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Review of urine formation in Ayurveda

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ABSTRACT

Urinary system (*Mutravaha samsthana*) of human body is explained in several Ayurveda text books and is meant for the formation and excretion of *Mutra* (Urine). Urine formation has major role in human physiology. Though there was no availability of microscope, the vision of *Apta jana* is so clear that the *Mutra Nirman Vidhi* is highly appreciable. *Ahara* is said as *Upstambha* which after digestion is transformed into nutritive part (*Ahara Rasa*) and waste product (Urine and feces). The process of *Mutra Nirman* in *Ayurveda* is very controversial, so author have tried to prove that Ayurvedic concept of *Mutra Nirman* is how much scientific.

Key words: *Ahara, Mutra Nirman Vidhi, Kidney, Ureter, Urinary Bladder.*

INTRODUCTION

Urinary system is explained in many Ayurvedic scriptures. The anatomy and physiology of urinary system in elaborated form in different parts of *Samhita* but there is lack of relationship with each other. The anatomy of urinary system is described as *Mutra Vaha Srotas* having *Vasti* (bladder) and *Medra* (penile part of urethra) as *Moola*.^[1] The *Vrikka* (kidney) is the only organ for urine formation should be *Mutra Vaha Srotas Moola* but *Vrikka* is described as a *Moola* of *Medo Vaha Srotas*.^[2]

Mutravaha Samsthana

It includes *Basti* (urinary bladder), *Vrikka* (kidney), *Gavini* (ureters), *Medra* (urethra), *Mutravaha Srotanshi* (nephrons), *Mutravaha Nadies* (nerves of urinary system), *Mutravaha Dhaminies* (arteries of urinary

system), *Mutravaha Sira* (veins of urinary system).

Mutra is the *Kitta* in *Drava* form produced as a result of *Aharpaka* and stored in *Mutrashaya*.^[3] *Vasti* is described by *Acharya Sushruta*^[4] and it seems that it is a urinary bladder having storage function and *Medra* is the penile part of urethra.

Basti (Urinary Bladder): According to *Shabdakosha*,^[5] the root '*Vas*' is used as '*Vas Acchadane*'. Its different meaning are to cover, base, store house and reservoir of urine. So *Basti* can be defined as a store house which acts as a reservoir.

Vrikka (Kidney): it is derived from the root '*Vrikkadane*' means to take. The detail Ayurvedic anatomy of *Vrikka* (kidney) is present in all Ayurvedic texts. The position, development and its functions are well described all over but no direct reference of *Vrikka's* (kidney's) relation to urine formation. *Vrikka* (kidney) are two in numbers and are situated in the lumbar region on either side in the posterior abdominal wall in the *Kostha* (abdominal cavity).^[6]

Gavini (Ureter): They are two in number, situated one on each side of *Basti* (bladder), receiving *Mutra* (urine) from the *Antras* (alimentary canal) and sending it further to *Mutrashaya* (urinary bladder).^[7]

Medra (Urethra): It is one among the eight important organs, which are to be protected from any injury at the time of performing surgery for *Mutrashmari*

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(bladder calculus).^[8] It is the outlet of the *Basti* (bladder), which is two *Angulas* (a type of length measurement) in females and twelve *Angulas* in males.^[9] In males it carries both *Mutra* (urine) and *Shukra* (semen), while in females only *Mutra* (urine).^[10]

Mutravaha Srotas (Nephrons): According to Charaka, the definition of the word *Srotas* (body channels) is 'Sraanat Srotamsi'.^[11] Which means, where from something oozes out. On this way the channels which carry *Mutra* (urine) can be considered as *Mutravaha Srotas* (nephrons) has its origin from *Basti* (bladder) and two *Vankshanas* (inguinal region).^[12] whereas *Sushruta* believes *Basti* (bladder) and *Medra* (penis) as the roots of *Mutravaha Srotas* (nephrons)^[13] and any trauma to this *Mutravaha Srotas* (nephrons), leads to acute retention of urine, distention of urinary bladder and painful erection of the penis, ultimately leading to death of the patients.^[14]

Mutravaha Nadis (Nerves of Urinary System): *Mutravaha Nadis* are thousand in number and are situated in between *Pakvashaya* (large intestine) and *Basti* (bladder).^[15] the functions of these *Nadis* (nerves) and *Mutra Nishyandana* (filtration of urine) whether in state of awakening or sleep, and carrying the *Mutra* (urine) from *Pakvashya* (large intestine) to *Basti* (bladder), like the rivers fill the ocean with water.^[16]

