequent purges. Egyptians thought that all man was born healthy and that every pathology has its causes; visible or hidden; internal (the *uekbedu* were originating in a putrid process in the intestines, which circulates when the body rests), or external (eating, drinking too much, airborne or insects caused).

Another expression used as pathology was *aaa*, an infectious pathology circulating in the body with big possibilities of it being of cancerigenous nature.

Some translations of the *Ebers Papyrus* reference repeatedly the difficulty of diagnosis of pathologies with the *aaa* name. The attempts made for its interpretation were inconclusive so far. Number 62 of *Ebers Papyrus* associates *aaa* to a specific parasite and this led some scholars to identify it as hematuria.<sup>11</sup> Other medical Papyri refer it as a supernatural entity, a type of punishment from the gods that enters the body and circulates, causing illness. It is mentioned fifty times, in four Papyri; (28 in *Ebers Papyrus*, twelve in the *Berlin Papyrus*, nine in the *Hearst Papyrus*, and once in the *London Papyrus*).<sup>12</sup>

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<sup>11</sup> An abnormal presence of blood in urine.

<sup>12</sup> Cf. David, A. R., *5000 Years of Schistosomiasis in Egypt*, 133-135.

According to ancient Egyptians, ‘*les agents provocateurs*’ or pathogenic factors, could be the *aaa*, the *uekbedu*  and other Set creations, since he was the personification of evil and disorder.

Both in the *Ebers Papyrus*, the *Hearst Papyrus* and the *Berlin Papyrus* 3038, the *uekbedu* consecrate two principles; one non-medical (the demonic entity that enters the body, and another, from faecal material, that enters the blood and infects it).<sup>14</sup> There is also the *ubau*, secretions or pus caused by the *uekbedu*.

### Urinary diseases

The kidneys were left in the mummified bodies as they were hidden in the back peritoneal cavity, therefore not easily detected by the embalmer’s arm. The same happened to the female reproductive organs.<sup>15</sup> An example of prophylactic protection against urinary diseases might have been the bag used to protect the penis from the infections caught in Nile still waters.<sup>16</sup>

Ruffer was the first to analyse urinary calculi in 1908, but he did not find any pathologies or parasitic eggs. But in the kidneys he examined (from six mummies), showed *Bilharzia haematobia* eggs.<sup>17</sup>

### Poliomyelitis

<sup>13</sup> Cf. Steuer, R., Steuer, Robert O., “Aetiological Principle of Pyaemia in ancient Egyptian medicine” in *Supplements to the Bulletin of the History of Medicine*. Gardiner interprets Aa2 , as pustule or gland in his *Egyptian Grammar; Being an Introduction to the Study of Hieroglyph*, which suggests a cyst or tumor. According to Steuer, ancient Egyptians wrongly confused pus from a wound or a pathology from decomposing tissue at the moment of embalming. Maybe this determinative confirms this attestation as it appears both in medical papyri and mummification records. Sign Aa3 from Gardiner,  seems to be the evolution of the first, when a secretion is verified coming out to the exterior of tissue, as in the case of fluids flowing from inflammations, infections and other trauma.

<sup>14</sup> Cf. Steuer, R., *Op. Cit.*, 14.

<sup>15</sup> Cf. Bitschaj, J., Brodny, M., *A History of Urology in Egypt*, 3-4.

<sup>16</sup> Cf. *Ibidem*, 5-6.

<sup>17</sup> Cf. Ruffer, M. A., Ruffer, M. A., “Note on the presence of *Bilharzia haematobia* in Egyptians mummies of the twentieth dynasty (1250 - 1000 BC)” in *British Medical Journal*, 2 (1910): 16.

The equine foot is documented for the first time in ancient Egypt.<sup>18</sup> It is a viral infection of the spinal cord cells<sup>19</sup> only identifiable in those who survive the disease.

