

# How are Dementia and the Relevant to Dementia Diseases Recorded in Texts Dating Back to 1555 B.C. and up until the 7th century A.D.: The Case of Galen and of Paul of Aegina

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## Abstract

*Our article investigates the ways in which the term “dementia”, as well as dementia as a disease, appears and is described in ancient texts. In other words, we record the context ascribed to dementia and to the relevant to dementia diseases in various texts. Firstly, we locate the relevant citations in two Egyptian papyrus scrolls and then we look into the context ascribed to the term “dementia” in the texts of Greek writers up until the 7<sup>th</sup> century A.D.*

*Namely: 1. In Ebers’ papyrus scroll we encounter a general description of the dementia disease, that resembles the description of the disease we use today, without, however, the actual use of the term “dementia”. 2. In Edwin’s papyrus scroll there is a citation of a disease that resembles that of aphasia. 3. The term dementia as a state of thoughtlessness, carelessness and foolishness, can be found in the texts of many writers/poets, .4. Hippocrates was the first that used psychiatric terms. 5. Galen, the second most important doctor of Greco-Roman times, after Hippocrates, was the first to name dementia as a disease and the first to describe it. Apart from dementia, he, also, names and describes around thirty more “diseases of the mind”. 6. Paul of Aegina, five centuries later, he lived in the 7<sup>th</sup> century A.D., recognizes the importance of Hippocrates’ and Galen’s work.*

**Keywords:** ancient medicine, dementia, Galen, mental diseases

## Introduction

Our article is divided in two sections. In the first section we describe the context ascribed to dementia and to the relevant to dementia diseases in various texts, starting from two Egyptian papyrus scrolls and subsequently, we look into the ascribed context of dementia in the texts of Greek writers. Our research had the following findings:

A) Ebers’ Egyptian papyrus scroll (which is estimated to have been written around 1555 B.C.) is, according to our research, the most ancient text to include the largest number of citations of diseases relevant to dementia. For example, amongst other things, there is a mention of the fact that “at an old age, there is a deterioration of the mind and our ability to remember things”. In this papyrus scroll there is no actual mention of the term “dementia” but we do find a general description of the disease of dementia, which matches our understanding of dementia today.

B) Edwin’s papyrus scroll was written in 1700 B.C. but is based on a text that dates back approximately to 3000 B.C. Here, we have a mention of a disease that is very similar to aphasia (Edwin’s papyrus scroll, Case 22).

C) The term dementia as a state of thoughtlessness, carelessness and foolishness, can be found in the texts of many writers/poets, such as: Homer, Anaxagoras, Democritus, Plato, Aristotle, Aretaeus of Cappadocia et al., while Hippocrates used many other psychiatric terms of other scientific fields, such as Mania, Melancholy, Phrenitis, Insanity and Paranoia, that we are presently, also, using.

Subsequently, in the second section, our research focuses on Galen’s body of work (129 A.D. – 199 A.D.), the second most important doctor of ancient times, after Hippocrates, and the last distinguished doctor of Greco-Roman times. It is in Galen’s body of work that we first come across dementia to be characterized as a disease. Therefore, the aim of our research is to locate dementia and the relevant to dementia diseases within his body of work. Galen, apart from dementia, also described another twenty

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five “diseases of the mind”, such as: ecstasy, amnesia, skotomatikon (vertigo), phrenitis... We have categorized those in alphabetical order. We have mainly looked for treatment methods of the above mentioned diseases in Galen’s and Paul’s of Aegina texts. Given that there is an interval of approximately five centuries between the works produced by these two writers, we compare their suggested treatment methods in order to determine how similar they are. Through our research we have, also, found that: **1.** a recorded description of mental illnesses relating to dementia can be found back in the 17<sup>th</sup> century B.C. **2.** In a text written in the Greek language by Hippocrates one can find psychiatric terms relevant to dementia, while dementia as a disease is first encountered in Galen’s body of work. **3.** In Galen’s body of work, apart from dementia, we, also, find several similar mental illnesses. **4.** The treatment methods suggested by Paul of Aegina remain the same after five centuries and match those proposed by Galen and Alexander of Tralles. According to Paul of Aegina, there are doctors that worked in the past and those that are more recent. The last from those that worked in the past is Galen, who he considers to be a milestone in medicine. We offer a translation of Paul’s of Aegina preface in his seven-volume book<sup>1</sup>: “This body of work (Medical epitomes in seven volumes) was written by me not because something that the doctors that came before me wrote in their works or practiced (in their medical profession) is considered to be outdated. This is more of a synoptic manual, because while those doctors worked with great diligence, correctly and extensively, for their profession (medicine), more recent doctors, without even feeling the need to read this body of work, have the audacity to accuse them of verbosity”. He considers Hippocrates’ and Galen’s body of work to be correct<sup>2</sup>. Of the more recent doctors (that came after Galen), he mentions Oribasius (he lived in the 4<sup>th</sup> century A.D.). He, as Paul of Aegina mentions, did produce a notable body of work, but the epitome of the work he produced, which he dedicated to his son, Eustathius, had many shortcomings<sup>3</sup> .....”and that is why I have prepared this epitome of the body of work of the ancients. I had refrained from including my own views, apart from a few on matters that I have noted and have tested in practice”.

