

THE GREEK CONCEPT OF DIABETES

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THERE have been several essays on the history of diabetes. Salomon¹ covered the period from Hippocrates to the beginning of the 19th century. Schumacher² prepared an *Index to Diabetes Mellitus*, which contains a large number of useful references. Papaspyros³ has published a book on this subject. Shorter reviews have been prepared by Horowitz,⁴ Barach,⁵ and Orth.⁶ A chronological list of the various authors under discussion is given in the accompanying table.

The best ancient description of diabetes is given by Aretaeus,⁷ who describes the disease as a melting down of the flesh into urine with an incessant flow of urine as if it were coming from the opening of aqueducts. Aretaeus asserts that the disease was given the name diabetes from the Greek work meaning siphon. The fluid does not remain in the body, but uses the body as a ladder whereby to leave it. The use of the word "ladder" has given considerable trouble. In Liddell and Scott's Greek-English Lexicon,⁸ *διαβάθρη* has the meaning of ladder, but it also may be translated as gangway, drawbridge, or bridge. In a Latin edition of Aretaeus⁹ the word *canali* is used. Leopold¹⁰ in his English translation of this passage uses the word "channel." The sentence has a better meaning if bridge or channel is used in place of ladder. Aretaeus comments that life does not last very long, for great masses of flesh are liquefied into urine. He compares this disease to the toxic effects of an adder bite, which causes unquenchable thirst in man. These symptoms of snake bite are well described by Nicander.¹¹ In another section Aretaeus^{11a} compares diabetes to dropsy, for in ascites the fluid remains in the body, but in diabetes the fluid runs off by way of the kidneys. Aretaeus and the other authors under discussion did not differentiate diabetes mellitus from diabetes insipidus. It is assumed that they were dealing with diabetes mellitus, although this assumption has been questioned by Henschel.¹⁴ Biographies of Aretaeus are given by Leopold,¹⁰ Reed,¹² and Kudlien.¹³

<i>Name</i>	<i>Date</i>	<i>Source</i>
Hippocrates	469-399 B.C.	Hippocratic Corpus ¹⁵
Aristotle	384-322 B.C.	<i>Parts of Animals</i> ¹⁶
Apollonius of Memphis	3d century B.C.	Quoted by Caelius Aurelianus ²¹
Demetrius of Apamea	ca. 100 B.C.	Quoted by Caelius Aurelianus ²¹
Celsus	1st century, A.D. Under Tiberius	<i>De Medicina</i> ¹⁹
Archigenes of Apamea	ca. 54 to 117 A.D.	Quoted by Caelius Aurelianus ²¹
Soranus of Ephesus	2d century A.D.	Translated by Caelius Aurelianus ²¹
Galen	A.D. 129-199	<i>Diabetes</i> , Translated by Lund ²⁰
Aretaeus the Cappadocian	Contemporary of Galen	The Extant Works ⁷
Caelius Aurelianus	5th century A.O.	<i>On Acute and Chronic Diseases</i> ²¹
Paulus Aegineta	About 640	Seven Books ²²

It is assumed that there are no references to diabetes in the Hippocratic corpus. There are, however, indirect statements which may be interpreted as allusions to that disease. For example, in the *Epidemics*,¹⁵ the amount of urine passed is described as great and not proportional to the amount of fluid drunk but considerably in excess. In the *Coan Prognosis*¹⁶ there are several references to watery urine; for example, in paragraph 565 it is recorded that recovery is uncertain in chronic cases with watery urine. In paragraph 568 it is remarked that it is bad when urine is passed soon after drinking. In the Hippocratic writings there is the word *ὀρρηκτώτατος*, meaning to make water much or often. It is of interest that the superlative ending, *-τατος*, is used. This word occurs in the Ermerins¹⁷ edition of Hippocrates, page 354, paragraph 52. Aristotle¹⁸ uses this word with the same meaning: viz., "to make water excessively." It may be assumed from the above references that excessive urinary flow with wasting of the body was known to the Hippocratic writers.

Celsus, who wrote in Latin at the time of Tiberius (see table) but may be considered a Greek writer since he interpreted Greek medicine, describes the condition in which urine exceeds in quantity the fluid taken even if it is passed painlessly. The ailment gives rise to wasting and to danger of consumption. The concept that the urine passed is greater than the ingested fluid was repeated by many authors in the Middle Ages.

Galen²⁰ lists the various descriptive names for diabetes: dropsy into the pot, diarrhea of the urine, and the thirsty disease. He describes the

conditions as rare; he had seen only two cases, and in both there was excessive thirst, and the patients passed in the urine as much liquid as they had drunk. Galen stresses that the site of action was in the kidneys and not in the stomach.

Caelius Aurelianus²¹ prepared a Latin version of the works of Soranus. In the index of the Drabkin edition there is a subject heading "Diabetes," but on examination of the text this section could not be found (footnote 3, p. 776) except for a short paragraph. In this paragraph Caelius quotes Apollonius of Memphis as separating two forms of dropsy, one marked by retention of fluid and the other by the inability to retain fluid; the patient discharges whatever he drinks as if it were passed through a pipe. Apollonius lived in the second half of the third century B.C. Caelius Aurelianus continues by stating that Demetrius of Apamea distinguishes this disease from dropsy in which any fluid that is drunk is discharged as urine. Demetrius calls this condition *diabetes*. The time of Demetrius of Apamea is given as the first century B.C. None of his works have come down to us; we have only quotations in later authors. Caelius Aurelianus apparently assigned a special chapter for the discussion of diabetes but this chapter seems to have been lost. I have looked for it in the 1529 edition edited by Johannes Sichart²² without success. I have attempted to reconstruct this passage on diabetes from later authors noted for their ability to copy, but have not been able to find it. The early printers discarded the manuscripts after their publications were printed; therefore it is unlikely that this missing section will be found. The chief fact is that the concept of diabetes goes back to Demetrius, who lived in the first century B.C.

Later authors such as Paulus Aegineta²³ repeat Celsus and describe diabetes as the rapid passage of fluid out of the body. Liquids are voided as urine almost as soon as they are drunk. The disease is attended by marked thirst. In fact, as late as 1745 the Greek concept of diabetes was repeated by James in his *Medicinal Dictionary*.²⁴ James describes diabetes as the condition in which any fluid is voided soon after it is drunk. The patient is afflicted by insatiable thirst; fluid is discharged as urine in larger quantities than were taken into the stomach. The disease is of a chronic kind for it dissolves and consumes the body. It is rare. Thus in 1745 the descriptions of the Greek physicians were still being used.

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