



Ayurvedic Concept Of Anatomy Of Excretory System: A Review

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ABSTRACT

Ayurveda has emerged as a new hope for the world in terms of its usefulness in treating various diseases with minimal adverse effects. The holistic approach towards health and disease is the major strength of this science. It has gained a lot of acceptance and appreciation around the globe. To meet the expectations of the scientific community at every level, it is important that the system is explained to the modern world in the language and the terminology they understand. At the same time, if anatomy and physiology of excretory system is clear, it will be helpful for the *Ayurvedic* physicians to understand the pathological conditions of this system of the body and their effective treatment. Ayurveda has presented a very brief description about the structure and function of the excretory system. It has only mentioned the existence of the structures which may be responsible for functions of excretion. This article is an effort to explain the anatomy of excretory system explained in Ayurvedic texts in view of modern day knowledge.

INTRODUCTION

As such there is no clear cut and well defined description about the structure and the function of the excretory system in Ayurvedic texts. Scattered references do appear which make mention to the structures involved in excretion. On basis of present day knowledge of anatomy of this system we know that the major structures involved are the Kidneys, Ureters and the Urinary bladder and Urethra¹. Ayurvedic concept regarding anatomy of these structures is quite limited and very much scattered. Physiology of this system is also not very clear in Ayurvedic texts. Kidneys and Urinary bladder have been clearly mentioned by the names *Vrikka* and *Basti* respectively. No specific mention has been made of ureters and the urethra. Terms like *mutravahi nadi* and *dhamani* are found but the description about these entities is not sufficient to understand the anatomy and the physiology of the system. Various diseases have been described in *Ayurvedic* texts in relation to the excretory system, therefore it will be useful to understand the structure and the function this system for better understanding of the diseases.

STRUCTURE OF VRIKKA:

The description of anatomy and physiology of excretory system in Ayurvedic literature is very crude and miniature. Term *Vrikka* has been derived from *vrikkadane*, which means 'to take'². While explaining the urinary system, Sushruta has not mentioned the *vrikka* in relation to the *basti*. There is description that *mutravaha nadis* or *dhamanis* carry *drava mala* from *pakwashaya* to *basti* where it percolates in drops in a pool of urine i.e. *basti*³. Charak and Sushrut has also mentioned that *Vrikka* are internal organs and are two in number^{4,5}. The relation of *vrikka* and *mutrashaya* has been mentioned while describing seven *ashayas* and the organs related to the *ashayas*⁶. It has been mentioned that there exist two *vrikka* in human body, one on the left side and the other one on the right side⁷. The shape of the *vrikkas* has been mentioned to be near round⁸. The symptoms of *vrikka vidradhi* suggest that *vrikkas* are situated in the back part of the abdomen in the *koshtha* in the lumbar region⁹. The *vrikkas* have been told to be the root of *medovaha srotas*¹⁰. Nourishment of the abdominal fat is the function of *vrikka*¹¹. This perhaps has been considered so because the suprarenal glands lie in close relationship to the upper pole of the corresponding kidneys¹². Cortisol, which is secreted by the suprarenals promotes mobilization of the fatty acids from the adipose tissues. Also, excessive cortisol secretion is associated with a peculiar type of obesity, with excess deposition of fat in the chest and head regions of the body¹³. Cushing's disease, which is caused by the hypersecretion of the adrenal cortex, characterizes mobilization of fat from lower part of the body, with concomitant extra

deposition of fat in the thoracic and upper abdominal regions¹⁴. Though suprarenals lie outside the renal capsule, are enclosed with the kidneys in the perirenal fascia¹⁵. *Mutravahi nadis* are two in number and have been told to divide in to tens of hundreds of thousands¹⁶, which comes out to be one million. Each kidney contains about one million nephrons¹⁷.

STRUCTURE OF *BASTI*:

Basti has been considered to be the storehouse of urine as synonym *mutrashaya* has also been used for *basti*¹⁸. This description makes clear that the term *basti* has been used for urinary bladder, which, according to modern day anatomy is considered as the temporary storehouse of the urine¹⁹. *Bsati* has been considered to be one of the *ashayas*²⁰. In *Ayurvedic* texts the *basti* has been stated to be related to *nabhi, prishtha, kati, mushka, guda, vankshana, shepha* and *pourush granthi*¹⁸. According to modern day anatomy, apex of the urinary bladder is related to umbilicus by the median umbilical ligament, the upper part of the base separated from the rectum by the rectovesical pouch and the lower part is related to the seminal vesicles and the terminal part of the vas deferens. In males the bladder rests on, and is in direct continuity with the base of the prostate²¹. The shape of the *basti* has been mentioned to be like that of *alabu*¹⁸, which is ovoid in shape. The distended Urinary bladder is also ovoid in shape.²² *Basti* has been reported to have a single outlet.¹⁸ The urinary bladder has a single urethral orifice.²³ *Ayurvedic* texts state that *basti* is surrounded by *sira* and *snayu*.¹⁸ Modern day anatomy also recognises presence of various true and false ligaments²⁴ around the bladder. True ligaments present around the urinary bladder include the lateral true ligament, lateral puboprostatic ligament, medial puboprostatic ligament, median umbilical ligament and the posterior ligament. False ligaments of the bladder include the median umbilical fold, medial umbilical fold, lateral false ligament and the posterior false ligament. According to *sushrut*, *Basti* is *adhomukha*¹⁸ i.e. its outlet is directed downwards. Same is true for the urinary bladder, at lower end or the neck of which the urethra is connected.²⁵

CONCLUSION:

From the above discussion and the available references, it can be understood that in the ancient *Ayurvedic* literature, the concept of existence of the excretory system as an independent unit has been accepted, and subsequently the pathological conditions related to this system has been explained in details. Various diseases has been mentioned that are specifically related to this system including *mutrakrichhra, mutraghata* and *mutrashmari*. In addition to it, existence of diseases like *vrikka vidradhi* and *bastimukha vidradhi* has also been accepted and explained in details. This suggests that despite the not so clear understanding of the anatomy of the structures engaged in the function of urine formation, the concept of physiology was very clear to the ancient scholars. It is only on the basis of this understanding that these diseases have been described. It is also important to highlight here that only the diseases related to physiology have been described more prominently and only few pathologies related to the structure of related organs have been mentioned, which include *vidradhi*. Further research to understand and establish the concept of anatomy and physiology of the structure related to excretory system is required so that the diseases of this system can be understood with more clarity and treated accordingly.

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