Krug argues that Galen constitutes both a peak and a borderline for medicine of ancient times, meaning that Galen had pushed the medical science to reach the limits of its potential. The vast body of work that he has produced created the impression that it is

impossible for someone to add something more to it, let alone surpass it (Krug, 2008 p. 210). Both Alexander of Tralles and Paul of Aegina, for example, not only offer the same definition of lethargy but they, also, use very similar wording.

## FIRST SECTION

The various types of dementia<sup>4</sup> constitute an important field of neurodegenerative diseases connected, mainly, with old age. It is estimated that in the year 2025, approximately 1.2 billion people above the age of 60 will suffer from some type of dementia. It is of great interest, therefore, to see what people knew about dementia and what type of treatments they proposed through time. In this context, we have found that it was Galen that first studied dementia. However, by studying Galen’s views on dementia<sup>5</sup> - given that he had lived in the 2<sup>nd</sup> century A.D.- we do not wish to go back in time, but rather **to move forward, using Galen’s views**. The anticipated rise in Alzheimer type of dementia cases in Greece in the coming years constitutes a major problem that has to be dealt with. It is a significantly aggravating disease that requires a coordinated effort from the part of society, science and the state in order for support and help to be provided to the patients and their families.

Through our research we have, also, found that the oldest text that contains references to the symptoms of dementia is Ebers’ papyrus scroll, which was written at around 1555 B.C. (Finger, 1994, 2000). This papyrus scroll contains the description of approximately 900 medical prescriptions for the treatment of specific disorders. Amongst other things, we have, also, found that it was observed that in some of the patients: **1.** there was “perishing of the mind and forgetfulness”<sup>6</sup>. **2.** That “(the patient’s) mind is drowned; this means that his/her mind is forgetful like one who is thinking of something else.”<sup>7</sup> **3.** It was, also, observed in a patient: “the mind’s kneeling: this means that his/her mind is constricted”<sup>8</sup>. “The mind kneels through purulency: this means that his/her mind is small in the interior of his/her belly”<sup>9</sup>. **4.** As far as the “drying up of the mind” is concerned: “it is (due to the fact) that the blood coagulates in the heart”<sup>10</sup>. **5.** In another patient, however, “his/her mind is contracted, there being darkness in his/her, interior”<sup>11</sup>.

**In Edwin’s papyrus scroll<sup>12</sup> some of the symptoms of aphasia are: in Robert H. Wilkins’ transliteration from hieroglyph to English<sup>13</sup> we read the following: “One having a smash in his/her temple;**

he/she discharges blood from his/her two nostrils and from his/her ear; he/she is speechless; (and) he/she suffers with stiffness in his/her neck. An ailment not to be treated.”<sup>14</sup> It should be noted that the papyrus scroll in question is divided in Cases<sup>15</sup>. Each one of the cases contains six parts: **A.** the **Title:** (which includes a summary of the patient's case and what it is about). **B.** The main part, titled **Examination and Diagnosis** (here we find a more detailed report on the observations concerning the patient's condition). **C.** What kind of treatment (if any) is proposed for the particular case<sup>16</sup>. The papyrus scroll contains in total 48 cases. The same case, case 22<sup>17</sup>, that can be found in the Neuroscience for Kids; The Edwin Smith Surgical Papyrus<sup>18</sup>, is considered to be the first case that corroborates **aphasia**<sup>19</sup>. His comment about case 22 is the following: “**Fracture of the temporal bone (of the skull). This patient could not speak and this case is thought to be the first to document aphasia. If this is a description of aphasia, it would pre-date the famous work on aphasia by Paul Broca (1861) by thousands of years! Case 22 was “An ailment not to be treated.”**

The descriptions of these disorders state that the Egyptians used the same methods in order to deal with both mental and physical illnesses. The papyrus scroll (The Edwin Smith Papyrus) was published and translated by various researchers (the German edition, Grundriss der Medizin der alten gypter, is considered to be the best and is based on Paul Ghalioungui's publication)<sup>20</sup>.

Moving on to Greece, we need to first examine Homer, one of the oldest and greatest poets. In Homer, as in other poets, the term senseless means foolish<sup>21</sup>, he who has no sense, no brain, and the adjective “νηπίτιος” is often used (which derives from the word νήπιος, which means silly, stupid). In rhapsody F of Iliad, in the very meeting between the Gods with the purpose of deciding whether they should take part in the war, aiding the two sides at war (Trojans-Greeks) or if they should depart, it is the goddess Athena who first calls Ares, the god of war, stupid, νυπήπιος<sup>22</sup>, for trying to compare himself to her, as far as valor is concerned, and 30 verses down, Poseidon, also, uses the same characterization (νηπίτιο) for the god Apollo, who is younger than him, claiming that Apollo possesses a foolish heart<sup>23</sup>. In Homer, we, also, come across the term ‘senseless’ (ανοήμων) that means imprudent<sup>24</sup>. The term νόος (perception, sense), finally, is used for more than a 100 times in the text. Dementia as lack

of mind, can, also, be found in the texts of other writers and poets, such as: in Aeschylus, Theognis, Anaxagoras<sup>25</sup>, Democritus<sup>26</sup>, Plato etc. Plato highlights that dementia has a different context to goodwill (ευήθεια)· goodwill or gullibility has a positive context · ευήθεια = well constructed, (in term of) ethos, mind· therefore, dementia is a poorly constructed, (in terms of) ethos, mind<sup>27</sup>.