Examples from ancient Egypt: a shortening of the left leg in a mummy found at Deshasha<sup>20</sup> was interpreted as being polio. The twisted Siptah foot<sup>21</sup>, as well as the deformities in the mummy of Khnumnakht from the 12th dynasty are probably also cases of polio.<sup>22</sup>

A funerary stela dated from the 18th or 19th dynasty in Copenhagen shows doorman Roma with a shorter leg, accompanied by an equine foot (*talipes equinovarus*), *deneb*<sup>23</sup> in ancient Egyptian.<sup>24</sup>

### Tuberculosis

Studies show that man would have contracted the pathology from bovine cattle, and it changed in humans; as there are no examples from the Pre-Dynastic era, when bovines were not yet domesticated. Andreas G. Nerlich<sup>25</sup> analysed DNA from 26 mummies from Thebes, from the New Kingdom and the Greco-Roman Period, six of those infected with human type tuberculosis. He thinks that, about 50% of Egyptian population could have been infected by tuberculosis, a viral infection in the intestines that might attack bone marrow and provoke irreversible paralysis, usually shown in legs.

<sup>18</sup> Cf. Newsom, S. W. B., "The history of infection control: Poliomyelitis part 1: Ancient Egypt to 1950 – a disease uncontrolled", *British Journal of Infection Control*, 6, 3 (2005), 14.

<sup>19</sup> Cf. Ebeid, N. I., *Op. Cit.*, 401.

<sup>20</sup> Or Dishasha, from the Old Kingdom, a cemetery c.130 km south of Cairo, where Flinders Petrie excavated some tombs in 1898: University College of London: <http://www.digitalegypt.ucl.ac.uk/deshasheh/index.html>.

<sup>21</sup> Cf. Ebeid, N. I., *Op. Cit.*, 403; Fleming, S., Fishman, B., O'Connor, D., Silverman, D., *The Egyptian Mummy: Secrets and Science*, 85.

<sup>22</sup> Sandison, A. T., Tapp, E., "Disease in ancient Egypt" in Cockburn, A. (Ed.) *Mummies, Disease and Ancient Cultures*, 43.

<sup>23</sup> Cf. Ebeid, N. I., *Op. Cit.*, 399.

<sup>24</sup> Cf. Nunn, J. F., *Op. Cit.*, 77.

<sup>25</sup> Cf. Zink, A., Haas, C., Reischl, V. D. O., Szeimies, U., Nerlich, A. G., "Molecular analysis of skeletal tuberculosis in an ancient Egyptian population", *Journal Medical Microbiology* 50 (2001): 355-366.

There is a case of an Egyptian child mummy with tuberculosis, found in the tomb of Nebuenenef (TT 157) showing this pathology has no age rank.<sup>26</sup> Tuberculosis is a chronic infectious disease, caused by *Mycobacterium tuberculosis*, described by Robert Koch in 1882. Other forms: *Mycobacterium bovis*, *M. kansasii*, *M. fortuitum*, *M. marinum*, *M. intracellulare*.<sup>27</sup>

### Leper (*Mycobacterium lepre*)

Leper cases in ancient Egypt cannot be confirmed before the Greco-Roman Period, as shown by the mummy of Irtisenu<sup>28</sup>; the *Ebers Papyrus* mentions it in prescriptions 874 and 877<sup>29</sup>. In 1980 it was recognized in four skeletons from the Ptolemaic Period. Maybe it reached Egypt only with the armies of Alexander.<sup>30</sup>

### Dermatological diseases

Ancient Egyptians were very concerned about their beauty and youth so they had all types of cosmetic care you can imagine, some of those carrying medicinal properties too. Hair dyes, unguents, perfumes running down the head, eliminating parasites and odd scents, with anti-septic properties, all to prevent aging. There are, at least, three sources describing these concerns the *Ebers Papyrus*, *Edwin Smith Papyrus*, and the *Hearst Papyrus*. On how to remove grey hair: *Papyrus Ebers* 451, 452, 459 to 461.