Mutravaha Dhaminis (Arteries of Urinary System): *Sushruta* while describing the *Dhaminis* (arteries which moves downwards) which are meant for *Sara-Kitta Vibhajana* (dividation between essence and fecal matter of food) and to transport *Mutra* (urine), *Purisha* (feces), *Shukra* (semen), *Artava* (ova/menses), *Apana Vata* (flatulence) etc. downwards.^[17] *Adhogami Dhamini* (ten in numbers) are further subdivided into three parts, thus total number becomes 30.^[18] These same *Dhaminis* (arteries) taking part in the *Sara-Kitta Vibhajana* (dividation between essence and fecal matter of food) process, out of which two are said to be the *Mutravaha Dhaminis* (arteries of urinary bladder) going to *Mutrabasti* (urinary bladder), the functions of

which stated are *Dharana* (holding) and *Yapan* (nourishing) of *Mutra* (urine) and *Basti* (bladder).^[19] *Dalhan* further says that these are further divided into countless branches.^[20]

Mutravaha Siras (Veins of Urinary System): *Ashtanga Hridaya* has first time described concept of *Mutravaha Sira*.^[21] *Mutravaha Siras* are regarded as minute channels carrying *Mutra* (urine) to *Basti* (bladder). This *Mutravahi Sira* opens in the lateral side of *Basti* (bladder) and fills the *Basti* (bladder) with *Mutra* (urine) continuously by the process of *Nishyandana* (filtration).^[22]

Sarangdhara describes that the *Maladrava* (liquid part of stool) of digested food i.e. *Mutra* (urine) is transported to *Basti* (bladder) by *Siras* (veins).^[23] *Adhamalaa* in his commentary on *Sarangdhara* says that the *Siras* (veins) are concerned with *Aharajala* (liquid part of food) transported to *Basti* (bladder) through *Mutravaha Siras* (veins of urinary system).^[24]

So we find that *Nadis* (nerves), *Dhaminis* (arteries) and *Siras* (veins) of *Mutravaha* have close relation with the urinary system.

Urinary System^[25]

The urinary system includes kidney, ureters, urinary bladder and urethra. Kidney is the organ where the process of urine formation occurs. In kidney, there are millions of nephrons which filter the blood. Ureters are a pair of muscular tubes which convey the urine from kidney to urinary bladder. Urinary bladder is organ which only store urine. Urethra is a terminal part of urinary system beyond the bladder and acts as a passage to discharge out the urine from bladder.

Modern physiology of urine formation^[26]

Urine is the final plasma filtrate which mainly contains water and electrolytes. Blood is filtered by tuft of capillaries present in Bowman's capsule. After that filtrate enters in PCT, loop of Henle and DCT then to collecting ducts opening into calyx of kidney. The reabsorption of glucose and electrolytes only occurs in loop of Henle, PCT and DCT. The plasma filtrate is called urine when it reaches in collecting duct.

Collecting duct unite to form minor calyx, minor calyx opens in renal pelvis from where ureters begins.

Ayurvedic physiology of urine formation

Formation of urine in Ayurveda is related to *Ahara* (food).^[27] when food gets completely digested, *Ahara* is divided into two parts which are *Sara* and *Kitta*.^[28] *Sara* is nothing but nutritious part of food and *Kitta* is *Mala*. The *Kitta Bhaga* is divided into two parts- one is water content (*Mutra*)^[29] and other part is solid content (stool). The water content of *Kitta* after absorption from *Pakvashaya* (large intestine) is further described as *Mutra bhaga* (urine),^[30] that urine after absorption and filtration reach into *Mutravahi Dhamini* in three groups on the basis of their direction. Out of which Adhogami Dhamnies are further subdivided into subgroups according to their functions becomes thirty in number in which ten- two for *Vata*, *Pitta*, *Kapha*, *Shonita* and *Rasa*, like that two for each *Shukra*, *Purish*, *Artava* and two *Dhaminis* for transportation of *Mutra*. The two *Mutravadi Dhamini* is designated for function of transportation of urine.

CONCLUSION

Due to lack of advanced techniques, they could not find out what happens to liquid part absorbed through alimentary canal. They thought that there must be interlinking system between alimentary canal and urinary bladder. They were unable to find any gross interlinking anatomical organ so they concluded that there might be numerous, invisible structures carrying urine from intestines to bladder and they named these structures as *Mutra Vaha Nadis* (nephrons). But on scientific parameters, fact has been proven that absorption occurs at the level of intestine and absorbed products and transported to bladder via kidney. After detailed study of Ayurvedic and modern literatures we can conclude that kidney should be included in the *Mutra Nirman Prakriya* which is the main organ of filtration i.e., urine formation.

