



Research Article

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EFFECTIVENESS OF ARAGWADHADIGANA KASHAYA IN MANAGING MICROALBUMINURIA IN TYPE II DIABETES MELLITUS: A CASE STUDY

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ABSTRACT

Diabetes Mellitus (DM) is one among the most common lifestyle related disorders in the present era. In type II DM, prevalence of microalbuminuria is 20 - 25% in both newly diagnosed and established cases. Microalbuminuria defined as urinary albumin excretion of 30 – 300 mg/day is an earlier sign of vascular damage due to complications of DM and a marker of general vascular dysfunction. Microalbuminuria is seen in the third stage of diabetic nephropathy and is a leading cause of End Stage Renal Disorder (ESRD). In Ayurveda, Lakshanas (symptoms) of Kaphapittavruta Madhumeha (DM with Kapha and Pitta obstruction) show similarity to the features of microalbuminuria. Aragwadhadigana Kashaya (Medicated Decoction) having Kaphapittasamana (reduces Kapha and Pitta humours), Pramehahara, Apatarpana (non nourishing) properties is considered to be effective in Prameha (Obstinate urinary disorders including Diabetes) associated with Kapha Pitta Aavarana (Obstruction). A 60-year-old male patient, already a known case of DM for the past 20 years came to our OPD with complaints of frothiness of urine, urgency of micturition and bilateral ankle swelling for one year along with generalized tiredness for two years. On investigation, 24-hour urine microalbumin was found to be 281 mg/day. The patient was advised to take Aragwadhadigana Kashaya 48 ml twice daily for 30 days. At the end of the study, significant changes in subjective criteria and 24-hour urine microalbumin were observed. This effective treatment protocol can prove as a noninvasive safe therapy in managing Microalbuminuria in Type II Diabetes Mellitus.

Keywords: Microalbuminuria, Madhumeha, Aragwadhadigana Kashaya.

INTRODUCTION

Diabetes Mellitus (DM) is one among the most common lifestyle related disorders in the present era. DM is a group of metabolic disorders that share the phenotype of hyperglycemia¹. Current era faces diabetes and its micro vascular complications as epidemics. According to WHO, 422 million adult people were diabetic in 2016 and 14 November 2016 marked as diabetes day. The prevalence of DM is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. It is predicted that by 2030, DM may afflict up to 79.4 million individuals in India^{2,3}. India is said to be the diabetic capital of the world and Kerala is the diabetic capital of India⁴. In type II DM, prevalence of microalbuminuria is 20-25% in both newly diagnosed and established diabetes⁵.

Microalbuminuria defined as urinary albumin excretion of 30-300 mg/day is an earlier sign of vascular damage due to complications of Diabetes and is a marker of general vascular dysfunction. It is the third stage of diabetic nephropathy⁶. The knowledge about the metabolic and hormonal sequel of hyperglycemia is increasing. And implies this in the context of endothelial dysfunction arises due to production of reactive oxygen species, inflammatory cytokines and growth factors. Altogether it produces pro-inflammatory cytokines and interleukins 1,6,18 and TNF-Alpha which in turn lead to structural and functional changes in the

glomerular endothelium. These considerations lead to the conclusion that glomerular endothelial dysfunction and in particular damage to its glycocalyx represents the most likely initiating step in diabetic microalbuminuria⁷. Renal involvement has a pivotal role in Diabetes and microalbuminuria is a leading cause of End Stage Renal Disorder (ESRD) and also leading cause of DM related morbidity and mortality through leading of overt proteinuria, doubling of serum creatinine etc. Thus it plays a silent killer role. Microalbuminuria is a reversible condition and if treated properly, we can prevent ESRD.

