

Information on diabetes mellitus in traditional Ayurvedic medicine

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SUMMARY

The article is devoted to the little-studied issue of the history of medicine - the description of diabetes mellitus in traditional Ayurvedic medicine. The article presents the information set forth in the fundamental written sources of Ayurvedic medicine - "Charakasamhite" and "Sushrutasamhite", as well as links to a number of modern studies. Particular attention is paid to "Charakasamhita", which contains information about the etiology, pathogenesis, clinical picture of the disease, as well as methods and means of prevention and treatment of diabetes mellitus. Also mentioned are the individual typological (constitutional) features of the course of diabetes mellitus, confirmed by modern research. General ideas about this disease, as well as its correspondence to modern nosological units, are stated. The article contains data on external and internal factors, contributing to the development of diabetes. Two options for the development of diabetes mellitus have been identified: congenital and acquired; different approaches to the prevention and treatment of each of these options have been prescribed. New Sanskrit terms have been introduced into the scientific circulation of the history of medicine, denoting diabetes itself, as well as the deviations in health that preceded it. In the course of studying Ayurvedic texts, methods for diagnosing diabetes mellitus were described, highlighting twenty of its types. Separately, it should be noted the relationship of diabetes mellitus with various pathological conditions described in Ayurvedic texts, covering all types of genitourinary infections, obstructive uropathies, renal failure, etc. The article enriches the history of medical science with new data and contributes to the formation of a holistic picture of the development of world endocrinology.

Keywords: history of science, diabetes mellitus, "Charakasamhita ",
Sushrutasamhita ", Ayurvedic medicine.

RESUME

The article is devoted to a littlestudied question of the history of medicine - the description of diabetes mellitus in traditional Ayurvedic medicine. The article presents information contained in the fundamental written sources of Ayurvedic medicine - "CharakaSamhita" and "SushrutaSamhita", as well as links to a few modern studies. Special attention is paid to the "CharakaSamhita", which contains information about the

etiology, pathogenesis, clinical picture of the disease, as well as methods and means of preventing and treating diabetes. Individual typological (constitutional) features of the course of diabetes mellitus, confirmed by modern research, are also mentioned. General ideas about this disease, as well as its compliance with modern nosological units, are presented. The article contains data on external and internal factors that contribute to the development of diabetes. Two variants of diabetes mellitus development are identified: congenital and acquired, and different approaches to prevention and treatment of each of these variants are prescribed. New terms in Sanskrit have been introduced into the scientific history of medicine to denote diabetes mellitus itself, as well as previous deviations in the state of health. While studying Ayurvedic texts, methods for diagnosing diabetes mellitus were described with the identification of twenty types of diabetes. The connection between diabetes mellitus and various pathological conditions, including all types of urinary infections, obstructive uropathies, kidney failure, etc., described in Ayurvedic texts should be noted separately. The article enriches the history of medical science with new data and contributes to the formation of a complete picture of the development of world endocrinology.

Keywords: history of science, diabetes mellitus, CharakaSamhita, SushrutaSamhita, Ayurvedic medicine, history of medicine.

Diabetes mellitus (DM) is a non-communicable chronic disease that poses a global medical problem and poses a threat to human health. The prevalence of type 2 diabetes continues to increase. In 2000, the number of patients with diabetes in the world was 171 million people, in 2013 - 382 million, by 2035, experts from the World Diabetes Federation (IDF) predict an increase in the number of patients on the planet by 55% - up to 592 million people.

Over the past decades, the World Health Organization (WHO) has encouraged the study and implementation of modern health care methods and experiences of traditional medicine. The position of WHO has had a noticeable impact in many countries of the world on the reassessment of the importance of traditional medicine for improving public health and preventing diseases. The international document "WHO Strategy for Traditional Medicine" (2013) contains a detailed description of the main types and methods of traditional and traditional medicine, including traditional Ayurvedic medicine [15].

Historical and medical study of diabetes mellitus is of interest. There are few works devoted to the historical study of this pathology and, basically, these publications are devoted to the contribution of individual doctors to the field of diabetology [5] or the history of the development of this direction in certain regions [3]. The author did not find any works devoted to the concept of diabetes mellitus in traditional medicine, in particular in Ayurvedic medicine.

