

Historical note

Diabetes and the “Natural Faculties” in the Galenic treatises

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The term *diabetes* first appears in a text by Aretaeus to describe a disease of the kidneys. Galen is likely to have borrowed this term from Aretaeus also to describe the same disorder, though in a manner somewhat uncharacteristic of his writings. Taken as a whole, only a few mentions may be found in the Galenic writings of the condition of “diabetes”, namely in three Galenic treatises and in two pseudo-Galenic. In all cases, Galen employs different terms to designate the disease, simultaneously adding some description of its clinical manifestation. He clearly suggests that diabetes is a rare, chronic disease of the kidneys caused primarily by a malfunction of two of the “natural faculties”: the “alterative faculty” and the “retentive faculty”. A small number of remedies are to be found only in the pseudo-Galenic treatise,

De remediis parabilibus. The present article deals with the Galenic views on diabetes, based on his experience and personal knowledge. Keeping in mind Galen’s theory that the etiological factor for the onset of diabetes is a failure or malfunction in the activity of the two “faculties”, the current paper examines those “faculties” and elaborates on the link between them and “diabetes”.

THE “NATURAL FACULTIES”

The exact English translation of the Galenic treatise title “Περὶ φυσικῶν δυνάμεων” is the “Natural Forces”. Nevertheless, the translated version, as presented in the book by AJ. Brock, R. Loeb Classical Library, Harvard University Press, Cambridge, 1991, is “Natural Faculties”.

Galen writes that diabetes is a disease arising from the malfunction of the “alterative” and the “retentive” faculties of the body. It is important at this point to explain the Galenic theory of “faculties”. In his treatise *On the Natural Faculties* (*De naturalibus facultatibus*), Galen seeks to explain the rules governing human existence that along with Nature constitute the “Galenic physiology”. He considered that all kinds of body functions are ruled by one or more “faculties” which work either alone or in co-operation with each other. In the term “faculty” he includes everything that concerns the activities of the organism and is impossible to explain.¹

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The natural faculties are of many different kinds. Galen supported the existence of three principal faculties: genesis (“embryogeny”), growth, and nutrition. Each faculty has several sub-faculties, depending on the function performed, though a strict taxonomy cannot be made (Table 1). Thus there are three additional faculties assisting genesis: a) the alterative (secondary alterative faculties = ostopoietic, neuropoietic, etc.), b) the formative/shaping, and c) the attractive. Four auxiliary faculties of nutrition exist in all organs: a) the alterative (secondary alterative faculties: assimilative, nutritive), b) the attractive, c) the retentive, and d) the expulsive.² Finally, there are three secondary faculties assisting growth: a) the alterative, b) the formative/shaping (secondary formative faculties: histogenetic and organogenetic), and c) the nutritive. The aim of the current paper is not the analysis of the theory of the “Galenic faculties” but the presentation of those whose malfunctions were considered to be the cause of diabetes.

THE “ALTERATIVE FACULTY”

The primary faculty of genesis results from the co-operation of two secondary faculties: the alterative and the formative/shaping. “The seed having been cast into the womb or into the earth, then, after a certain definite period, a great number of parts become constituted in the substance which is being generated”.³ During the first stage of genesis, nature constructs the bones, nerves, cartilages, membranes, etc. employing the alterative faculty, meaning moisture, dryness, coldness and warmth, and those sub-faculties deriving from the combination of these, such as the bone-producing faculty (ostopoietic),

the nerve-producing faculty (neuropoietic) and the cartilage-producing faculty (chondropoietic).

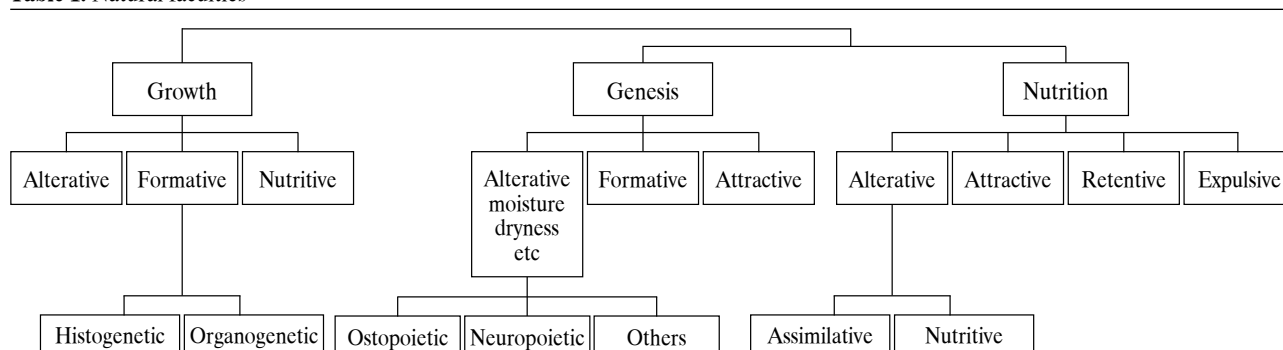
The peculiar flesh (parenchyma) of the liver, the spleen, the kidneys, the lungs, the heart, the substance of the brain, the stomach, the throat, the intestines and the uterus are all *sensible elements*, homogenous and simple.