Prameha (obstinate urinary disorders including diabetes) is very well described in Ayurvedic classical text books. Acharya Caraka describes Prameha in Sootra Sthana, Nidana Sthana and Cikitsa Sthana. Acharya Caraka mentions the occurrence of Kaphameha (obstinate urinary disorders including Diabetes, predominantly kapha) as Kaphavruta Apana (Apana Vayu obstructed by Kapha)⁸ in the context of Avarana (obstruction) in Vatavyadhi Cikitsitha Adhyayam (chapter of Vataroga treatment). Hence an involvement of Avarana is justified. 20 types of Prameha are explained by all Acharyas. Among them Madhumeha is mostly correlated to DM. In Sootra sthana, Acharya Caraka beautifully narrates Santharpana Nidana (over nourishment causes), Samprapti (pathogenesis), types- KaphaPittavruta Madhumeha (DM caused by Kapha Pitta obstruction) & Dhatukshayajanya Madhumeha (DM caused due to depletion of tissues) and

Sadhyasadyata (prognosis) of Madhumeha⁹. Susruta Acharya also says about the fatigue and other characteristics of Madhumeha¹⁰. Considering these views about the Madhumeha, we can compare Microalbuminuria to Kapha Pittavruta Madhumeha with Kruchrasadhya¹¹ prognosis. So an Apatarpana (non-nourishing), Kapha Pittasamana, Pramehahara Yoga is to be selected for treating Microalbuminuria. Aragwadhadigana Kashaya¹² is mentioned in Ashtanga Hridaya Sootra sthana, Sodhanadigana Sangraha Adhyaya. It consists of Aragwadha (*Cassia fistula* Linn), Indrayava (*Holarrhena antidysenterica* (Roxb.ex Fleming) Wall.exDC.) Patala (*Stereospermum suaveolens* DC). Kakatikta (*Leea hirta* Roxb. Nees), Nimba (*Azadirachta indica* A Juss), Amrutha (*Tinospora cordifolia* Wild). Madhurasa (*Marsdenia tenacissima* Wight and Arn). Sruvavrksa. (*Flacourtia indica* Merr.), Pata (*Cyclea peltata* H.f.), Bhoonimba (*Andrographis paniculata* (burm.f) Wall ex Nees), Saireyaka (*Barleria prionitis* Linn), Patola (*Trichosanthes dioica* Roxb), Karanjam (*Pongamia glabra* Vent.) Chiruvilwa (*Holoptelia integrifolia* (Roxb.)Planch). Saptachada (*Alstonia scholaris*), Agni (*Plumbago zeylanica* Linn. R.Br.), Sushavi (*Nigella sativa* Linn), Phala (*Randia dumetorum* Lam), Baana (*Barleria prionitis* Linn.), Ghonta (*Ziziphus xylopyrus* (Retz) Willd.) These drugs having the above-mentioned properties via its Tikta (bitter), Kashaya (Astringent) Rasas (tastes) and Ushna veerya (hot potency), justifies the use of Aragwadhadigana Kashaya in the treatment of Microalbuminuria.

MATERIALS AND METHOD

Case Study

Place of Study

Pankajakasthuri Ayurveda Medical College and Post Graduate Centre Hospital, Killy, Kattakkada, Thiruvananthapuram, India.

Ethical clearance

The study has been cleared by IEC vide approval reference number (PKAMC/ADM/01/2017). The study is carried out as per

Personal history

International Conference of Harmonization – Good Clinical Practices Guidelines. (ICH – GCP).

Case presentation

A 60-year-old Christian male patient, chef by occupation, reported to Kayachikitsa OPD, Pankajakasthuri Ayurveda Medical College and PG Centre Kattakkada on 7/12/2018 with Reg.No.18/70166 with complaints of frothiness of urine, urgency of micturition, bilateral ankle swelling for the past 1 year. He also suffered from generalized tiredness for the past 2 years. He is a known case of type II DM for the past 20 years and is on modern medication.

History of Presenting Complaint

The patient was asymptomatic before 20 years. Gradually he noticed increased thirst and diagnosed as having type II DM at that time; started taking modern medication since then. Two years ago generalized tiredness appeared which was insidious in onset; likewise noticed frothiness of urine, urgency and ankle swelling nearly 1 year ago. Thus came to Pankajakasthuri Ayurveda Medical College Hospital for better management through Ayurveda.

History of Past illness

H/O Renal calculi 23 yrs ago and did Lithotripsy

Family history

Father was a known case of DM and 2 siblings are also known cases of DM.

