

AN OBSERVATIONAL STUDY ON PRAMEHA UPADRAVA W.S.R. TO DIABETES COMPLICATIONS

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ABSTRACT

Diabetes is a metabolic disorder, which leads to many complications affecting many vital organs and rendering the body disabled. Overall, 90% of patients having diabetes for more than 15 years will exhibit at least one and usually several of these complications of diabetes with an inexorable course to disability and premature death. Also, therapeutic failure is possible, the greatest problem failing diabetologists or clinicians today. *Prameha* is a urinary disorder. *Madhumeha* is one of the types of *prameha* or if not treated properly all *pramehas* will get converted into *madhumeha*. The disease *Prameha* and its *upadrava* are studied with the help of classical texts and related literature, also a concept of *Vyadhi Upadrava Sambandha* in the present era with reference to *Prameha* is studied. To support the concept of *Prameha upadrava* observational study was undertaken. *Prameha upadrava* under each category of *vataj*, *Pittaj*, and *Kaphaj* describes the dominant *doshas* in each diabetes patient. They are 12 - *Vataj*, 13 - *Pittaj*, 11 - *Kaphaj Prameha upadrava* and also *prameha pidaka* is *upadrava* of *Prameha*. All patients had *upadrava* of *prameha* either of *Vataj*, *Pittaj*, or *Kaphaj* in diabetes. *Vataj Upadrava* can be correlated with diabetic neuropathy. *Pittaja* and *Raktaja upadravas* may be correlated with retinopathy and *Kaphaja upadrava* may be correlated to nephropathy in diabetics.

Key words: *Prameha upadrava, Diabetes Complications, Madhumeha, upadravas*

INTRODUCTION

Prameha is known to Indians from the Vedic period onwards by the name '*Asrava*' (*Prameha*). They were treating this disease very effectively at that time also. *Prameha* is also described as '*Mahagada*' (major disease) because it affects most parts of the body and every cell of human physiology. *Prameha* which has been correlated with diabetes has become a global problem in spite of advances in modern science. Changing demographic profiles, technological progress, and nutritional transition with a sedentary lifestyle and unsuitable diet have contributed to a number of chronic health problems like cardiovascular disease (CVD), Diabetes mellitus (D.M.), liver and kidney diseases, cancer, etc., of which D.M. is increasing worldwide and inviting major health problems from its complications. Though *Prameha* is *Tridoshaja Vyadhi*, the relative predominance of any one *dosha* and *dooshya* enables its classification into *Vataj*, *Pittaj*, and *Kaphaj* *Prameha*.^[1] The characteristic features of all types of *Prameha* are *Prabhoota* and *Aavila Mootrata* and *Medo Dushti Lakshanas* (excessive urination and turbidity in urine and symptoms of vitiated *medo-dhatu*).^[2] *Doshas* which are involved in the pathogenesis of the disease, this may further complicates the problem and must be considered in the management of the original disease that is called '*Upadrava*'.^[3] *Prameha* patient dies usually due to *Prameha upadravas*. *Sushruta* has described *Prameha* complication according to *dosha* predominance. *Brihat trayee* has described *Prameha pidaka* as a major complication of *Prameha*. *Sushruta* has mentioned '*Malabadhata*' (Constipation) as a commonly observed complication as the body of the diseased person is loaded with *meda*, hence they do not respond to common purgatives in usual doses. *Sushruta* noted that *Dosha* predominance is a primary factor in *Prameha Upadrava* (complication).^[4] Some *upadravas* are not fatal but they severely disable day to day life of the patient due to *Eka-dashindriyakarmahani* like - Retinopathy, Neuropathy, Erectile dysfunction, etc. With the use of *Rasayandravyas* which are abundantly mentioned for *Prameha*, its *Upadravas* can be prevented or their occurrence can be delayed and the patient can live a less

painful life with them, but for this earliest prediction or detection of these *upadravas* is the most important part of *Prameha Chikitsa*.^[5] An individual suffering from *Prameha* usually seeks the doctor's help when the complications have developed fatigue; excessive thirst and excessive urination are some of the symptoms for which the diseased person approaches the physician. Modern physiological theories attribute this complication to the involvement of the autonomous nervous system.^[6] In most cases only after the complications have developed, individuals suffering from *Prameha* seek a physician's advice. It has been noted that many of the patients of *Prameha* are taking conventional treatment, but it was only a conservative type which reduces BSL only.^[7] So many patients are not satisfied as it has a long-term treatment regime. Thus, the study of *Prameha upadrava* thoroughly is need of today to reach the goal of care for disease with the ancient science of life i.e., *Ayurveda*.