On how to prevent the loss of pigment in the hair: *Ebers* 453 to 458, 462, 463; *Hearst* 147 to 149; on how to grow more hair (baldness was a great concern<sup>31</sup>, one thing was to remove air, another to loose it..., as, for an Egyptian, it meant the loss of vitality) *Ebers* 464 to 467, 468 for women, 469 to 473; *Hearst* 144 to 146, removal of hair to enhance body beauty: *Ebers* 476, 774; *Hearst* 155, 156. To rejuvenate the face: *Ebers* 716 to 721,

<sup>26</sup> Zimmerman, M. R., "Pulmonary and Osseous Tuberculosis in an Egyptian Mummy", *Bulletin of the New York Academy of Medicine*, New York, 55 (1979): 604-608.

<sup>27</sup> <http://www.rbo.org.br/materia.asp?mt=1320&cidIdioma=1>

<sup>28</sup> Ebeid, N. I., *Op. Cit.*, 56

<sup>29</sup> Bardinet, T., *Op. Cit.*, 371-373.

<sup>30</sup> Ebeid, N. I., *Op. Cit.*, 214-215.

<sup>31</sup> *Ibidem*, 289.

for the skin in general: *Ebers* 714 and *Hearst* 153 and *Smith* column 21, lines 3-6; *Ebers* 715 and *Hearst* 154 and *Smith* column 21, lines 6-8; *Smith* column 21, line 9 to column 22, line 10.

Odd scents had their own prescription: *Ebers* 708 to 711; *Hearst* 31, 32 and 150, 151.

### Traumas

The *Edwin Smith Papyrus* mentions 48 cases, from battle wounds, violent arguments, or the handling of heavy instruments. The osteo-articular deformities resulting from heavy load carrying and localized mechanical efforts, are shown in iconography, as in the example seen at the tomb of Ipuï at Deir el-Medina showing a dislocated shoulder<sup>32</sup>; the hunchback girl at the Liverpool Museum; the Sheppard with the deformed knee at the mastaba of Ptahotep at Saqqara, V dynasty; and others such as umbilical hernia, genital hypertrophy shown at the fishermen and clay worker from the tomb of Mehu at Saqqara dated from the 6th dynasty.<sup>33</sup>

Skeletons found at Tell Tabilla in 2003 have cervical degenerations and abnormal development of the arm muscle, which suggests carrying heavy loads.<sup>34</sup>

From analysed cases we can conclude that, regarding trauma, whoever got to be an elderly person (life expectancy was around 36 years of age<sup>35</sup>; would probably develop arthritis, arteriosclerosis and dementia.<sup>36</sup>

### Ophtalmic Pathologies

In ancient Egypt some eye diseases were frequent: cataract, conjunctivitis and trachoma. To reduce the aggressive sunlight on the eyesight they

<sup>32</sup> Ebeid, N. I., *Op. Cit.*, 140; Nunn, J. F., *Op. Cit.*, 179; Filer, J., *Disease*, 33.

<sup>33</sup> Cf. Reeves, C., *Egyptian Medicine* 34-35.

<sup>34</sup> Tell Tebilla Project <http://www.deltasinai.com/delta-11.htm>

<sup>35</sup> Lisboa, J. V., *Op. Cit.*, 285; Cf. Fleming, S., Fishman, B., O'Connor, D., Silverman, D., *Op. Cit.*, 74; Nunn, J. F., *Op. Cit.*, 22.

<sup>36</sup> According to Zahi Hawass royal elite could reach 50-60 years of age.

painted the eye around with malachite, a green copper mineral, extracted from the Sinai and the mines in the oriental desert; they also used *mesdemet* or galena, a cosmetic powder protecting from sand, wind and insects.

Night blindness was cured with a cooked and crushed ox liver<sup>37</sup>, which we know to be rich in vitamin A. The cataracts, plaques provoking the loss of transparency in the eye lenses, the retina, have a Latin name, as an image of a fluid running from the brain to the eye... Egyptians called it «water rise»<sup>38</sup>. Treatment was done mixing turtle brains and honey. First recorded surgery was done at Alexandria in the Ptolemaic Period (323 BCE to 30 BCE.).

In Coffin Texts 157 there is a reference to the first ophthalmic exam, associating pig with reduced eyesight<sup>39</sup>. Is this the reason why pork is not eaten in Egypt? We don't know for sure.