Treatment history

1. Glyciphage 1-0-1(A/f)
2. Glimepiride 0-1-0 (A/F)

Table 1: Personal History

Appetite: Good	Bladder: Increased frequency and urgency present. Day: 5-6 times and Night: 2-3 times of urine output is there.
Allergy: Not Detected	Diet: taking mixed diet, fresh grains, fish and milk daily. Katu - Amla- Lavana Ahara Priyatva and vegetables having Tikta Rasa preferred now. Before the onset of Diabetes, sweets were preferred.
Addiction: Nil	Sleep: Sound
Bowel: Constipated.	Exercise: Tedious work

Systemic examination

Urogenital system

Pain–Absent

Voiding symptoms

Frequency- Increased

Urgency –Present

Incontinence –Absent

Nocturia- Present

Fatigue – Present

Hydration: Normal

No Uremic complexion, Uremic fetor, Breathlessness, Asterixis, Cushingoid appearance, bruising.

No conjunctival pallor

Cardiovascular and respiratory system– No abnormality detected.

Locomotor system

Ankle joint

Inspection – Normal.

Palpation- Pitting edema

ROM

Flexion and Extension- Possible but painful (B/L)

Investigations

On 8/12/2018

FBS - 142 mg/dl.

PPBS- 196 mg/dl.

HbA1C- 8.6%

Blood urea- 25.0 mg/dl.

Creatinine- 0.9 mg/dl.

Uric acid- 4.3mg/dl.

Sodium- 140.5mmol/l

Potassium- 4.2mmol/l.
Urine RE was normal except Albumin - +, Sugar -+
24-hour Urine micro albumin on 9/12/2018-281 mg/dl

Course of treatment

Patient was advised to take Aragwadhadigana Kashaya 48 ml twice daily half an hour before food for a period of 30 days along with modern medications. Patient was advised to report once in 15 days for uninterrupted feedback.

RESULT

Table 2: Observations

Observations	Before treatment	After treatment	After follow up
Objective parameter			
Urine Microalbumin (24 hour)	281 mg/day.	173mg/day.	166 mg/day.
Subjective parameters			
Frothiness	Always	Reduced	Reduced
Urgency	Present	Absent	Absent
Ankle edema	Present	Absent	Absent
Generalized tiredness	Present	Relieved	Relieved
Constipation	Present	Absent	Absent

Thus Aragwadhadigana Kashaya was found effective in reducing the microalbuminuria in type II DM and also in reducing the symptoms.

DISCUSSION

Microalbuminuria is a leading cause of DM related morbidity and mortality by producing overt proteinuria, doubling of serum creatinine etc. The metabolic and hormonal sequel of hyperglycemia produces endothelial dysfunction of glomerular capsule (arises due to production of reactive oxygen species, inflammatory cytokines and growth factors). This results in particular damage to its glycocalyx which represents the most likely initiating step in diabetic microalbuminuria. It can lead to ESRD. Microalbuminuria is a reversible condition and if treated properly, we can prevent ESRD.

In Ayurveda, the Santharpana Nidanans (over nourishment causes) lead to kapha (bodily humour) vardhana (increase) especially Bahudrava Sleshma (Kapha having liquidity in excess) which leads to Agnidushti (impaired digestive power) and Ama (bio toxins) formation. This Ama produces Kleda Vriddhi (increase in body fluids), vitiation of Kledaka Kapha (a division of Kapha-located at stomach) and Avalambaka Kapha (a division of Kapha-located at Chest), which in turn vitiates Udakavahasrotas (channels of water transport) producing Trshna (polydypsia) etc. These altogether produce Kleda of Rasa (plasma), Meda (fat), Rakta (blood), Mamsa (muscle tissue); results in Vridhi (increase) and Sidhilatha (looseness) of these Dhatus (tissues), especially bahu abadha medas (an increase in the quantity and decrease in viscosity of fat). Chances for vitiation of Srotomoola (root of channels) of Rasa, Rakta, Mamsa, and Meda are there. Besides this, Ama produces Samanavayu Dusti (vitiation of a type of Vata-located at stomach) and Pacakapitta Dushti (vitiation of a type of Pitta situated between stomach and large intestine) leading to Koshtasrita Vatamaarga Avarodha (obstruction of movement of Vata indigestive tract). The Vigunitha Vayu (vitiating Vata) takes these Dushyas (vitiating bodily tissues and waste products) to Khavaigunya Pradesa (place of deformity). The function of Mootra is Annasya Kledanirvahanam (elimination of liquid products of metabolism), so excess of Kledanirvahanam (excess elimination of liquids) have to be done in this condition to remove excess Kledatwa of Rasaadi Dhatus. Vrkka (kidneys) is one among the Medovahsrotamoola (root of channels of fat circulation) and Mootravahasrotamoola (root of channels of urine formation) is Basti (urinary tract) and Medhra (penis). Here these Samprapti (pathogenesis) produce Khavaigunya (deformity) in