Hippocrates used psychiatric terms that we still use today, such as: Mania, Melancholy, Phrenitis, Insanity and Paranoia. He was, also, aware of pregnancy psychosis and alcohol-related psychosis. Finally, we should, also, add that Hippocrates had novel concepts about the beneficial impact of fever (fever therapy) and sleep (sleep therapy) on neuropsychiatric diseases. He, also, talked about psychotherapeutic and psychiatric examination. This can be found in his book titled *About humors* (E 488-9), in which he tries to gather information with regard to the patient's personality (possible abuses, sleep patterns, physical and mental fatigue etc.). Many of Hippocrates' psychiatric perceptions serve as a model of scientific way of thinking even today.

Areataeus of Cappadocia, who lived during the first years of postchristianity, describes, also, various mental diseases, that he divides in three different types: mania, melancholy and insanity. Finally, Epiphanius, an ecclesiastical writer that lived during the 4<sup>th</sup> century B.C. and fought against heretics, couples the heretics' dementia with their lunacy<sup>28</sup>. We have, also, found that Paul of Aegina was familiar with Alexander of Tralles' work, since he describes diseases, such as lethargy, in the same way as he does.

## SECOND SECTION

### GALEN<sup>29</sup>

Galen was born in Pergamum. At the beginning, he studied medicine in Pergamum and later on in Smyrna, Corinth and Alexandria. In order for him to complete his studies, he became a surgeon to Pergamum's gladiators (fighters-slaves) for four years. Galen studied the brain through experimentation (Karapetsas, 2011 p.22). He established Physiology and Anatomy<sup>30</sup>. After Hippocrates, Galen was the next Greek doctor to deal extensively with brain diseases and their surgical treatment. He performed numerous dissections and offered valuable knowledge and observations that helped cement medical thinking and practice for almost fifteen centuries<sup>31</sup>.

Despite the influence Galen's body of work has exerted on medicine of the middle and more recent years, never the less, the study of his body of work is not as extensive today as Hippocrates' body of work. The more, however, Galen's work is studied, the more its depth, its importance and its focus on medical research<sup>32</sup>.

### The names that Galen gave to mental health diseases

In Galen's surviving texts, as well as those characterized by some of the scientists as being the texts of Pseudo-Galen, we looked for diseases of the mind and the ones we were able to locate are presented below in alphabetical order. Through our research we have come across (27) twenty-seven diseases and they read as follows:

**1. Amnesia** (21 citations<sup>33</sup>): The cause of amnesia (lithi)<sup>34</sup>, as in similar mental illnesses, is the abnormal fluids (humor) created in the body.

**2. Anaesthesia** (62 citations): When the overflow brain fluid (humour) is cold, humans experience lack of sensation (anaesthesia) and immobility<sup>35</sup>.

**3. Apoplexy** (95 citations): Apoplexy (paralysis) is a mental "possession" that is followed by anaesthesia. The patient loses all consciousness and the ability to move (paralysis). The cause is the inflow of cold fluid (humour) that fills the ventricles of the brain<sup>36</sup>. During apoplexy, the whole of the body is paralyzed<sup>37</sup>. Democritus compares intercourse to a mild type of apoplexy<sup>38</sup>.

**4. Carus**<sup>39,40</sup> (70 citations): Carus (unconsciousness) is a form of lunacy characterized by lassitude. When the patient suffers from carus, his fantasy and his logic are impaired. One of them might work, while the other does not. It is connected with the presence of cold fluids (humor) in the brain<sup>41</sup>. Paul of Aegina said that: carus resembles lethargy, while the loss of memory and reason is due to cooling<sup>42</sup>.

**5. Catalepsy**: (109 citations). : Form of lunacy<sup>43</sup>. Fantasy and logic are impaired.

**6. Cataphora** (77 citations)<sup>44</sup>: cataphora (deep sleep) is deep and "difficult to reverse". The patients are exhausted and forgetful of everything they say.

**7. Coma**: (128 citations): Coma<sup>45</sup> occurs due to extreme coldness in the brain or weakness of the body, as was the case with Hermocrates. Galen divides coma into: 1. **Deep coma** (eyes shut) and 2. **Awake non responsive coma** (eyes open). He calls the awake non responsive coma deep or vegetative coma.

The same term (awake non responsive coma) is

used by **Paul of Aegina**, to which he proposes phlebotomy as a treatment. He highlights that the diseases could become very dangerous "εἴ που διὰ τινα τροφῆς ἢ πόματος ἀμαρτάδα (ἀμαρτάδα=sin=inexpediency, error) γένηται" if the patient eats or drinks something that it is prohibited...

**8. Delirium** (24 citations): It is phrenitis coupled by high fever. The patient pulls out the lint from woolen fabrics, is in an ecstatic trance, is forgetful, gets scared and cannot speak properly<sup>46</sup>. It is divided in lethargic or frantic delirium.

**9. Dementia** (13 citations): According to Galen, dementia (failure of mental function) is connected to abnormal brain fluids (humours). The fluids can be: **1. Cold**. The patient experiences lack of sensation (anaesthesia), immobility and inertia when the overflow brain fluid (humour) is cold. **2. Warm**. When the overflow brain fluid (humour) is warm, the body is "agile" and thought is impaired<sup>47</sup>. (12). **3. The abnormal flow of fluids (humours) in the body affects the soul and behavior**. The fact that the soul's memory is possible to exhibit such symptoms, both when someone is ill and after his recovery, is something that, also, Thucydides has pointed out, when he stated that some of the people that were rescued from the plague repressed any memory of what came before to such a degree that they ended up forgetting who they really were<sup>48</sup>. Dementia, also, exists in cases of melancholy but in those cases is reversible, since when the melancholy stops, mental function is restored<sup>49</sup>.