THE “RETENTIVE FACULTY”

In order to more fully explain the “retentive faculty”, it is important to briefly provide information on the primary faculty of nutrition. The faculty that mainly aids nutrition is once again the “alterative”. The alterative faculty, in relation to nutrition, has two sub-faculties, the “assimilative” and the “nutritive”. Another faculty gathers the necessary quantity of food for each organ, called “attractive” or “epispastic”. This faculty also transfers the nutrient from the veins to each organ and delivers it to the organs. Uptake of the food is performed very rapidly but its retention by the organ, the alteration and the assimilation cannot be performed so fast. If the adhered humor does not remain stable in the specific part and changes its position, neither adhesion nor assimilation will take place in any part. Thus, nature needs another faculty in order to keep the consumed food in its predestined part. This faculty should reside in the part in need of nourishment and this is the reason why this faculty has been named “retentive” (καθεκτική - κάθουμαι).⁴

Galen presents the retentive faculty by using as examples the organs of the body where this faculty could be recognized by the human senses. The stomach retains the food until the time of digestion and the uterus retains the embryo until the time of labor.⁵

Table 1. Natural faculties



POSSIBLE EXPLANATION OF THE PROPOSED ETIOLOGY OF DIABETES

Galen considered that diabetes is a disease arising from the malfunction of the “alterative” and the “retentive” faculties. Bearing in mind the clinical features of the disease, the malfunction of the “alterative” faculty is clearly manifested by the continuous need for moisture, since this faculty uses moisture for the construction of the most important parts of the body. The constant need of the organism of the diabetic patient for water probably reveals to Galen the inequality of the existence of the four primary alterative faculties (warmth, cold, moisture, dryness), but more specifically of moisture. The malfunction of the “retentive” faculty is probably regarded as such due to the inability of the kidneys to keep in the content the consumed fluids; constant need for urination was possibly the clinical manifestation of this malfunction.

TREATMENT

Probably because of his limited experience owing to paucity of cases of diabetes (he had seen only two diabetic patients), Galen does not enter into detailed treatment descriptions. Only one instance of treatment is found in the Galenic corpus, this being found in the pseudo-Galenic treatise *De remediis parabilibus*. The writer advises the patient to take very thin membranes from the abdomen of young roosters, to dry them under the sun and eat them. If this cannot be done, he proposes obtaining mountain-copper, dry acorn, flower of the wild pomegranate and oak-gall, pestling them and then drinking a mixture made up of the paste stirred with rose honey and cold water.⁶

Little, in fact, is mentioned in the texts of Galen about diabetes, since Galen acknowledges his limited experience on the subject. This may also explain the small number of references in his treatises on the subject, which number only 12. However, the manner in which he supports his ideas about diabetes is through the elaboration of a very complicated “physiology” based on the theory concerning the role of “faculties” in the function of the human body. Diabetes is thought to be caused by the malfunction of the “alterative” and the “retentive” faculties. The malfunction of the “alterative” faculty is manifested by the constant need for the consumption of liquids

while that of the “retentive” faculty by the inability of the kidneys to retain their content i.e. urine. However, the “temperaments”, the main Galenic innovation and a supplementary theory to that of Hippocrates, as well as the role of the humours, the basic Hippocratic physiology, are not mentioned at all.

What may most importantly be inferred is that Galen has been honest as a “scientist”. He uses the Greek word “ονομάζουσι” (they say) in all discussions of the disease, meaning that other doctors have referred to the topic and to the term “diabetes” prior to his writings, while the texts of Aretaeus entertain the same stance. Thus, it is evident that neither could have been the “godfather” of diabetes. Confusion also exists as to the first user of the term “εἰς οὐρὰ διάρροειαν” (urinary diarrhea). Theophilus Protospatharius refers to the “godfather” of that illness as being the “most outstanding of all ages”. Such a reference would normally lead either to Hippocrates or Galen. However, no reference has been found in the works of Hippocrates, while Galen himself refers to someone prior to him employing the term. Nevertheless, no references to the term “εἰς οὐρὰ διάρροειαν» have been found in writers before Galen.

Finally, it is also important to note that Galen refers to diabetes both as a symptom and as a disease, and does not refer extensively to the treatment of this condition. Confusion is understandable bearing in mind that Galen was a doctor of the second century AD possessing little knowledge of human anatomy and physiology. His dissections of animals could not have supplied answers to such issues that were eventually solved after many centuries had elapsed.

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