Aim and objectives:

1. To collect all the descriptions about *Prameha* and its *Upadrava*.
2. To study the *Prameha Vyadhi* thoroughly
3. To study the *Upadravas* of *Prameha* thoroughly with the help of classical texts and related literature.
4. To study the concept of *Vyadhi upadrav sambandha* in the present era with reference to *Prameha*.

MATERIALS AND METHODS:

This study of *Prameha Upadrava* was carried out in two phases -

Phase I: Collection of all references about *Prameha* and its *upadrava* from Ayurvedic *Samhita grantha* and modern Literature.

Phase II: Study of *Prameha upadrava* clinically in the present context.

Phase II:

1) Population:

- I. The patients coming to the OPD of *Rognidan Vikruti Vigyana* department were studied from July 2007- June 2008.

II. The patients in IPD of *Rognidan Vikruti Vigyana* and *Kayachikitsa*.

2) **Sample:** Patients with Diabetes mellitus were selected randomly from the above Population with the help of selection criteria.

3) **Study criteria:** There are 100 patients taken for the study.

Inclusion criteria:

- 1) Patients will be selected randomly irrespective of sex.
- 2) Patients of the age group between 16 to 75 years.
- 3) The OPD and IPD patients complaining or presenting signs and symptoms of *Prameham* (Diabetes) were selected.

Signs and symptoms:

Prakarshen Mutrapravrutti- increase urine frequency.

Prabhut Mutrapravrutti- increases urine output

Madhuraccha Tanoratha - increases blood sugar level.

- 4) Patient with a past history of Diabetes mellitus (D.M.)
- 5) Diabetic patients selected according to Diagnostic criteria for plasma glucose concentration: -

Fasting (F): 120 mg% above.

Post Prandial (P.P.): 200 mg% above.

Exclusion criteria:

- 1) Unconscious and uncooperative patients.
- 2) Patients below 16 years and above 75 years of age.
- 3) *Garbhini* (ANC) and *Sutika* (PNC).

Proforma:

The patients were interviewed with the help of pre-designed proforma i.e., case record form (CRF) followed by clinical examination and necessary investigation.

The CRF included data on age, sex, BMI (Body Mass Index), chart of *prameha upadravas* as per *dosha*, and diabetes complication according to modern were studied.

Conformation of Prameha Upadrava:

Conformation of *Prameha Upadrava* as per *Dosh* and *Dushya* which

described in *Breeha-trayees* as the following was done.

Vataj Prameha Upadrava:

1. *Udavartham:* Upward movement of *Vata*.
2. *Kampan:* Tremor
3. *Hridgraham:* Gripping pain in the chest region
4. *Lolatha:* Affinity
5. *Shoolam:* Pain
6. *Anidra:* Insomnia
7. *Shosha:* Wasting
8. *Kasa:* Cough
9. *Swasa:* Difficulty in breath
10. *Badhapureeshathwa:* Constipation
11. *Daurbalya:* Weakness
12. *Stambha:* Stiffness

Pittaj Prameha Upadrava:

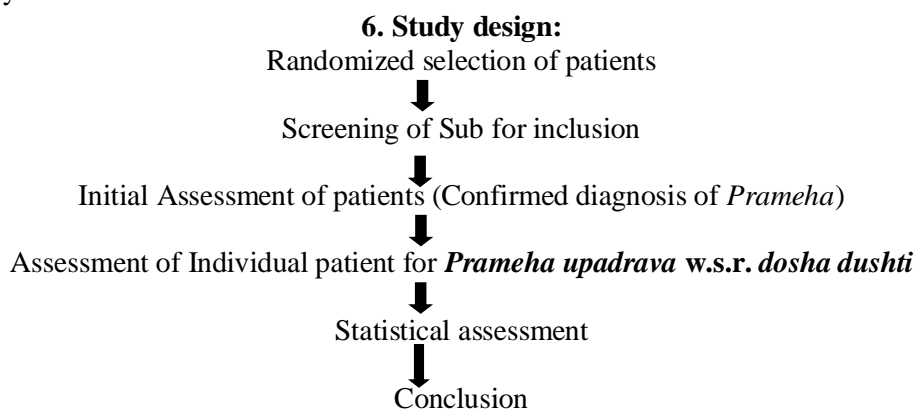
1. *Bastimehanyotoda:* Pain in the Bladder and Urinary path.
2. *Mushkavadaranam:* Pain in testes.
3. *Jwara:* Fever
4. *Daham:* Burning sensation
5. *Trishna:* Thirst
6. *Amlika:* Acidity
7. *Moorchha:* Unconsciousness
8. *Vit bhedanam:* Loose motion
9. *Hridaya Shoola:* Pain in heart region
10. *Nidranasam:* Loss of sleep
11. *Pandurog:* Anaemia
12. *Pit - Vin mutra:* yellowish discolouration of Urine and stool.
13. *Daurgandhya:* Foul smell to the body.

Kaphaj Prameha Upadrava:

- 1) *Avipakam:* Indigestion
 - 2) *Aruchi:* Loss of Appetite
 - 3) *Chhardi:* Vomiting tendency
 - 4) *Atinidra:* Excessive sleep
 - 5) *Kasa:* Cough
 - 6) *Peenasa:* Cold with running nose
 - 7) *Kapha prasek:* Excessive salivation
 - 8) *Mansopchay:* Obesity
 - 9) *Aalasya:* Lazyness
 - 10) *Shaithilya:* Flaccidity
 - 11) *Makshikop Sarpanam:* Files get attracted towards the urine, and sweat of *pramehi* patients.
- Along with these signs and symptoms, diabetic complications were studied.
1. Hypertension - B.P. 140/90 mmHg above

2. Retino pathy - Fundoscopy S/o retinopathy
3. Nephropathy - USG abdomen and necessary biochemical test S/o Nephropathy.
4. Angiopathy: C.T. Brain - S/o Cerebrovascular accidents. Vibration test s/o Neuropathy.
5. Infection: Pulm. koch's _ X-ray chest S/o Koch's, Wound, UTI Microscopic urine examination were done for urinary tract infection.

For this study, necessary investigations were done e.g., ECG, fundoscopy, USG, X-ray, etc. Also, Haematological and biochemical tests e.g., BSL, Blood Urea, Creatinine, Sr. Bilirubin, lipid profiles, protein level, and urine ketone bodies were done. Also, *prameha pidaka* (carbuncle) was studied. *Dosha dushti* was considered by standard Ayurvedic Texts.



OBSERVATION & RESULT:

Table 01: Age and type of D.M.: -

Age	Type – 2	Percentage (%)	Type – 1	Percentage (%)	Total
16 – 20 yrs	00	00	01	05	01
21 – 30 yrs	02	2.5	04	20	06
31 – 40 yrs	07	8.75	05	25	12
41 – 50 yrs	25	31.25	02	10	27
51 – 60 yrs	24	30	04	20	28
Above 60 yrs	22	27.5	04	20	26
Total	80		20	0	100

The most affected age group is 41 - 50 years, i.e., 32% with Type – II diabetes, and 31 - 40 years i.e., 25% with Type – I diabetes. In diabetes, the non-insulin dependent diabetes mellitus was leading with 80%. The patients with Insulin depended on diabetes mellitus were 20%.

Table 02: Male and Female percentage of Diabetics:

Type	Male	Percentage (%)	Female	Percentage (%)	Total
Type – 2	34	42.5	46	57.5	80
Type – 1	10	50	10	50	20
Total	44		56		100

The total No. of male patients suffering from diabetes were 44% and females were 56%. The males suffering from NIDDM (Type - 2) group were 43% and those from IDDM (type - 1) group were 50%. The females suffering from NIDDM (Type - 2) group 57% more than females suffering from IDDM 50%.

