

Samprapti of Diabetes Induced Microalbuminuria - A Review

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ABSTRACT

Introduction: Microalbuminuria is a part of diabetic kidney disease. (DKD). due to long standing Diabetes, microalbuminuria ; the leakage of small amounts of albumin into the urine due to altered glomerular permeability and deposition of glycaemic products over the glomerular membrane is manifested. presence of urine albumin more than 30mg and up to 300mg is diagnostic criteria. It reflects the state of increased endothelial damage. **Objective:** To critically review and analyze the samprapti of diabetes induced microalbuminuria. **Methodology:** Conceptual study. Literature review on the subject including critical understanding of DIM(Diabetes induced microalbuminuria) from existing modern medical literature and its interpretation in terms of ayurveda Siddhanta. **Discussion-** Understanding newer modern clinical condition and its applied aspects later developing the samprapti of the same as per the principles of Kayachikitsa itself is a challenge to the research field. Based on the same new dimension in framing the modern clinical condition in terms of ayurveda can propose a comprehensive clinical protocol to new age modern clinical problem like DIM in ayurveda. This opens a new unexplored potent clinical area for applied ayurveda, applied Kayachikitsa and role of rasayana in the management of DIM. **Conclusion:** Developing clinical protocol and SOP for challenging unexplored modern clinical conditions is possible by understanding the modern physiopathogenesis and then its clinical application in ayurveda in terms of Kayachikitsa principles is possible and it has lot of scope in the field of Research and ayurvedic super speciality practice so that the policy makers can think about a separate DM course on Vrikkaroga.

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KEYWORDS: Diabetes induced microalbuminuria, DIM, DKD. Rasayana, ayurvedic superspeciality practice

INTRODUCTION

Diabetes mellitus is heterogeneous group of disorder characterised into diabetes. having diabetes for chronic history, damages the renal vascular architecture and damages the functional status of kidney is called diabetic kidney disease¹(DKD). Microalbuminuria is defined as presence of urine albumin more than 30mg and up to 300mg². Poor glycemic control is the risk factor of Microalbuminuria. It reflects the state of increased endothelial damage. Leakage of protein via stream of urine in the patients of uncontrolled diabetes mellitus. 34.4% incidence³ of Diabetes Induced Microalbuminuria found in India. Approximately 400million people with type 2 diabetes worldwide, in that 30-50%will have elevated urine albumin

excretion. The prevalence rate³ is predicted around 37% of cases in Type 2 diabetes mellites. Overall, It has been estimated in approximately one-fourth of patients with T2DM after 5 years of diagnosis In India. Various contemporary school of medicine have explained about diabetic nephropathy and diabetic kidney disease, among these entity diabetes induced microalbuminuria is one of the stage. Currently all nephrologists are practicing as a spectrum of whole nephrology, though separate line of treatment and protocol put forth to practice DIM, modern school of medicine has certain limitations like advising the group medications which hampers the routine status of patients, Prameha is pan of meha with prabhuta avila mutrata. Whereas Madhumeha is

subclassification of Prameha having madhu varna and rasa,

Invariably Vrikkaroga⁴ is vatasthane kledavridhhi. Vitiation of kapha, vata, pitta due to Aharaja, Viharaja, Nidanarthakara (Madhumeha) hetu affects the Jataragni, dhatwagni, Bhutagni in the minutest level with derangement in metabolism is considered as vrikka marmashrita vyadhi, Ayurvedic management on vrikkaroga has huge practice lines up based on samprapti. Untreated Prameha possess various upadhravas told by sushruta and DIM, in allopathy 3 types of chronic diabetic complications are explained, among them it falls under the category of diabetic nephropathy. So, understanding of samprapti and kriyakala are much necessary before planning the chikitsa. Vrikkaroga is not enumerated in Classical Samhita, thorough analysis of concept plays vital role in order to prevent the upadrava.

AIM AND OBJECTIVES

The study was taken with a view of critically analyse and understand vishesha samprapti of diabetes induced microalbuminuria.

