

AN INSIGHT OF NEPHROLOGY IN AYURVEDA & MODERN SCIENCE

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ABSTRACT

Ayurveda, the science of Ayu (life) is the ancient science of health. Urine formation has major role in human physiology. Despite the no availability of microscope, vision of apta jana (eminent scholar) of Ayurveda is so clear, the detail of urinary system in their text is highly appreciable. Aahar (diet) is said as Moola of body, which after digestion is transformed in to nutritive part (Aahar Rasa) and waste product (Urine and Feces). Modern Medical Science depicts that urine is filtrate of blood plasma and organ of filtration is kidney. Ayurveda describes that Mutra (urine) is formed from Aahar Rasa in to Antra (Intestines). The process of Mutra Nirman (urine formation) in

Ayurveda is much controversial topic, so author have tried to prove that Ayurvedic concept of urine formation is how much scientific on the parameter of Modern Medical Science.

KEYWORDS: Aahar, Mutra nirman prakriya, Antra, Kidney, Ureter, Urinary Baldder.

INTRODUCTION

Urinary system of human body is explained in various Ayurveda text books. The Ayurveda text is reservoir of knowledge but it is scattered here and there in Samhita. The anatomy and physiology of urinary system is described in very extended form in different part of samhita but there if lack of relationship with each other. All the acharya have described the anatomy of urinary system in the form of mutravah srotas having basti and medra as mool.^[1,2,3]

The vrikka is described in different context as mool of medovah srotas. The components of urinary system according to modern anatomy and physiology are kidney, ureters, urinary bladder and urethra. On the basis of deep study of mutra vaha srotas, it seems that only kidney should be the mool of mutravaha srotas.

Mutravaha Srotas

Mutra is dravarupi kitta produced as a result of Aharpaka. It is stored in Mutrasaya. The mool of Mutravaha Srotas are Vasti and Medra. The brief anatomy of Vasti is described by Acharya Shusruta. After deep study of relation and position of Vasti, it seems that it is urinary bladder which function is storage of urine not its formation. Here the term Medhra denotes the penile parts of urethra.

Urinary system

The urinary system includes kidney, ureter, urinary bladder and urethra. Kidney is the organ of blood filtration where the process of urine formation occurs. After detailed study of verse written by Acharya Shusruta, we can say that kidney have millions of nephrons which filter the blood. Ureters are a pair of muscular tubes which convey the urine from kidney to urinary bladder. Gavini term is used for ureters in Ayurveda.^[4] Urinary bladder is pelvic organ in relation of rectum, anal canal, uterus and folds of peritoneum covering its surfaces, which only store the urine. Urethra is 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

Urine is the final plasma filtrate which mainly contains water and electrolytes. Blood is filtered by tuft of capillaries present in the Bowman's capsule. After that filtrate enters in loop of Henley, PCT and DCT then to collecting ducts opening into Calyx of kidney. The reabsorption of glucose and electrolytes only occurs in loop of Henley, PCT and DCT. The plasma filtrate is called urine only when it reaches in collecting duct. Collecting ducts unite to form minor calyx, minor calyx opens in major calyx open in renal pelvis from where ureters begins.

Ayurvedic physiology of urine formation

Acharyas described that in Pakvasaya Ahar is divided in two parts which are Sara and Kitta (Maladrava). In Pachyamanashya or Grahni, Ahara is divided in two parts which are Sara and Kitta Bhaga(Maladrava). Sara is nothing but productive nutritious part of food and Kitta is

Mala. Ahara Rasa containing the water content and nutritive substance which is absorbed in grahani while remaining Kitta is fecal matter. This fecal matter is divided in two parts one is water content and other part is stool content. This water content of Kitta is further described as Mutra Bhaga(Urine), that urine after absorption and filtration reach into Mutravahi Dhamani 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 each Vata, Pitta, Kapha, Shonita and Rasa, like that two for each Shukra, Purish, Artava and two Dhaminis for transportation of Mutra. The two Mutravahi Dhamini is designated for the function of transportation of urine. According to Shusruta Mutravahi Dhamini extend from the level of Nabhi to Basti.^[6] By the number, position and functions, these Mutravahi Dhamini it seems to be resemble with two ureters.