Previously, we carried out studies on the concept of various pathologies in traditional Ayurvedic medicine [2, 4, 8, 13].

This article presents a study of traditional Ayurvedic medicine sources describing diabetes mellitus.

Ayurvedic medicine is one of three surviving

days of traditional medical systems (Indian, Chinese and Tibetan), which were formed over millennia [6].

In Ayurvedic medicine, an individual-typological approach to the patient is used and different types of constitutions are described [7], which is also applicable in relation to the description of diabetes mellitus.

Understanding Diabetes in Ayurvedic Medicine

In Ayurveda, diabetes mellitus (DM) is described as "madhumeha ksaudrameha" [1], which literally means "excess amount of urine, sweet as honey", or as "Dhātupākajanyavikrti", which means "disease caused by metabolic disorders substances leading to disruptions in the formation and transformation of body tissues." Ayurvedic texts describe 20 types of urine disorders (prameha) according to the prevailing dosha [2] (10 types of kapha disorders, 6 pitta disorders and 4 vata disorders) and the physical characteristics of urine (eg, volume, color, odor, taste, sediment, particulate matter, semen and mucus). In diabetes, urine is excreted in excess and is usually cloudy. Diabetes mellitus is one of the violations of the composition of urine (prameha), possible with any of the three constitutions (vāta, pitta or kapha).

The Ayurvedic approach to the treatment of diabetes includes the correction of diet and exercise regimen, as well as the use of a number of medicinal plants and their mixtures with hypoglycemic action. Cleansing procedures are a unique method of the Ayurvedic approach to treating diabetes. However, it should be noted that the clinical description of diabetes, etiology, diagnosis, prognosis and lifestyle recommendations given in Ayurvedic texts are generally similar to those described in Western medicine.

Clinical description (roga-vyākhyā) and etiology (vyādhi-hetu) The main symptoms of diabetes are described in classical Ayurvedic texts (Charaka-samhita, Sushruta-samhita and others) and include the sweet taste of urine, thirst, constant hunger, fatigue, obesity, taste changes, constipation, burning sensation on the skin, cramps, insomnia, and a feeling of numbness. Boils, wounds and abscesses in diabetic patients are often difficult to treat and are also mentioned in Ayurvedic texts. All these symptoms are very similar to those described in modern Western medicine. Ayurvedic doctors today also rely on the results of chemical analysis of urine and blood to confirm the diagnosis.

According to Ayurveda, there are many factors that influence the onset and development of diabetes. Diabetes mellitus can be genetically determined, and overweight patients may face this diagnosis due to a sedentary lifestyle and poor diet (among the main factors are laziness, excessive sleep, abuse of sugary and fatty foods, and lack of exercise). All of these factors are understandable, as they can all lead to type 2 diabetes. Ayurveda distinguishes two types of diabetes mellitus: (1) genetically determined (sahaja), manifested at an early age, from birth, and has common features with juvenile diabetes or insulin-dependent diabetes; and (2) acquired

(apathyaja) due to improper lifestyle, more common in humans older age and among obese people, and is similar to type 2 diabetes [14]. In addition, the Charaka-samhita describes two types of diabetes: one occurs in people with underweight (krsaprameha), and the second in people with excess body weight (sthūla). The first requires the use of tonics along with insulin therapy, and the latter - a set of measures to reduce body weight (apatarpana) [12, p. 120.].

Pathogenesis (samprāpti)

According to classical Ayurvedic texts, diabetes mellitus and all types of urine disorders (prameha) begin when kapha dosha is out of balance and spreads throughout the body, mixing with fat (medah), which is similar to kapha dosha (mucus) in its physical properties. Kapha, mixed with fat, penetrates the urinary system, thereby interfering with normal urination. Unbalanced pitta and vata and various body fluids can also be involved in disrupting this process (mala). It is believed that impaired free urine flow is the cause of increased urination, characteristic of diabetes. Left untreated diabetes can lead to disruptions in the formation of bone marrow, tissues, nutrients (fats, proteins, and carbohydrates) and hormones (ojah). Incurable stage of diabetes - madhumeha is essentially insulin-dependent diabetes mellitus. Ayurvedic texts do not describe madhumeha in detail, however indicate the mechanisms of the development of the disease, known to us today, in particular with respect to neurological disorders and disorders of the processes of insulin production (ojah) (with the destruction of the cells of the islets of Langerhans of the pancreas) and its interaction with the cells of the body. Ayurveda also describes disorders of tissue metabolism, leading to the development of complications - damage to blood vessels, kidneys, eyes and nervous system. In order to select a therapy, diabetes is described in Ayurveda not only as a condition madhumeha, but also as an ojo meha state (reduced immunity and hormonal imbalance).