MATERIALS AND METHODS

The thorough review of classical textbooks, contemporary textbooks and research article is done to substantiate the stepwise vitiation of dosha, dushya, agni and manifestation of samprapti. Pathology is scientific study of diseases and bridge between science and medicine, pathophysiology is how disease affects the patient physical and functional status, etiopathogenesis is cause and development of disease, physiopathology is altered bodily functions associated with pathology. Where as samprapti is the vyadhi janaka doshavyapara in that dosha dushya sammurchana is developed, samprapti Ghataka are components are bodily humours responsible for actual manifestation of samprapti.

Present study has been taken on the Patients of diagnosed cases of diabetes induced microalbuminuria visiting Kayachikitsa OPD of Taranath Government Ayurvedic Medical College and Hospital Bellary, was documented and analyzed thoroughly to understand the vishesha samprapti.

Samprapti

The various santharpanajanya nidana⁵, direct vitiation of samana and vyana vayu occurs. Intern it causes apana vaigunya, leads to further vitiation of pancha vayu. Due to roukshya and kharaguna vridhhi, Picchila Snigdha, Sukshma guna kshaya, Vata prakopa which leads to loss of mridu guna in srotas and srotovaigunya occurs, it might be avarana janya⁶, Properties of albumin have similarity with kapha and it has been told that normal quality of kapha gives

Bala to shareera, and when it is denatured, it turns into mala⁷, which deranges the normal function. In case of Prameha, kapha is in bahudravavastha along with Nissara Ruphi (albumin) kledavridhhi promote the samprapti.

Regarding dhatu's, according to Vagbhata, vitiation of pitta and kapha leads to Raktha dushti. Through hridaya vyana vayu holds the Dushita rakta which further affects the rasa samvahana⁸ followed by mamsa kshaya, are also responsible for building of toxic substances in the blood stream. From this we can conclude that the main dushya are Rasa and Raktha, mamsa, meda. Siras are the upadhatu of Raktha, it can cause derangement in the integrity of sira.