**10. Ecstasy** (26 citations): According to Galen, severe cases of lunacy<sup>50</sup> are called ecstasy. In other texts by Galen, he, also, informs us that ecstasy is a form of short term mania<sup>51</sup>.

**11. Epilepsy** (102 citations): When the thick melancholic fluid (humor) flows into the ventricles of the brain, many times it leads to epilepsy<sup>52</sup>.

**12. Forgetfulness (epilismosyni)** (6 citations): This can be caused by the use of drugs or by certain abnormal fluids (humour) created in the human body<sup>53</sup>.

**13. Heterocrania** (9 citations): A headache that alternates from the left to the right temple (of the head) and its intensity increases<sup>54</sup>.

**14. Katochi**: (27 citations): Katochi was a group of diseases of the brain<sup>55</sup>. Their characteristic is convulsions.

**15. Kefalaia**: (22 citations): A disease characterized



by headaches that sometimes are unbearable, and the patient hears noises and his eyes are bulging<sup>56</sup>

**16. Lethargy:** (70 citations). Lethargy is called the cataphora (deep sleep) that is hard to be reversed, the patient is pale, and there is oedema with gas, coupled with lassitude<sup>57</sup>. When there is some type of degeneration/sepsis and is coupled by fever, this disease is called lethargy<sup>58</sup>.

Both Alexander of Tralles and Paul of Aegina, not only offer the same definition of lethargy, but they, also, use the same wording<sup>59</sup> in order to describe the disease. In the text that is about nine lines long, where the two writers refer to lethargy, one can observe the following similarities between the two texts.

1. The space within the human body that is connected to lethargy is the brain and is the same as phrenitis
2. The "matter" of lethargy and phrenitis is opposite
3. In lethargy there is liquid and cold phlegm dampening the brain
4. Those that suffer (from lethargy) are forgetful and stupefied

From the above mentioned examples we conclude that it is very likely, as confessed by Paul of Aegina in the preface of his work, that the common expressions between the two writers are the same words that Galen used in his lost works, which the writers borrowed.

**Treatment of lethargy:** According to Galen, a hot beverage with thyme, pennyroyal vinegar and oregano and other similar herbs should be prepared and should be placed near the patient's nose, so that the steam of the beverage will reach the patient's brain, in order to destroy the thickness of the fluid (humor). 13. (GALENUS Med. De methodo medendi libri xiv {0057.066} Volume 10 page 930 line 4).

The treatment suggestions for lethargy proposed by Alexander of Tralles (from Caria, 6<sup>th</sup> century A.C.) and by Paul of Aegina are the same as those proposed by Galen.

**17. Madness** (337 citations): Madness is connected to the prevalence of yellow bile in the brain. In the case of madness<sup>60</sup>, both fantasy and logic are impaired. Sometimes only one of them functions properly, as was in the case with Theophilus<sup>61</sup>, the doctor that suffered from this disease. He had the ability to have a reasonable conversation and was able to recognize the people that were present. However, he believed that a group of people playing

the flute had taken residence at a corner in his house, some of them standing and others sitting down, and played the flute day and night, making noise. (He felt that the flautists) played constantly throughout the day and the night, even for a few hours, and he would yield at them to get out of his house. That was the type of his madness. When he recovered from his illness and his visitors recounted to him all that had taken place, he was able to remember the ghosts of the flautists. For some patients, however, no ghost appeared before them<sup>62</sup>.

**18. Mania**<sup>63</sup>. (54 citations): Mania is the ecstasy of the mind and the change in a person's habits. It is not coupled with fever<sup>64</sup>.

**19. Melancholia:** (78 citations). Melancholia is an affection that harms the thought process; it is coupled with dysthymia and an aversion towards previously beloved activities. It occurs when blood is wedged in the brain. For the treatment of this particular disease, Alexander of Tralles (lived in the 6<sup>th</sup> century) proposes phlebotomy of the vein on the forehead<sup>65</sup>. In the case of melancholia, there is no fever. For the treatment of melancholia **Paul of Aegina** proposes: 1. we begin with phlebotomy 2. we administer many fluids, 3. Aloe, pistacia, black hellebore 4. We aim to induce diuresis and sweating, 5. Poultices with a mixture of rue, dill, absinthe, pennyroyal and silver hairgrass, boiled in oil. He, also, advises that the patient avoids the consumption of beef, deer, lentil, cabbages, snails in wine, thick black wines and in general, whatever creates the black bile.

**20. Morosis/Dementia**<sup>66</sup> (14 citations): When logic and memory are lost, the disease is called morosis. It can be lost either memory or logic or both together. When both (logic and memory) are lost, logic is lost first

**21. Narke/Numbness** (59 citations): When a particular nerve is compressed due to cooling or is obstructed due to thick and sticky fluids (humor) or the patient is suffering due to an external cause, then *narke* (numbness) and paralysis are induced and there are muscle spasms<sup>67</sup>.

**22. Paresis:** (12 citations). Alexander of Tralles defines paresis as follows: the disease of paresis (impaired movement) is usually called paralysis. It is characterized by unconsciousness and immobility of the body that leads to death. That is what separates this disease from apoplexy (paralysis)<sup>68</sup>. Galen

proposes the use of the term paresis for other diseases, also, that, probably, are not mental diseases i.e. "πάρεσιν κύστεως or πάρεσιν ἀπάντων τῶν μορίων τοῦ σώματος" (=bladder paresis or paresis of a part of the body).

