

NEPHROLOGY IN ANCIENT INDIAN SYSTEM OF MEDICINE

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ANATOMICAL CONSIDERATIONS

A vivid description of the anatomy, physiology and pathological disorders of urinary tract is available in Āyurvedic literature. The important anatomical structures concerned with urine formation, as described in Āyurveda are : (1) *Vṛkka*, (2) *Mūtra Vaha Srotas*, (3) *Mūtravaha dhamanis, sirās* and *nāḍis*, (4) *Vasti*, (5) *Vasti Śirā*, (6) *Mūtraprastha* etc.

The term *vṛkka* is generally believed analogous to the kidneys as known today. As per original descriptions, the *vṛkka* is a paired organ situated in the *koṣṭha* or the trunk specially in the back part of the abdomen in the lumber region. Dalhaṇa described the *vṛkkas* as a pair of fleshy rounded bodies. Suśruta described them as composed of the essence of the blood and fat. Śāraṅgḍhar described their function as nourishers of abdominal fat. Some commentators described a relationship between the *vṛkkas* and the *āhārajala vāhīnī sirās*, i.e. the vessels carrying liquid fraction of the refuse, resulting from the digestion of food.

The term *vasti* refers to the urinary bladder. According to the classical descriptions, *vasti* is a thin walled gourdshaped organ, composed of muscles, blood and membranous structures situated in the abdominal cavity, in the pelvis, surrounded by various structures located therein mainly concerned with storage of urine. This description suggests that *vasti* as described in Āyurveda is nothing but the urinary bladder as known today. The term *vastiśirā* refers to the upper end or the fundus of the urinary bladder. Another structure classically described in relation to *vasti* or bladder is the *vastidwāra* or *vastibila* or *vastimukha* which definitely indicates lower opening or internal urethral orifice of the urinary bladder.

The structures described in Āyurvedic literature under the term *mūtravaha-srotas* are controversial. The literature shows the term *mūtra-vaha srotas*,

being used in singular, dual and plural numbers. Moreover, the term *srotas* itself is controversial. However, it may be provisionally stated that in general *srotas* form a structure consisting of channels as well as openings which are always moving and are carrying *dhātus* and *malas*. Thus the pair of *mūtravaha srotas* described by Suśruta and the two *gavinis* mentioned in Vedic literature can be identified as ureters, because Suśruta's *mūtravaha srotas* and the *gavinis* of Vedic literature are two in number. They are related to *vasti* or the bladder and the *medhra* or the urethra. They have been indicated as to occur in the operative field of parineal lithotomy, as, a surgeon is advised to take care of them during such surgery. And an injury to them (ureters) leads to extravasation of urine in the region of *vasti* leading to death. Caraka described the present context in a different way. Here the term *mūtravaha srotas* appears to include two different sets of structures : (1) Structures concerned with the passage of formed urine like ureters and the urethra, (2) the second set refers to innumerable constituent functioning units in the kidney, i.e. nephrons which filter the urine as is more clearly described by Vāgbhaṭa who says that there are numerous *mūtravaha nāḍis* having innumerable tiny openings through which urine is passed (filtered) into the *vasti*.

The terms, *mūtravaha dhamanis*, *sirās* and *nāḍis* have been generally used to describe the renal arteries, veins and nerves respectively.

THE PHYSIOLOGICAL CONSIDERATIONS

According to Āyurvedic concepts the process of urine formation starts along with the process of digestion of food. The food after digestion, in the *āmāśaya* and *pakvāśaya* is divided in two parts (1) *prasāda bhāga*, i.e. useful portion and (2) *kiṭṭa bhāga*, i.e. excretable portion. This act of separation takes place at the *unḍūka* (iliocaecal junction). Then the liquid portion of the *kiṭṭa bhāga* of digested food (*kleda*) circulating with the general *udaka* pool, i.e. water and electrolyte system of the body, passes to the *vasti* as *mūtra* or urine after being filtered through innumerable channels, the nephrons. Thus the formation of urine starts just along the digestion of food and passes through three stages (i) *udaka* (general water pool), (ii) *kleda* (metabolites added to the water pool), (iii) *mūtra* (real urine after filtration).