Course and prognosis of the disease (sādhyatā)

According to classical Ayurvedic texts, all types of urine disorders (prameha) left untreated can lead to incurable disease (madhumeha). Kapha disorders are easiest to deal with treatment, since kapha dosha and affected tissues (dūsyā) have the same properties and require the same type of treatment. Pitta-type disorders are controllable (palliative), but they can persist throughout life, since the causing these disorders pitta dosha and tissues and waste products (dūsyā) differ in their properties and require different approaches to treatment. Vata-type disorders are considered incurable because the tissues (dhātu) and hormones (ojah) are emaciated.

Studies have identified the relationship between physical constitution and the relative indicators of hyperglycemia and insulinemia, the results of these studies are generally consistent with the Ayurvedic prognosis of the disease [9, 10, 11].

Patients with a kapha constitution showed the highest levels of insulinemia and the lowest fasting and postprandial blood sugar levels. Vata patients had the lowest insulinemia and the highest fasting and postprandial blood sugar levels. Pitta patients took an intermediate position. Further research is needed to confirm these findings.

In Ayurveda, the main complications of Kapha-type diabetes are considered to be poor digestion, decreased appetite, vomiting, drowsiness, cough, and catarrhal rhinitis. Patients with pitta-type disorders most often complain of stabbing pains in the bladder, penis and scrotum, as well as fever, burning sensation, thirst, bitterness in the mouth, severe weakness and loose stools. Patients with vata disorders often experience tremors, heart pain, abdominal tenderness, insomnia, and dry mouth. The main complications of Vata-type diabetes include: ulcers and purulent lesions of the joints, muscles, skin and blood vessels, as well as damage to the kidneys and retina.

Clinical examination and diagnostics (roga-parīksā and nidāna)

In the past, Ayurvedic doctors diagnosed diabetes mainly by the sweet taste of urine, which was determined by the number of flies and ants that accumulated over the urine. Today, Ayurvedic doctors rely on urine and blood sugar and glycohemoglobin (HbA1c) levels to confirm the diagnosis. The following signs and symptoms of Kapha, Pitta and Vata type diabetes are described in Ayurvedic texts.

1) Kaphajaprameha:

- a. Udakameha - Urine clear, in large quantities, white, cold, without odor, resembles water, sometimes slightly cloudy, may contain mucus.
- b. Iksumeha - Urine resembles sugarcane juice, very sweet.
- c. Sāndrameha - The urine becomes viscous after standing overnight.
- d. Surāmeha - Urine resembles beer (surā), transparent on top, sediment turbid.
- e. Pistameha - The urine is white and cloudy, like water with flour.
- f. Śukrameha - The urine looks like semen or is mixed with semen.
- g. Śītamēha - The urine is sweet and very cold.
- h. Sīkatāmeha - Particles like sand are present in urine.
- i. Śanairmeha - Very slow urination.
- j. Lālāmeha - Mucous urine, contains threadlike fragments similar to saliva.

2) Pittajaprameha:

- a. Ksārameha - Urine resembles an alkali solution in color, smell and taste.
 - b. Kālameha - Black urine.
 - c. Nīlameha - Bluish urine.
 - d. Hāridrameha - Turmeric-colored urine.
 - e. Mānjīsthameha - Urine has an unpleasant odor reminiscent of manjishtha (*Rubia cordifolia*), reddish tint.
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f. Raktameha - Urine has a strong unpleasant odor, slightly salty, bloody red.