There is big question to establish that in basti which anatomical structure should have to include regarding Mutra Nirman Prakriya. In the process of solving this question reviewing of Mutra Nirman Prakriya according to vedic and ayurvedic scripture is become necessary because it can give clue to consider the anatomical structure which takes part in Mutra Nirman as well as storage.

Regarding to consider or not consider Vrikka in Mutra Nirman Prakriya, it is also required to see the statements of different Ayurvedic acharyas to clarify the function of Vrikka. During the review it is found that according to different acharyas, Vrikka is written as Moola of Medovaha Srotas but not at any place the function of Vrikka is described related to Mutra Nirman Prakriya. Except these references there is not any description of function of vrikka. Further to clarify this query, it become necessary to see, the Mootra Nirman Prakriya according to Vedic and Ayurvedic scriptures.

Modern science also describes that when blood get filtered in kidney the product is named as filtrate of blood not the urine proper. This filtrate is also highly nutritious devoid of only blood cells when finally gets processed and come in collecting duct then only called as urine. This urine no more stays in kidneys but immediately expelled out from kidney and carried through ureters to urinary bladder, where urine can become further concentrated hence Mutra Nirmana Prakriya in Ayurveda is justified.

In present scenario if we see the macro and micro anatomy of kidney, it opine that micro anatomy of kidney shows the great involvement of arterial system which also involve in the

process of filtration of blood which is a source of nutrition for the cells of the body. During the process of filtration of blood most of the nutrients and water contents are reabsorbed and again reach in the systemic circulation of body and unwanted substances and excessive part of the water separates from the blood and then collected by the collecting ducts, at this level separated part from the blood is termed as urine. This whole process shows resemblance with the concept of Mutra Nirmana Prakriya given by Acharya Susruta^[8] and commentary given by Dalhana on Susrutas statement regarding to Mutra Nirmana Prakriya.

CONCLUSION

After the detailed study of ayurvedic and modern literatures we can conclude that Kidney should be included in the Mutra Nirmana Prakriya. Thus we should include following organs in Ayurvedic Nephrology Vrikka (Kidney), Gavini (Ureter), Basti (Urinary bladder) and medra (Penile part of Urethra).

REFERENCES

1. Mutravahanam tu srotsam bastirmulam vankshanau cha.(Cha.Vi .5/9).
2. Mutravahe dvay tayormulam bastirmedram cha. (S.S.IA. 9/35).
3. Mutravahinam srotasam mulam bastirvanksanau cha. (A.S.IA. 6/30).
4. Yadteshu gavinyoryad bastavadhisansrutam,avam te mutram muchyatam bahirbaliti sarvakam.(Atharveda 1/3/6).
5. Ashayastu –vatashayah, pittashayah, shlesmashyosraktashayah amasayah pakvasayo mutrashayah strinam garbhasayoashtamam iti. (S.S. IA. 5/8).
6. Tasam tu nabhiprabhvanam dhamininamurdhvaga dasha, dasha cha adhogaminyah chatasratiryagah, Adhogamastu vatamutrapurishasukratavadinya adhovahanti.....mutravastim abhiprapanne utravahe dvay. (S.S. IA.9/7).
7. Aharasya rasa sara sarhino maldravah, sirabhistannalam neetambastau mutratvamapnuyat, tatah kittam cha malam geyam tisthate pakvashaye cha tat. (Sarangdhara S.P.Kh. 6/10).
8. Pakvasgayagatastatra nadyo mutravahastu yah, tarpyanti sada mutram saritam sagaram yatha. sukshmatvannopuplabhayate mukhanyasam sahasrashah. Nadiabhirupnitasya mutrasyamasayantarata, jagratah swapatash chaiv sa nisyanden pooryate, amukhatsalilenyastah parshvebhayah pooryate navah ghato yatha tatha viddhi vastirmutrane pooryate. (S.S.Ni. 9/25).
9. Anyatro vinirgatasya mutrasya mutrasayah prapti sadhateparshva dvayasthe nadyau

gavinayo.(Palkavpya sutra)

10. (Kim E. Barrett, Ganong's Review of Medical Physiology, Mcgraw-Hill Publication, 23rd Edition-2010, Page No-645-648).