CLINICOPATHOLOGICAL CONSIDERATIONS

The review of the Āyurvedic literature indicates that most of the clinicopathological entities of urinary system as known today are described in Āyurveda in the form of certain syndromes. Majority of such syndromes appear to have been grouped under the eight types of *mūtrakṛcchras*,

thirteen types of *mūtrāghātas* and twenty types of *Pramehas*. Besides, some specific entities like *mūtraśmarī* and urinary disorders associated with other medical diseases are described in different contexts. Special emphasis has been put on the alterations of physical characters of urine itself in various states.

It may be pointed out here that the Āyurvedic literature does not make mention of any specific organic disease of urinary system in terms of urinary organs which appear to be in accordance with the general Āyurvedic approach to the identification of a clinical entity. However, a number of diseases presented with recognisable urinary changes are described. Such diseases may be classified as (a) Diseases with predominant urinary manifestations, which are said to originate from the *vasti*, i. e. the urinary tract and so may be named as *vasti roga* or *mūtra roga* such as *mūtra-kṛcchra*, *mūtrāghāta*, *aśmarī* and *prameha*, (b) other diseases associated with urinary alterations and urinary symptoms like *jwara*, *atisāra*, *arśa*, *pāṇḍu* etc. Thus an adequate clinical description of urinary diseases is available in the Āyurvedic texts. Most of the clinical entities known in modern nephro-urology have been covered, at least in principles under different heads. In the words of Vāgbhaṭa the urinary diseases may be classified in two groups.

(1) *Mūtrātīpravṛtti janya roga*, i. e. diseases associated with increased urinary output. The twenty types of *pramehas* as described in Āyurveda may be included under this class of urinary disease.

(2) *Mūtrāpṛapravṛtti janya roga*, i. e. diseases associated with decreased urinary output. Different kinds of *mūtrāghātas* and *mūtrakṛcchras* as described in Āyurveda may be included in this category. This group covers syndromes of renal failures, urinary obstructions and urinary infections as known today.

THE PATHOPHYSIOLOGICAL CONSIDERATIONS

In the original Āyurvedic literature one may not find clear, specific and intelligible description of the pathogenesis and underlying pathology in different urinary disorders. But in the light of the Āyurvedic concept of urine formation it is presumed that the urinary disorders may be the result of the abnormalities at different levels as described below.

1. Disturbed digestion of ingested food by *pācaka pitta* under the influence of *samāna vāyu*.

2. Disturbed absorption of digested end products of food from *pakvāśaya* by *maladhara kalā* under the influence of *samāna vāyu*.

3. Disturbed filtration and reabsorption of *malarūpa mūtra*, i. e. urine from the blood.

4. Disturbed transportation, storage and excretion of urine from *vṛkka* (kidney) to *vasti* (bladder) by the *gavinis* (ureters) and passing out by *mūtra praśeka* (urethra) under the influence of *apāna vāyu*.

The disturbances of different levels as mentioned above result into different types of urinary disorders.

THE THERAPEUTIC CONSIDERATIONS

The review of the Āyurvedic literature reveals the mention of a variety of drugs and measures in the management of urinary disorders. Fundamentally the urine and urinary physiology have a clear relevance to the *pañca mahā bhautika* and *tridoṣa* theories of Āyurveda. Similarly Āyurveda also conceives *pañcamahābhautic* and *doṣic* theories of the activity of a drug or treatment in a particular disease or disorders. However, the drugs commonly used for urinary disorders have been classified in the following groups;—

1. *Mūtravirecanīya* dravyas — Diuretics.
2. *Mūtra virajānīya* dravyas — Decolouring agents.
3. *Mutra samgrahaṇīya* dravyas — Anti diuretics.
4. *Mutra viśodhana* dravyas — Urinary antiseptics.
5. *Aśmani bhedan* dravyas — Antilithic agents.

Besides these specific classes of indigenous drugs, a large number of drugs, both herbs and minerals, have been described singly or in combinations for the treatment of urinary disorders.

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