Table 03: BMI (Body Mass Index):

BMI	Type-1	Percentage (%)	Type-2	Percentage (%)	Total
<18	02	10	05	6.25	07
>18<24	05	25	25	31.25	30
>25<29	07	35	34	42.5	41
>30	06	30	16	20	22

Overweight patients were present in type -II 50/80 (63%) and 13/ 20(65%) in type –I. Underweight patients were present in type - II 5/80 (6%) and 2/20 (10%) in type – II D.M.

Prameha Upadrava:

Table 04: Vataj Upadrava:

Sr. No.	Vataj Upadrava (12)	Total (100)	Type- 2 (80)	Percentage (%)	Type – 1 (20)	Percentage (%)
1	Udavartham	18	15	18.75	03	15
2	Hridgraham	21	17	21/25	04	20
3	Shoolam	46	36	45	10	50
4	Shosha	27	20	25	07	35
5	Swasa	31	25	31.25	06	30
6	Daurbalya	70	57	71.25	13	65
7	Kampan	30	23	28.75	07	35
8	Lolatha	38	31	38.75	07	35
9	Anidra	22	17	21.25	05	25
10	Kasa	23	16	20	07	35
11	Baddhapureeshathwa	32	24	30	08	40
12	Stambha	35	28	35	07	35

Daurbalya and shoolam are mostly seen in Vataj Upadrava of Prameha.

Table 05: Pittaj Upadrava:

Sr. No.	Pittaj Upadrava (13)	Total (100)	Type- 2 (80)	Percentage (%)	Type – 1 (20)	Percentage (%)
1	Bastimehanyotoda	16	14	17.5	02	10
2	Jwara	27	20	25	07	35
3	Trishna	59	47	58.75	12	60
4	Morchha	33	22	27.5	11	55
5	Hridayashoola	17	16	20	01	05
6	Pit – Vinmutra	20	14	17.5	06	30
7	Mushkavadaranam	20	17	21.25	03	15
8	Daham	68	55	68.25	13	65
9	Amlika	23	18	22.5	05	25
10	Vitbhedanam	17	14	17.5	03	15
11	Nidranasam	24	19	23.75	05	25
12	Pandurog	13	13	16.25	00	00
13	Daurgandhya	53	45	56.25	08	40

Daham, Daurgandhya, and Trishna are mostly seen in Pittaj Upadrava of Prameha.

Table 06: Kaphaj Upadrava:

Sr. No.	Kaphaj Upadrava (11)	Total (100)	Type- 2 (80)	Percentage (%)	Type – 1 (20)	Percentage (%)
1	Avipakam	25	19	23.75	06	30
2	Chhardi	22	15	18.75	07	35
3	Kasa	24	17	21.25	07	35
4	Kapha prasek	36	31	38.75	05	25
5	Aalasya	45	36	45	09	45
6	Makshikop Sarpanam	43	38	47.5	05	25
7	Aruchi	49	37	46.25	12	60
8	Atinidra	51	41	51.25	10	50
9	Peenasa	14	08	10	06	30
10	Mansopachay	38	29	36.25	09	45
11	Shaithilya	55	45	56.25	10	50

Shaithilya, Atinidra, Aruchi, and Aalasya are mostly seen in kaphaj Upadrava of Prameha.

Table 07: Prameha Pidaka (Carbuncle) in Prameha Upadrava:

Prameha Pidaka (Carbuncle)	Total (100)	Type – 2 (80)	Percentage (%)	Type – 1 (20)	Percentage (%)
Present	03	02	2.5	01	05

Of 20 patients with type - I diabetes, 1 (5%) patient showed *Prameha Pidaka*, and out of 80 patients with type - II diabetes, 2 (2.5%) patients showed *Prameha pidaka*.