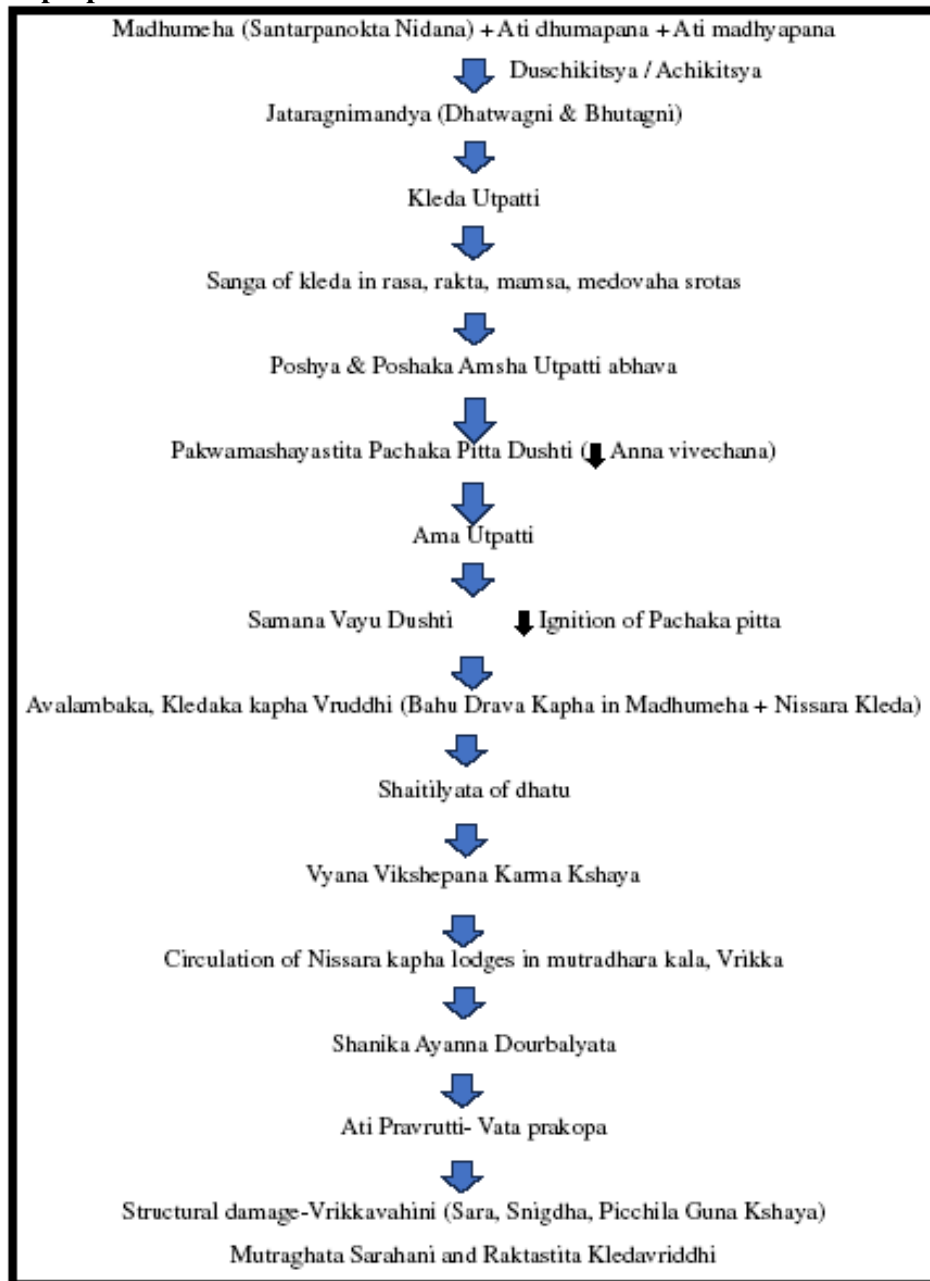
In Prameha rasa, Raktha and medovaha srotodushti⁹ occurs and it also affects the mootravaha, Udakavaha srotas. This srotodushti will cause Rasa Rakta Vikshepana karma avaroda and which leads to the Vyana Kopa. Ati santarpana nidana leads to agni dushti which affects the Uttarottara dhatu by affecting the Jataragni and dhatwagni. The kledaswarupi ama and mandagni vitiates the pachaka pitta situated in between pakwashaya and amashaya. Which has the function of Pachana and anna vivechana. Vitiates samana vayu located near the antaragni, which has the function of promotion of pachaka pitta. The ama and agni dushti further vitiates Avalambaka and Kledaka kapha. This will cause the increased production of dravamsha in kapha, in patient with Madhumeha.

The production of kleda also causes manifestation of Madhumeha which in turn will promote kleda formation and vice versa. Dushitha vata, kapha and Raktha in Prameha promotes the kleda. This kleda and Dushita doshas produce further Shaitilyata and dushti of meda, mamsa, rasa, rakta dhatu's. They circulate throughout the body and get accumulated in the mootradharakala situated in vrikka and basti, which has an embryological origin from Raktha-meda prasada. The function of separation of malabhava from sara is done by Samana vayu and Pachaka pitta. Mootra is the Drava Roopa mala carrying excessive kleda in the body, formed in the mootradharakala situated in vrikka. Kleda, Bahudrava kapha, samana vayu, Pachakapitta, and other dhatu's deranged and get localised in basti and mutradhara kala. Finally ayanadourbalya of mutradhara kala occur due to the Shaitilyata of Dushita dushya. This ayanadourbalya ultimately leads to loss of dhatusaramsa along with kledabhavas because of their loss of ability to hold them back before separating from malabhava. The sangha of srotas due to dushya causes vata prakopa and structural damage of the organ. Albuminuria is

nothing but the excessive loss of dhatu saramsa due to ayanadourbalya.