The *Ebers Papyrus* has a whole section on eye diseases; more treatments than clinical descriptions.

At Deir el-Medina the workers suffered badly with stone dust. In an emotional ostrakon from the 19th dynasty, a father writes to his son asking for treatment for his eyes, as he is a designer himself.<sup>40</sup>

Honey and cadmia<sup>41</sup> were used on eyes. Copper too, used to treat white spots and drying out wounds. Mixed with milk cures eye ulcers; Egyptians manufactured a balm for the eyes grinding it down with stones.<sup>42</sup>

## Dental pathologies

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<sup>37</sup> Nunn, J. F., *Op. Cit.*, 200; Ebeid, N. I., *Op. Cit.*, 155.

<sup>38</sup> Ebeid, N. I., *Op. Cit.*, 155.

<sup>39</sup> Rítner, R., *Op. cit.*, 30.

<sup>40</sup> [http://www.mc.maricopa.edu/dept/d10/asb/anthro2003/legacy/ancient\\_lives/ostraca.html](http://www.mc.maricopa.edu/dept/d10/asb/anthro2003/legacy/ancient_lives/ostraca.html) Mesa Community College University, Arizona, USA.

<sup>41</sup> From the Latin *cadmia*, from the Greek *kadméia*, zinc carbonate extracted near the Greek city of Cadmo (Thebes); Zinc carbonate – ZnCO<sub>3</sub>

<sup>42</sup> Pliny, the Elder, *Natural History: a selection*, chapter 23.

Teeth had different names, according to their shape, *ibeh* , and *nehedjet*  <sup>43</sup> this latter ones being the molars, according to Lefèbvre<sup>44</sup>. The determinative hieroglyphic used for tooth is an elephant's tusk; probably characteristic of ancient Egyptians to represent organs and body parts as animal ones.

Most common dental problems, as shown on mummies, were caries and abrasion (worn out teeth).<sup>45</sup>

There is a case of abridged teeth, three substitute teeth, held by a thin gold string, not yet proven to have been worn in life or either put in the deceased for the afterlife<sup>46</sup>. Ancient Egyptians' diet, cereal based foods which were grinded on open air, with stones, would have been the main cause for teeth abrasion.<sup>47</sup>

There was a cyst found in a mummy, Djedmaetinesankh, musician of the temple of Amun-Ra at Thebes, from the Greco-Roman Period, at the Royal Ontario Museum, Canada<sup>48</sup>. A huge wound, resulting from an abscess caused by a cyst and thirteen smaller abscesses were analysed.

Melcher says<sup>49</sup>, maybe ancient Egyptians learned from their Assyrian neighbours how to use cloves as treatment for teeth pain.

### Respiratory diseases

Respiratory infections could appear as a result of lack of hygienic conditions, due to the agglomeration of people at workmen's villages, touching

<sup>43</sup> Nunn, J. F., *Op. Cit.*, 50.

<sup>44</sup> Lefebvre, G., *Essai sur la médecine Égyptienne de l'Époque Pharaonique*, 60.

<sup>45</sup> Schwarz, J.-C., «La médecine dentaire dans l'Égypte Pharaonique» in *Bulletin de la Société d'Égyptologie*, Genève, 2 (1979): 37.

<sup>46</sup> Not final the specialists' conclusion over a pre or post-mortem addiction.

<sup>47</sup> Cf. Fleming, S., Fishman, B., O'Connor, D., Silverman, D., *Op. Cit.*, 74.

<sup>48</sup> Jack, L. A., *The Faces of Djed: A CT-scan of a ROM Mummy Illuminates a Life from Ancient Egypt*, 1.

<sup>49</sup> *Ibidem*, 5.

infected waters, desert sands, dead or alive infected animals, toxic plants and even insects<sup>50</sup>. Work in mines and quarries exposing workmen to these conditions and, consequently their families, military campaigns, wounds deriving from personal contact, all in need of a treatment. Ruffer analysed several lung tissue samples from mummies and canopic vases with what he thought might have been traces of pneumonia (*bacillus*).