3) Vātajaprameha:

a. Majjameha - Urine resembles or is mixed with bone marrow.

b. Ojomeha - Urine is like honey.

c. Vasāmeha - Urine resembles a fat emulsion, frequent urination.

d. Hastimeha - Urine resembles that of an elephant during mating season, urination is continuous, slow; urine is mixed with lymph.

These characteristics of urine may indicate various pathological conditions, covering all types of genitourinary infections, obstructive uropathy, renal failure, etc. Kaphajaiskumeha and vātajaojomeha correlate with modern understanding of diabetes 2nd and 1st types.

However, in recent years, the diagnostic tools of Ayurvedic doctors have gravitated towards modern clinical and laboratory methods used in Western medicine.

For an individual selection of therapy, it is necessary to correlate the diagnostic results with the patient's physical constitution.

Treatment (cikitsā)

Traditionally, the daily care of diabetic patients has been performed using suitable palliative medicinal plants. These plants are selected based on properties such as rasa (taste), guna (properties), vīrya (energy), vipāka (effect after digestion) and prabhāva (unique effect), the combination of which should lead to treatment. Based on this approach, the Charaka-samhita prescribes different types of formulations for treatment according to the type of constitution. It should be noted that vigorous exercise is contraindicated in debilitated and malnourished patients with severe diabetes. They are encouraged to practice light physical and breathing exercises. Some exercise is believed to stimulate insulin production and improve tissue sensitivity to insulin by stimulating the muscles and pancreas. Other lifestyle recommendations include walking regularly, cutting back on certain foods such as animal fats. Regular consumption of bitter melon, food with a pungent and astringent taste, asparagus, spinach, turmeric, fenugreek seeds, black pepper and ginger. Studies have shown that turmeric is highly effective in treating diabetes mellitus [1]. Modern experience shows that there is no need to exclude sugar from the diet, provided it is consumed wisely, which is in line with Ayurvedic recommendations. Honey and raw palm sugar are believed to balance kapha and pita, respectively, and may be beneficial in the treatment of these types of diabetes. Patients are also strongly advised to quit smoking, not drink alcohol, and limit sleep to 8 hours a day. that honey and raw palm sugar balance kapha and pita, respectively, and may be beneficial for the respective types of diabetes. Patients are also strongly advised to quit smoking, not drink alcohol, and limit sleep to 8 hours a day. that honey and raw palm sugar balance kapha and pita, respectively, and may be beneficial for the respective types of diabetes. Patients are also strongly advised to quit smoking, not drink alcohol, and limit sleep to 8 hours a day.

Usually, mono-component herbal remedies are not used in Ayurvedic treatments. Since the treatment is determined by the constitution, it always includes multicomponent formulas of medicinal plants and sometimes minerals.

According to Ayurveda, every disease is caused by an imbalance of one or two doshas, and they must be balanced in accordance with the patient's constitution; therefore, one cannot apply the same treatment tactics to all patients, even if they suffer from the same disease.

According to Ayurveda, when developing a treatment plan, it is necessary to take into account the patient's lifestyle, his age, professional activity, psychological needs and willpower. The treatment plan usually includes selection of procedures, collection of medicinal plants, a healthy diet, and monitoring of blood glucose levels.

Today, in treating diabetes, Ayurvedic doctors monitor blood glucose levels according to generally accepted standards.

Prevention of diabetes is mainly reduced to maintaining a healthy lifestyle and eating habits that will help reduce the accumulation of body fat, since it is known that more than 80% of patients with type 2 diabetes are obese. Regular use of nutrients (rasāyana) and hypoglycemic herbal formulations, especially for people with a hereditary predisposition to type 2 diabetes.

The conducted review of medical sources of traditional Ayurvedic medicine demonstrates the undoubted historical, scientific and practical importance of describing the signs, causes, risk factors, therapy of diabetes mellitus in the Ayurvedic medical tradition.

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[1] The conceptual concept of Ayurvedic medicine, which allows for an individual-typological (constitutional) approach to the human body and personality, as well as personalized treatment and prevention of various pathologies.

[2] The conceptual concept of Ayurvedic medicine, which allows for an individual-typological (constitutional) approach to the human body and personality, as well as personalized treatment and prevention of various pathologies.

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