One of the most common features of glomerular diseases is an abnormal excretion of plasma proteins in the urine. It is the cause and effect of several complications not only at a kidney but also at a systemic level. There are complex changes in the structure and function of the glomerular capillary, as well as in the entire nephron, that are responsible for the final elevation in urine protein concentration. Two distinct phenomena that can result in albuminuria. The first is the elevation of glomerular filtration of circulating plasma proteins that are almost completely retained in the circulating plasma in normal physiologic conditions. The second is a defective or incomplete reabsorption of proteins by the proximal tubule. The two phenomena are interrelated and likely

Flowchart of samprapti



both are present, when large size proteins present in the urine indicates pathological condition.

Samprapti Ghataka

Dosha: Kapha, Vata, Pitta, **Kapha**(Avalambaka, Kledaka), **Vata** (samana, apana, and vyana, later panchavata), **Pitta**(Pachaka, Ranjaka).

Dhatu - Rasa, rakta, mamsa, meda.

Mala - Mutra, Sweda

Agni- Jataragni, dhatwagni, Bhutagni

Dushya - Kleda

Srotas - Udakavaha, mutravaha, raktavaha, medovaha

Srotodushti Prakara - Sanga, Ati Pravrutti

Adhisthana - Vrikka

Vyakta sthana – Sarvadeha

Rogamarga – Abhyantara, Madhyama Rogamarga

Vyadhi Swabhava – Chirakari

MECHANISMS OF MICRO ALBUMINURIA¹⁰

One of the most common features of glomerular diseases is an abnormal excretion of plasma proteins in the urine. It is the cause and effect of several complications not only at a kidney but also at a systemic level. There are complex changes in the structure and function of the glomerular capillary, as well as in the entire nephron, that are responsible for the final elevation in urine protein concentration in several kidney disorders. Two distinct phenomena that can result in albuminuria.

The first is the elevation of glomerular filtration of circulating plasma proteins that are almost completely retained in the circulating plasma in normal physiologic conditions. The second is a defective or incomplete reabsorption of proteins by the proximal tubule. The two phenomena are interrelated and likely both are present, when large size proteins present in the urine indicates pathological condition.

DISCUSSION:

Kidneys are the unsung heroes of our body, working tirelessly, considered as cornerstone of overall health of an individual. As a broad-spectrum view diabetes induced microalbuminuria can be considered as a part of vrikkaroga which was mentioned in Bhaishajya Ratnavali¹². Samana Vayu situated in pakwashaya has importance in malavaha and ambhuvaha srotovichari. helpful to passage adhonayana of kitta. Pachaka pitta responsible for separation of malabhava from saramsa. Apana vayu does mutranishkramana, as a responsible vayu for mutrashoshana. Anubaddhata of mutra is karma of udanavata, sara kitta vibhajanartha vyana Prabhava. Mootra is the Drava Roopa mala formed in the mutradhara kala situated in vrikka. Due to vrikka ayanadourbalya leads to excessive loss of dhatu saramsa is a prime factor in diabetes induced microalbuminuria. Kapha dosha is responsible in blocking micro-vessels and developing microangiopathy. Vata is responsible for degeneration of the structure of the kidney and deterioration in all body components. It can be

brought under broad heading of kleda mala Sanchay, abhishyanda, ama, srotosanga and upadrava of Santarpanokta vikara.

CONCLUSION:

In diabetes induced microalbuminuria tridosha dushti, kleda vridhhi, udaka, Raktha, medovaha srotodushti, Jataragni and dhatwagnimandya followed by Bhutagnimandya. Mootra is the Drava Roopa mala formed in the mootradharakala situated in Vrikka. Due to ayanadourbalya of mootradharakala excessive loss of dhatusaramsa. Therefore, it can be considered as the adhisthana. Hence the approach of vrikkaroga through proper understanding of samprapti is prime factor to conclude the diagnosis and sadhyasadyata of vrikkaroga. Developing clinical protocol for challenging unexplored modern clinical conditions is possible by understanding the modern physio pathogenesis and then its clinical application in ayurveda Kayachikitsa principles is possible and it has lot of scope in the field of Research and ayurvedic super speciality practice.

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