Table 08: Diabetic Complication:

Sr. No.	Diabetic Complication	Total (100)	Type – 2 (80)	Percentage (%)	Type – 1 (20)	Percentage (%)
1.	Neuropathy	43	34	42.5	9	45
2.	Hypertension (HTN)	18	13	16.25	5	25
3.	MI (Myocardial Infarction)	01	01	1.25	0	00
4.	IHD	02	01	1.25	1	05
5.	C.V.A.	10	07	8.75	3	15
6.	Erectile dysfunction	05	05	6.25	0	00
7.	Retinopathy	13	12	15	1	05
8.	Nephropathy	7	06	7.5	1	05
	Infection: -					
1.	Wound/ulcer	6	4	5	2	10
2.	UTI	4	3	3.75	1	05
3.	Pulm. Koch's	7	6	7.5	1	05
4.	Pruritus vulvae	9	7	8.75	2	10
5.	Generalized Pruritis	3	2	2.5	1	05
6.	Balanoposthitis	2	2	2.5	0	00
7.	Br. Asthama	3	2	2.5	1	05
8.	H. Zoster	1	0	0	1	05

From the above chart, it is observed that Neuropathy is one of the major complications of diabetes and is present in 43% of patients. Secondly, Hypertension was observed in 18% of patients, Retinopathy in 13%, and Nephropathy in 7% of patients. Also, infections like UTI (Urinary tract infection), Pruritus vulvae, and Pulmonary Koch's were observed as complications in diabetes.

DISCUSSION

Upadrava always develops after the underlying disease, and it is always associated with the main disease. It can be minor or major, in its presentation. It can be compared with complications in modern science.^[8] *Madhukosha* commentary states that- *Upadrava* can be defined as 'another disease which develops due to vitiation of similar *doshas* involved in the main disease.'^[9] *Acharya sushruta* has mentioned *upadrava* as '*Aupsargik*' *vyadhi* because principle *dosha* is involved in the formation of disease and *upadrava* is the

same.^[10] According to *kashyapacharya vyadhi* which gets developed first is called, *Anubandhya* which is *pradhan vyadhi*, and *upadrava* is dependent on the *pradhan vyadhi* hence it is *Anubandh*, *Apradhan*, or *partantra vyadhi*. Again, *dosha* is involved in the development of both of these *vyadhi* being same, by the treatment of principle *vyadhi*, *upadrava* also gets cured.^[11]

Acharya charaka has described 2 types of *upadrava*- *sthula* and *anu upadrava*. *Sthula* means *balwan* i.e., major, and *anu* means *abalwan* or minor complication. This *sthula* and *anu* can be decided in two ways i.e. if the *upadrava* developed are with its all *lakshanas*, then it is said to be *sthula upadrava* and if it is not with all its *lakshana*, then it is *anu* or *Abalwan upadrava*.^[12] *Upadrava* being a type of *Roga* has its individual *samprapti* and *lakshanas*. The difference is that *vyadhi* develops individually and *upadrava* gets developed in a *vyadhi* due to further involvement of the same *doshas* involved in *vyadhi* formation and thus *upadrava* is always related to the main underlying disease.

Prameha Upadrava:

Considering the pathogenesis of *prameha*, *acharya charaka* mentioned *upadravas* of *prameha* are mainly important. Due to maximum *dosha -dushya*, patient of *prameha* is prone to many complications. The disease involves *upadravas* affecting the *marmasthanas* of the body. *Prameha upadravas* are difficult to treat as stated by *Acharyas sushruta* that patient of *prameha* dies usually due to its *upadravas*. *Acharya sushruta* has described *prameha upadrava* according to *dosha* predominance and it is a primary factor in *prameha upadrava*. *Acharya sushruta* documents that ‘*Mala-baddhata*’ (Constipation) is a complication of *prameha* because an individual has an excessive concentration of *meda*. He also described *prameha pidika* (Diabetic carbuncle) as a major complication of *madhumeha*. The following *upadravas* under each category of *kaphaj*, *pittaja*, and *vataja* describe the dominant *doshas* in each diabetic patient.