REFERENCES

1. Sushruta Samhita by Sharma . P.V., Sharir Sthan 9/19, chaukhambha Vishvabharti,Varanasi

2. Sushruta Samhita by Sharma .P.V., Sharir Sthan 9/18, Chaukhambha Vishvabharti,Varanasi
3. Sushruta Samhita by Sharma .P.V., Sharir Sthan 9/7, Chaukhambha Vishvabharti,Varanasi
4. Sushruta Samhita by Sharma .P.V., Sharir Sthan 9/25, chaukhambha Vishvabharti,Varanasi
5. Shabd Kosha, first chapter 1/3/9.
6. Sushruta Samhita – Dalhana commentary by Sharma.P.V., Nidana Sthan,9/18, Chaukhambha Vishvabharti, Varanasi
7. Atharvaveda 1/3/6
8. Sushruta Samhita by Sharma. P.V., Chikitsa Sthan,7/8, Chaukhambha Vishvabharti,Varanasi
9. Sushruta Samhita by Sharma. P.V., Sharir Sthan,4/21, Chaukhambha Vishvabharti,Varanasi
10. Sushruta Samhita by Sharma. P.V., Chikitsa Sthan,4/22, Chaukhambha Vishvabharti,Varanasi
11. Sushruta Samhita by Sharma. P.V., Chikitsa Sthan,4/23, Chaukhambha Vishvabharti,Varanasi
12. Charaka Samhita with English translation by Dr. Ram Karan Sharma and Vaidya Bhagvan Dash Vimana Sthana 5/36, Chaukhambha Sanskrit Series Office, Varanasi
13. Charaka samhita with English translation by Dr. Ram Karan Sharma and Vaidya Bhagvan Dash Vimana Sthana 5/32, Chaukhambha Sanskrit Series Office, Varanasi.
14. Sushruta Samhita by Sharma. P.V., Sharir Sthan,9/11, Chaukhambha Vishvabharti,Varanasi
15. Sushruta Samhita by Sharma. P.V., Sharir Sthan,9/12, Chaukhambha Vishvabharti,Varanasi
16. Sushruta Samhita by Sharma. P.V., Nidana Sthan,3/24, Chaukhambha Vishvabharti,Varanasi
17. Sushruta Samhita by Sharma. P.V., Nidana Sthan,3/21, Chaukhambha Vishvabharti,Varanasi
18. Sushruta Samhita by Sharma. P.V., Nidana Sthan,3/22, Chaukhambha Vishvabharti,Varanasi
19. Sushruta Samhita by Sharma. P.V., Nidana Sthan,3/22, Chaukhambha Vishvabharti,Varanasi
20. Sushruta Samhita – Dalhana commentary by Sharma.P.V., Nidana Sthan,3/22, Chaukhambha Vishvabharti, Varanasi
21. Ashtanga Hridaya by Kunte A M with Arundatta.In : Sarvangasundari, Commentarey. Nidana Sthan 9/1, Chaukhambha Orientalia, Varanasi
22. Ashtanga Hridaya by Kunte A M with Arundatta.In : Sarvangasundari, Commentarey. Nidana Sthan 9/2, Chaukhambha Orientalia, Varanasi

23. Sarangdhara Samhita by Himasagara, p., Murethy Chandra, Purva Khanda 5/23, chaukhambha Sanskrit series office, Varanasi
24. Sarangdhara Samhita-Adhamalla commentary by Himasagara, p., Murethy Chandra, Purva Khanda 6/6, chaukhambha Sanskrit Series Office, Varanasi
25. Kim E. Barrett, Ganong's Review of Medical Physiology, Mcgraw- Hill publication, 23rd Edition- 2010, page no- 645-646.
26. Kim E. Barrett, Ganong's Review of Medical Physiology, Mcgraw- Hill publication, 23rd Edition- 2010, page no- 647-648
27. Sarangdhara Samhita by Himasagara, p., Murethy Chandra, Purva Khanda 6/6, Chaukhambha Sanskrit Series Office, Varanasi.
28. Ashtanga Hridaya by Kunte A M with Arundatta.In : Sarvangasundari, Commentarey. Sharir Sthan 3/61, Chaukhambha Orientalia, Varanasi
29. Sarangdhara Samhita by Himasagara, p., Murethy Chandra, Purva Khanda 6/6, Chaukhambha Sanskrit Series Office, Varanasi.
30. Sushruta Samhita by Sharma .P.V, Nidana Sthan 9/21, Chaukhambha Vishvabharti,Varanasi

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