One of the pathologies found was also anthracosis, shown by the presence of charcoal particles in the walls of pulmonary alveoli. In ancient Egypt this disease was also caused probably by lamp fumes and cooking fires, sealed inside a house.<sup>51</sup>

### Gynecological

The *Berlin Papyrus* 3038 shows the famous birth prognosis using barley and wheat to determine if the foetus will turn out to be male or female.

The connotation of barley with male and wheat with female characteristics might be explained by phonetics; *'it*, barley, was identical to *it*, father; and *mut*, mother, sounded many times as *mtut*, cereal. This association is given to us by the Demotic in Erichsen.<sup>52</sup>

There was great danger involved in the pregnancy, childbirth and early childhood years, so the ancient Egyptians had gods, medical prescriptions, many amulets and special furniture to deal with these periods of a woman and a child's life. This represents a big chapter in ancient Egyptian medicine so it will not be developed here.

### Vascular diseases

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<sup>50</sup> Ebeid, N. I., *Op. Cit.*, 351.

<sup>51</sup> Cf. Fleming, S., Fishman, B., O'Connor, D., Silverman, D., *Op. Cit.*, 90.

<sup>52</sup> Erichsen, W., *Fragments memphitischer Theologie in demotischer Schrift, Papyrus demotische Berlin 13603*, 332, 363 and 382.

When working outdoors, they were exposed to other dangerous conditions such as sand dust brought by winds, insect and reptiles' attacks and also wild beasts. Eating was another temptation, meat was reserved to high officials and their families, as they were given the animal leftovers from temple' sacrifices. This meat was usually beef. Human mummies analyzed from people in these social ranks have showed high levels of cholesterol in calcified arteries (atherosclerosis).

They also suffered from constipation, probably caused by these food excesses, and we have some examples shown in iconography and texts, obese people amongst those who practiced sedentary positions, such as musicians, scribes or doormen/guards.

In the lower classes constipation could result from the hot climate complications, making a difficult digestion, and also because food was prepared on open air spaces, causing desert sand to be involved in the process, insects, fungi, and other infestations, such as the presence of rats in barns which left their faeces contaminate food, causing its' deterioration.

Aorta calcification was found in two mummies in 1852, and there are descriptions of calculi in temporal arteries in the mummy of Ramesses II, and extreme calcareous degeneration with hard plaques in the aorta of Merenptah. Ruffer, in his article, comments the extense mutilation done during the embalming process, leaving, most of the times only arms and legs' arteries to be analysed, once everything else is ripped by hand.<sup>53</sup>

An example of atherosclerosis is reported by Moodie in a mummy from the Predynastic<sup>54</sup>. This pathology, most prevalent in ancient Egypt<sup>55</sup>, is also found in the 6th dynasty, c. 2345-2333 BCE, carved at Teti's tomb at Saqqara.<sup>56</sup>

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<sup>53</sup> Ruffer, M. A., *Studies in the palaeopathology of Egypt*, fig.24.

<sup>54</sup> Moodie, R. L., "Roentgenologic studies of Egyptian and Peruvian mummies, Field Museum of Natural History" in *Anthropology Memoirs*, Vol. 3, Chicago, 1931, 20, 22.

<sup>55</sup> Moodie, R. L., *Ibidem*, 26.

<sup>56</sup> Britto, J. E., Herrera, J. A. C., "Atherosclerosis" in *Revista Cubana de Investigaciones Biomédicas*, 24 (2005): 3.

In an adult male mummy (40-60 y.o.), found in tomb 93.11 at Dra Abu el-Naga<sup>57</sup> coronary arteriosclerosis and miocardic fibrosis was found. Ruffer analysed several arteries, aortas, braquial, carotid and iliac, showing calcifications, and he ‘decalcified’ them using a solution of alcohol 98% and nitric acid 2%.<sup>58</sup>

### Oncological cases found in ancient Egypt

All diagnoses up to this day are controversial, but carcinomas of the nasopharynx and uterus are the most commonly found in mummies.