**23. Paroxysmos:** (765 citations). Paroxysms are coupled with amnesia (lithi), "release" and speechlessness<sup>69</sup>. In the above mentioned number of citations (765) that we have considered, the definition of the term paroxysmos as the outbreak of any disease is, also, included.

**24. Phrenitis,** (203 citations): It is a mental disease coupled with fever<sup>70</sup> that affects the *hegemonikon* (the ruling or controlling principle of the soul).

The essentially serious symptoms of phrenitis is insomnia and the patient seeing ghosts, the manifestation of a racing pulse, hyperventilation, dryness of the eyes and mainly delirium, which continues to occur even during very high fever. According to Galen, the logical function of patients that suffer from phrenitis is impaired, since the mental functioning of their souls is impaired. That is what had happened to the patient suffering from phrenitis, who, on the one hand, locked himself in the room, but, on the other, went to the window, holding each one of his utensils, and asked the passersby if they wanted to see him throwing them out the window. The patient was aware of the name of each utensil and that proves that neither his fantasy nor his memory was impaired. Why he felt like throwing out the window his utensils? He was unable to understand the reasons behind his behavior and he was unable to correct his behavior and that proves without a doubt that he was unable to think reasonably<sup>71</sup>.

According to Alexander of Tralles (lived in the 6<sup>th</sup> century), the yellow bile is the cause of phrenitis, which turns into madness<sup>72</sup>.

**25. Scelotyrbe** (=limping): scelotyrbe is a type of paralysis. (1 citation). In this case the patient is unable to walk straight<sup>73</sup>

**26. Skotomatikon**<sup>74</sup> = causing vertigo, loss of consciousness. (19 citations): Some of the patients experience vertigo and sometimes they fall down, especially when they spin around themselves. While those who do not suffer from this disease have to spin many times, before experiencing vertigo, for those that suffer from it, one spin around themselves is enough to make them experience loss of consciousness. For patients that suffer from this disease, vertigo occurs even if they are watching someone else spinning or if they see a wheel or something

similar spinning or even if they observe water turbulence. They, also, experience vertigo when the sun warms their heads or if a source of heat is near their heads. Healthy individuals experience the same feeling only when they are constantly spinning around<sup>75</sup>. The same observation is, also, made by Paul of Aegina, who mentions that patients feel dizzy with any kind of spinning that occurs.

**27. Typhomania** (3 citations): Typhomania is an imperfect lethargy. It is a mixed affection that includes both phrenitis and lethargy<sup>76</sup>.

### Treatment methods suggested by Galen

**Treatment of dementia:** In the case of dementia, which is coupled with hyperstimulation, at the initial stages of the disease, when its intensity is powerful and the patient is able to suffer the pain, phlebotomy should be performed, provided that none of the following is prohibiting its execution, such as the number of raw fluids (humor), childhood, the season of the year or lastly the temperature of the location (too warm or too cold). *Στην αρχή οξυρόδιον (έλαιον) προσφέρειν* = it is common to administer, at the initial stages of the disease, rose hip oil mixed with vinegar, hellebore, mandragora, opium poppy, opium<sup>77</sup> and henbane, and to have diathermy, sunlight therapy, phlebotomy, hydrotherapy, physiotherapy and psychotherapy.

Galen used henbane, opium and mandragora, but he, also, mixed substances. The parts of the mandragora plant (leaves, nut, root extract) have narcotic and analgesic properties, which makes it the number one choice for the performance of surgical procedures. Later on, for the preparation of anesthesia, they used a mixture of mandragora, opium, henbane, conium (hemlock) and lettuce. During the Roman time, the opium that was produced in large quantities in Thebes and was exported was renowned.

### Treatment methods suggested by Paul of Aegina

Paul of Aegina belongs to the period of late antiquity; he was a doctor and a writer of the 7<sup>th</sup> century A.D. He, most likely, was from Aegina. During the time of the siege of Alexandria by the Arabs, in 643, Paul must have been a famous doctor in Alexandria. At the great libraries of Alexandria, of Pergamum and Kos Island, he had at his disposal the original texts of basic medical science. He was particularly familiar with Galen's and Hippocrates' body of work. Paul collected and presented in a practical form, all the necessary and valuable information that a doctor needed in his everyday medical practice (Krug, p.213). Arab

doctors had taken an interest in the practical, useful and tested collective works of Oreibasius and Paul of Aegina. Like many doctors of late antiquity, he was not himself a researcher, but instead he offered a seven-volume synopsis of the work of the doctors that came before him, titled *Treatise*. In this body of work he made sure that he included the essential medical material. Therefore, his work contains, mainly, practical guidelines and at the same time a great number of references to medical tools (Krug, p. 219)

**In sum:** In general, we can find a record of mental diseases dating back to the 17<sup>th</sup> century B.C. In a text by Hippocrates written in the Greek language there are psychiatric terms relevant to dementia, but dementia as a disease first appears in Galen's work. In Galen's work, along with the term dementia, we can find several similar mental diseases.