Vrkka and Basti, the Sthana (place) of Apana (type of Vata present in perineal region). So Vigunitha Vata takes these Dushyas and Doshas (humours) to produce Sthanasamsraya (place of settlement) in Vrkka and Basti. The Dosha dominance is Kapha and Kaphavrtta Apana leads to Kaphameha (obstinate urinary disorders including Diabetes, predominantly Kapha) initially. Kaphamehi with vitiated Raktadi and Pacakapitta Dushti along with Pittala Aharas (foods increasing the Pitta humour)(avoids Madhura and takes more Katu(pungent), Amla(sour) dominant foods produces Pittameham(obstinate urinary disorders including Diabetes, predominantly Pitta). Both of these results in Mootra Atipravrutthi (increased frequency of urination) and Mootravaha Srotodushti (vitiation of root of channels of urine formation) again. This in turn vitiates Vata again via Kaphapitta Avarana (Obstruction to Vata by Kapha and Pitta) and Mootravaha Sroto Atipravrutthi (excessive functioning of channels of urine formation) and along with Vatavardhaka Aharaviharas (foods and activities which increase Vata humour) (kashaya, tikta rasa of saka (leaf) etc.). Thus leading to Kaphapittavrutta Madhumeha; which is Krchrasadhya (difficult to cure) in prognosis; where Vata will attract Ojus (excellency of dhatus) to Basti and eliminate through urine. In this stage, for Samprapti Vighatana (breaking of pathogenesis), medicines having Kapha-Pittasamana, Pramehahara, Apatarpana property has to be selected. So, Aragwadhadigana Kashaya in which most of the drugs are having Tikta, Kashaya rasa, which can tackle Kapha-Pitta vitiation and having Ushna veerya for tackling vata vitiation and having Prameha Samana and Apatarpana property was selected and given to the patient. Thus after the study, I was able to notice the remarkable changes in microalbuminuria level and subjective parameters.

CONCLUSION

Microalbuminuria in type II DM can be correlated to Kapha Pittavrutthi Madhumeha (DM caused due to Kapha Pitta obstruction) stage, one among the Santharpanotha Vyadhis (diseases caused by over nourishment). By this case study, it has been found that a Kapha Pitta Samana, Pramehahara and Apatarpana Medicine were effective in this condition. Hence it is emphasized that Aragwadhadigana Kashaya is having a significant role in the management of Microalbuminuria in Type II DM. So, it can be concluded that, Ayurvedic line of management gives satisfactory answer for the prevention of ESRD, via the cure of microalbuminuria as well as it is found equally beneficial for the promotion and preservation of health.

Recommendations

Microalbuminuria in type II DM can be correlated to Kapha Pittavruttha Madhumeha stage, one among the Santharpanotha Vyadhis. By this case study, it has been found that a Kapha Pitta Samana, Pramehahara and Apatarpana Medicine were effective in this condition. But the limitation of my study was limited time period, i.e. only one month. By this intervention of one month, the reduction in microalbumin was found to be 173mg/day from 281 mg/day, which was obviously a good thing, but the fact is that the patient is having microalbuminuria yet. So, longer duration of intervention is suggested based on this study. If Avarana is not treated properly, it will lead to Dhaturkshayajanya Madhumeha which is incurable in nature. After successfully treating the kapha Pitta vitiation, we have to go for Vatasamana (reduce Vata humour) measures like Dhanwantharam ghritam (ghee preparation mentioned in treatment of Prameha) and Rasayanas (rejuvenators) like Silajatu (most wholesome drug for urinary disorders) for prevention of recurrence and prevention of progression to ESRD. This will promote a preventive Ayurvedic management of Diabetic Nephropathy.

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