Strouhal claims that, although some authors state that malignant tumours are rare to find in ancient Egypt, literature favours the occurrence of these neoplasias, especially the Ebers Papyrus that describes 21 cases.<sup>59</sup>

### Gastroenterological, and hepatic diseases

Obesity leads to constipation. That is a fact. Some examples of people with obese constitution are:

Mentuhotep, the scribe, at the Louvre, discrete obesity, and three fat layers under hypertrophic mama;

Sebekemsaf, wearing a large tunic under his mama, n° 5801, Kunsthistorischen Museum, Wien;

Musicians playing at the tomb of Nebamon (TT 65) copied by Denon, showing mama;

Khufu’s relative, Hemiunu, architect of the great Giza pyramid, Hildesheim Museum.

Textual records attest that during pyramid construction the workers were given large amounts of radish (*Raphanus sativus*), garlic (*Allium sativa*),

<sup>57</sup> Nerlich, A., Wiest, I., Tubel, J., “Coronary Arteriosclerosis in a male mummy from ancient Egypt” in *Journal of Paleopathology*, 9, 2 (1997): 83, [http://www.dainst.org/index\\_55\\_en.html](http://www.dainst.org/index_55_en.html)

<sup>58</sup> Ruffer, M. A., *Op. Cit.*, 13.

<sup>59</sup> More references and extended work on this subject was done in my published work: Veiga, P., *Oncology and infectious diseases in ancient Egypt: the Ebers Papyrus’ Treatise on Tumors 857-877* (2009), VDM Publishing House Ltd., 100 pages.

and onion (*Allium cepa*), probably as prevention for inflammatory diseases, once they were working in closed environments, onions were also diuretic. Herodotus mentions this in his second book.

Biliary calculi were found in an intact gall bladder from a priestess c. 1500 BCE, autopsied at the *Royal College of Surgeons* in London, but destroyed in a WWII bombing.<sup>60</sup>

### Genetic

Akhenaton is mentioned as an example for this discussion, as he is an example himself of consanguineous marriages that still exist on the African/Arab world today.<sup>61</sup>

We still have no scientific evidence that the human remains found at KV55 are from Akhenaton. His body show pronounced hips, a prominent belly, an elongated skull and maxilla<sup>62</sup>. His pelvis' shape, thin bones facial and cranial structures suggest a diagnosis of hipogonadism and pituitary cranial dysplasia.<sup>63</sup>

In 1993 a publication in the *Journal for the Society for the Study of Egyptian Antiquities* has a new theory: Akhenaten would have suffered from Marfan syndrome. This theory was explored later, in 1996, and was also presented at the ARCE meeting of 2004. Once we have no soft tissue to analyse it is difficult to prove the theory.

### Conclusions

To be healthy was to be prosperous, to have good looks, and be able to work. Ancient Egyptians were very concerned about their looks but they

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<sup>60</sup> Gordon-Taylor, G., "On gallstones and their sufferers" in *British Journal of Surgery*, 25, 98 (2005): 241-251.

<sup>61</sup> Al-Gazali, L., Hamamy, H., Al-Arriyad, S., "Genetic disorders in the Arab world" in *British Medical Journal*, 333 (2006): 831-834.

<sup>62</sup> Dawson, W. R., *Magician and Leech*, 107-110.

<sup>63</sup> Aldred, C., Sandison, A. T., "The Pharaoh Akhenaten: A Problem in Egyptology and Pathology" in *Bulletin of the History of Medicine* 36 (1962): 293-316.

were also cautious with their food ingestion and condemned abuses, either food or alcohol, and, once religion and magic were side-by-side in health-care, we may think that, a good Egyptian was also a healthy Egyptian. All nature products served the common good; mineral, vegetal, animal, and human substances were used in magical and medical prescriptions. There were gods to be appraised and amulets to be worn; chants to be sung and special words to be recited upon a patient's bedside. Nothing was discarded. Calendars with lucky and unlucky days were issued in order to inform the priests when to do the things they did. There was no distinction between many religious procedures that involved magic and medicinal properties. All worked for the same purpose: to heal. To be healed is to be whole, in life or in the afterlife, a human body, an Egyptian, had to be complete.

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