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## Notes

<sup>1</sup> 1. PAULUS Med. Epitomae medicae libri septem, Book prchapter 1 section 1 line 1-5

<sup>2</sup> Galen's personality as a doctor and a researcher is what created the term 'Galenism' in the medical profession, a term that survives even today, given that his methods had no successors and he was not succeeded by any school of thought (Krug 1997, pp. 69-71 and 209)

<sup>3</sup> PAULUS Med. Epitomae medicae libri septem , Book prchapter 1 section 1

<sup>4</sup> We have descriptions of more than 100 types of dementia. The most common ones are: Alzheimer's type of dementia, vascular dementia, dementia of alcoholics, dementia with Lewy bodies, corticobasal degeneration, and dementia caused by other general medical conditions and the non-determined dementia.

<sup>5</sup> Today we know that a primary and early symptom of the disease is the memory disorder. There is difficulty in retaining recent information and facts, difficulty in finding the right words, reduced fluency. (Karapetsas, Modern subjects of Neuro-linguistics, Speech Pathology, Assessment, Diagnosis and Rehabilitation. Page 122).

<sup>6</sup> As far as the "perish of the mind and forgetfulness" is concerned: it is breath of the activity of the reciting priest that does it; it (i.e. the breath) enters into the lung several times, and the mind becomes confused through it.

**The original text:** As to "perishing of the mind and forgetfulness": it is breath of the activity of the reciting priest that does it; it (i.e. the breath) enters into the lung several times, and the mind becomes confused through it.

<sup>7</sup> "his mind is drowned": this means that his mind is forgetful like one who is thinking of something else.

<sup>8</sup> **The original text:** As to "the mind's kneeling (breakdown?)": this means that his mind is constricted, and his heart in its place in the blood of the lung. Becomes small through it. It is (due to the fact) that the heart is hot, and then his mind becomes weary through it; he eats little and is fas-

tidious.

<sup>9</sup> **The original text:** As to "the mind kneels through purulency; " : this means that his mind is small in the interior of his belly, the purulency falling on his heart, and so he becomes (;) and kneels.

<sup>10</sup> **The original text:** As to "drying up of the mind": it is (due to the fact) that the blood (coagulates?) in the heart.

<sup>11</sup> **The original text:** As to "his mind is dark (melancholic?), and he tastes his heart": this means that his mind is contracted, there being darkness in his, interior (lit. belly) through (;), and he makes the deed to consume his mind (i.e. he repents).

<sup>12</sup> <https://ceb.nlm.nih.gov/proj/ttp/flash/smith/smith.html> The papyrus is unfolding  
[https://www.google.gr/search?q=the+edwin+smith+papyrus+all+the+text&safe=strict&tbm=isch&source=i&u&pf=m&ictx=1&fir=RZ2uOHcnCuiXaM%253A%252COAJeyLDF5eQy6M%252C\\_&usg=\\_\\_D2nVFpWEuG1cmj-\\_gkW6uk1cX70%3D&sa=X&ved=0ahUKEWjN7ljQ-pDXAhWRZFAKHUw6BwgQ9QEIWjAG#imgcr=rVjLP0fadkJW\\_M](https://www.google.gr/search?q=the+edwin+smith+papyrus+all+the+text&safe=strict&tbm=isch&source=i&u&pf=m&ictx=1&fir=RZ2uOHcnCuiXaM%253A%252COAJeyLDF5eQy6M%252C_&usg=__D2nVFpWEuG1cmj-_gkW6uk1cX70%3D&sa=X&ved=0ahUKEWjN7ljQ-pDXAhWRZFAKHUw6BwgQ9QEIWjAG#imgcr=rVjLP0fadkJW_M): contains many pictures of the papyrus.

<sup>13</sup> Neurosurgical Classic-XVII. Edwin Smith Surgical Papyrus. Robert H. Wilkins, MD. Division of Neurosurgery, Duke University Medical Center, Durham, North Carolina at  
<https://ceb.nlm.nih.gov/proj/ttp/books.htm>

<sup>14</sup> **The original text as it was given to us by Robert H. Wilkins is as follows:**

**Case:** Twenty-Two .**Title:** Instructions concerning a smash in his temple.

**Examination:** If thou examinest a man having a smash in his temple, thou shouldst place thy thumb upon his chin (and) thy finger upon the end of his ramus, so that the blood will flow front his two nostrils (and) from the interior of his earhaving that smash. Cleanse (it) for him with a swab of linen until thou seest its fragments (of bone) in the interior of his ear. If thoucallest to him (and) he is speechless (and) cannot speak... **Diagnosis:** Thou shouldst say concerning him: "One having a smash in his temple; he discharges blood from his two nostrils and from his ear; he is speechless; (and) he

suffers with stiffness in his neck. An ailment not to be treated.”... **Gloss:** As for: “Thou seest its fragments in the interior of his ear,” it means that some of the fragments of the bone come away to adhere to the swab which was introduced to cleanse the interior of his ear.

15 For a detailed description of the papyrus scroll look at James Henry Breasted, *The Edwin Smith Surgical Papyrus*, The University of Chicago Oriental Institute Publications. <file:///C:/Users/USER/Dropbox/πάπυρος%20Edwit%20Smith%20-%20Αντίγραφο/οip4.pdf>

16 More on the contents of The Edwin Smith Surgical Papyrus at <https://faculty.washington.edu/chudler/papy.html>.

The 48 cases contained within the Edwin Smith Surgical Papyrus concern: **27** head injuries (cases #1-27), **6** throat and neck injuries (cases #28-33), **2** injuries to the clavicle (collarbone) (cases #34-35), **3** injuries to the arm (cases #36-38), **8** injuries to the sternum (breastbone) and ribs (cases #39-46), **1** injury to the shoulder (case #47), **1** injury to the spine (case #48)

17 In the original text, Case 22 appears as in photo 1.

18 Neuroscience for Kids; The Edwin Smith Surgical Papyrus The first use of “neuro” words in recorded history, Case 22. At <https://faculty.washington.edu/chudler/papy.html>

**The original text:** Case 22: Fracture of the temporal bone (of the skull). This patient could not speak and this case is thought to be the first to document aphasia. If this is a description of aphasia, it would pre-date the famous work on aphasia by Paul Broca (1861) by thousands of years!

Case 22 was “An ailment not to be treated.”

19 In the case of aphasia, the person is unable to speak, to use words correctly and in accordance with their meaning, to comprehend etc. this could be due to disorders in the brain’s blood vessels or brain damages. General Aphasia is the most serious type of aphasia, during which the patient has serious problems during speech, as well as understanding speech. Broca’s Aphasia or expressive

aphasia is characterized by limited speaking ability, limited vocabulary and moderate difficulty in auditory comprehension of the language, which often leads to difficulty in communication etc.

20 At <http://www.crystalinks.com/egyptmedicine.html>

21 3. HOMERUSEpic.Odyssea, Book 17 line 273

22 Iliad F 410, the goddess Athena speaks: (fool, why haven’t you yet understood how proud I am that I am braver than you, why do you keep trying to compare yourself to me, as far as valor is concerned? The same in: HOMERUS Epic. Ilias, Book 21 line 585 & HOMERUS Epic.Ilias {0012.001} Book 21 line 474 & HOMERUS Epic.Ilias, Book 13 line 292 & HOMERUS Epic.Ilias, Book 20 line 244 & HOMERUS Epic.Ilias, Book 20 line 200 & HOMERUS Epic.Ilias, Book 20 line 431

23 (Iliad F 441): : You fool, what a foolish heart you have (νηπίτι, ως άνοον καρδίαν έχεις)

24 1. HOMERUS Epic. Odyssea, Book 2 line 270. The same in the verses that follow: HOMERUS Epic. Odyssea, Book 2 line 278

25 1. ANAXAGORAS Phil. Testimonia Fragment 57 line 3, ARISTOT. Metaphys. A 3. 984b 15, B.ANAXAGORAS Phil. Testimonia, Fragment 15 line 6

26 Democritus B 282 (436, 11)

27 GALENUS Med. *In Hippocratis prognosticum commentaria iii*. Kühn volume 18b page 237 line 8: “ Πλάτων δ’ έν τῷ τρίτῳ τῆς Πολιτείας φησίν· “εὐλογία ἄρα καί εὐαρμοστία καί εὐχρημοσύνη καί εὐρυθμία καί εὐήθεια ἀκολουθεῖ, οὐχί ἄνοιαν οὔσαν, ἦν ὑποκοριζόμενοι καλοῦμεν εὐήθειαν, ἀλλά τήν ὡς ἀληθῶς εὐ τε καί καλῶς τὸ ἦθος κατεσκευασμένην διάνοιαν.”

28 EPIPHANIUS Scr. Eccl. Panarion (= Adversushaereses) Volume 2 page 390 line 16: Κέχρηται δὲ ταῖς πάσαις γραφαῖς παλαιᾶς τε καί καινῆς διαθήκης, ἔξεισι δε πισιν αἷς αὐτοῖ ἐκλέγονται κατὰ τὴν ἰδίαν αὐτῶν (15) παραπτεπονημένην φρενοβλάβειάν τε καί ἄνοιαν.

29 Galen was the last important doctor of the Greco-Roman world at that time. His Roman name is not apparent, but the two initials CI, that can be seen, most likely come from the Latin word Clarissimus = magnificent, and not from the name Claudius (wikipaideia)<https://el.wikipedia.org/wiki/%CE%93%CE%B1%CE%BB%CE%B7%CE%BD%CF%8C%CF%82>. A sample depicting the end of one of Galen's works, found in Kriara Collection

It bears Galen's peculiar signature as we can see in the photo 2.

30 His in-depth studies are about anatomy, physiology, surgery, ophthalmology, obstetrics, pathology, therapeutics, hygiene and pharmacology. <https://www.enallaxnews.gr/2017/05/17/to-palimpsisto-tou-galhnoupws-oi-arxaioi-ellhnes-therapevan-tis-astheneies/>

31 He described, also, for the first time the peripheral nerve injuries and their pharmacological treatment through the local application of 'glue', such as egg white, in order to promote the sealing of nerve truncations (Ochs, 1977).

32 He performed incisions in live animals with great consistency, preferably in monkeys and pigs, due to their similarities to the human body, but denied to perform incisions in human bodies, even if the human was dead (Krug, 2008).

33 The number of citations for each of the diseases of the mind used by Galen came about through our research in the totality of Galen's surviving body of work, as well as those texts that some consider to be Pseudo-Galen. The relevant research was conducted using the Thesaurus Linguae Graecae as its source.

34 GALENUS Med. Quod animi mores corporis temperamenta sequantur , Kühn volume 4 page 787

35 GALENUS Med. De methodo medendi libri xiv, Volume 10 page 929 line 17

36 Pseudo-GALENUS Med. Definitiones medicae , Volume 19 page 415: σμδ'.

37 GALENUS Med. De symptomatum causis libri iii, Volume 7 page 151 line

38 DEMOCRITUS Phil. Fragmenta, Fragment 32 line 3. STOB. III 6, 28. ξυνουσίη ἀποπληξίη σμικρή· ἐξέσσεται γὰρ ἄνθρωπος.

39 The term carus, in general, means very deep sleep, stupor, especially after drunkenness, vertigo, lethargy or any type of sudden anesthesia and immobility of the body.

40 PAULUS Med. Epitomae medicae libri septem, Book 3 chapter 6 section 3.9(2)

41 Balogiannis. Galen as a neuroscientist and a neuron-philosopher in *THE BRAIN* 2016 (53): 1-14.

42 PAULUS Med. Epitomae medicae libri septem, Book 3 chapter 6 section 3.11.

43 GALENUS Med. De symptomatum differentiis liber, Volume 7 page 60

44 Pseudo-GALENUS Med. Introductio seu medicus, Volume 14 page 741

45 GALENUS Med. In Hippocratis librum iii epidemiarum commentarii iii, Kühn volume 17a page 542

46 Pseudo-GALENUS Med. Definitiones medicae , Volume 19 page 412

47 GALENUS Med. De methodo medendi libri xiv, Volume 10 page 930

48 GALENUS Med. Quod animi mores corporis temperamenta sequantur, Kühn volume 4 page 777

49 Pseudo-GALENUS Med. Definitiones medicae , Volume 19 page 416

50 GALENUS Med. In Hippocratis prorrheticum i commentaria iii, Kühn volume 16 page 631 line 10

51 Pseudo-GALENUS Med. Definitiones medicae, Volume 19 page 462 line 11

52 GALENUS Med. De locis affectis libri

vi, Volume 8 page 177 line 13

53 GALENUS Med. Quod animi mores corporis temperamenta sequantur , Kühn volume 4 page 787 line 13

54 Pseudo-GALENUS Med. Definitiones medicae, Volume 19page 415

55 GALENUS Med. In Hippocratis prorrheticum i commentaria iii{0057.088} Kühn volume 16 page 827

56 Pseudo-GALENUS Med. Definitiones medicae, Volume 19page 415

57 Pseudo-GALENUS Med. Definitiones medicae, Volume 19 page 413 line 5

58 GALENUS Med. De methodo medendi libri xiv, Volume 10page 930.

59 1. ALEXANDER Med. Therapeutica , Volume 1 page 527 line 22. And 2. **PAULUS Med. Epitomae medicae libri septem, Book 3 chapter 6 section 3.**

60 GALENUS Med. De symptomatum differentiis liber, Volume 7 page 60

61 Theophilus was a doctor and a comedy writer from Epidaurus. See Verettas Marios. *The Names of the Greeks*. In *Papyrus Larousse Britannica* we have found the name Theophilus referring to a comedy writer, contemporary of Phillip and Alexander the Great, who, amongst other things, wrote a comedy under the name Doctor.

62 GALENUS Med. Quod animi mores corporis temperamenta sequantur, Kühn volume 4 page 777

64 Pseudo-GALENUS Med. Definitiones medicae , Volume 19 page 416 line 7

65 ALEXANDER Med. Therapeutica, Volume 1 page 595 line 23: Εἰ δὲ ὕλη αἱματικοῦ χυμοῦ σφηνωθεῖη περὶ τὸν ἐγκέφαλον, τότε θαρρῶν τὴν ἐν τῷ μετώπῳ φλέβα τέμνε•

66 PAULUS Med. Epitomae medicae libri septem, Book 3 chapter 6 section 3.11.

67 7. GALENUS Med. De symptomatum causis libri iii, Volume 7 page 152 line 8

68 ALEXANDER Med. Therapeutica , Volume 1 page 575 line 17

69 GALENUS Med. In Hippocratis librum iii epidemiarum commentarii iii, Kühn volume 17a page 692

70 GALENUS Med. De symptomatum differentiis liber , Volume 7 page 60

71 GALENUS Med. Quod animi mores corporis temperamenta sequantur , Kühn volume 4 page 777

72 Alexander Med. Therapeutica, Volume 1 page 509

73 Pseudo-GALENUS Med. Definitiones medicae , Volume 19 page 427 line 9

74 PAULUS Med. Epitomae medicae libri septem, Book 3 chapter 6 section 3.12.

75 GALENUS Med. De locis affectis libri vi, Volume 8 page 201

76 Pseudo-GALENUS Med. Definitiones medicae, Volume 19page 415 line 7

77 It appears that Galen is the first to suggest the administration of opium to hyper-active children (Goodman & Gilman, 1975)

Case 22

Handwritten musical notation for Case 22, consisting of approximately 18 lines of rhythmic symbols and notes. The notation is written in black ink, with some elements highlighted in red. The symbols include vertical lines, circles, and horizontal strokes, often grouped together. The notation is organized into two main sections, with the number '10' appearing on the right side of the second line and '15' on the right side of the eighth line. The overall style is that of a personal or working manuscript.



Παναγιώτης οσόν βουβαδύ. λαδοικέρον γάμα γόγγυ-  
 ούα, ηγέμελ βύβ βόζα, ζέφνος, βυβέ βυβάν-  
 νούα βυβ γάβων μύβω χαίς βύα.  
 άνιθ ότμή βυ βυβέ βυβ βυβώνμα=  
 βυ βυβέ βυβέ βυβέ βυβέ,  
 βυβέ βυβέ βυβέ βυβέ.  
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