Vataja Upadrava:

- 1) **Udavartam:** It is the upward movement of *vata-dosha*. It occurs due to gastrointestinal neuropathies in diabetes.
- 2) **Hridgraham:** Gripping pain in the chest region. It is also related to cardiac neuropathy in diabetes.
- 3) **Shoolam (Pain):** Pain is a complication in diabetes as polyneuropathy or pain in the abdomen is a symptom of diabetic ketoacidosis
- 4) **Shosha (Wasting):** Wasting in *prameha* due to *agnimandya*, there is loss of weight and there is no formation of proper *dhatu*s. In *prameha mansa dhatu* is also affected as in *aptarpanjanya samprapti* and there is *mansakshaya* (wasting). Diabetes is the disease of the metabolism of fats, proteins, and carbohydrates. The defect in metabolism will further lead to *shosha* (wasting). It can be related to asymmetrical sensory polyneuropathy.
- 5) **Swasa:** It means difficulty to breath (kussumauls breathing). It is observed in diabetic ketoacidosis or lactic acidosis and also in bronchial asthma with infection.
- 6) **Daurbalya:** weakness, is present as a symptom of hypoglycemia, in diabetic ketoacidosis and diabetic nephropathy. In *prameha*, all *dhatu*s get vitiated mainly *Rasa*, *Mansa*, and *Majja*. Due to the vitiation of the above *dhatu*s, there is *daurbalya* (weakness).
- 7) **Kampan:** Tremor, this upadrava is related to neurological complications.

- 8) **Lolatha:** Affinity, in hypoglycemic diabetic patients there is an affinity to eat more sugar or madhur rasa.
- 9) **Anidra:** Insomnia, which is related to a neurological problem.
- 10) **Kasa (Coughing):** Diabetics are also plagued by enhanced susceptibility to infection of the skin, and upper respiratory track tuberculosis.
- 11) **Baddhapurishatwa (Constipation):** *Acharya Sushruta* narrated that *Buddhapurishatwa* (constipation) is a complication of diabetes because the individual has an excessive concentration of *meda*. The average dose of laxative is not effective in this case.
- 12) **Stambha (Stiffness):** it may suggest the stiffness of the joint. *Prameha Mansa* and *Medodhatu* are the affected factors and hence there I stiffness of the joint, and then *mansa* and *medo dhatu* need to be treated.

Pittaja-Upadrava:

- 1) **Bastimehanyotoda:** Means pain in the bladder and urinary path. This may occur due to UTI or neuropathy as a complication of diabetes.
- 2) **Jwara:** Fever, it occurs due to infection in diabetic patients.
- 3) **Trishna:** Thirst, in the patient of *prameha*, excessive loss of water (polyuria) causes stimulation of the thirst center in the hypothalamus, which increases the intake of more water.
- 4) **Moorchha:** Unconsciousness, can be correlated with hypoglycemia, diabetic ketoacidosiscoma, ketotic hyperosmolar diabetic corm, lactic acidosis coma, etc.
- 5) **Hridayashula:** Pain in the heart region. It may be due to autonomic symptoms of hypoglycemia, and lactic acidosis.
- 6) **Pitvinmutra:** Yellowish discoloration of urine and stool. This is due to urinary tract infection, and diabetic nephropathy.
- 7) **Mushkavadarnam:** Pain in testes. It may be due to asymmetrical motor diabetic neuropathy.
- 8) **Daham:** Buring sensation. It is due to diabetic polyneuropathy, i.e., symmetrical sensory polyneuropathy.
- 9) **Amlika:** Acidity, may be the symptoms of diabetic ketoacidosis or nonspecific symptoms of hypoglycemia or due to G.I. track disturbance.
- 10) **Vit- bhedanam:** Loose motion, it may be the due to gastro-intestinal neuropathies as a complication of diabetes.

- 11) **Nidranasham:** Loss of sleep, this is related to a neurological problem in a diabetic patient.
- 12) **Pandurog:** Anaemia, in the case of *panduroga* the properties of *oja* alter and affects the *varna, bala, and sneha* of the body and cause *varnabhed, dhatu-gurav,* and *shaithilya* in diabetes patient. The main seat of *ojas* is *hridaya* in the pathogenesis of *pandu* in the diabetic patient, the *sadhak pitta* is vitiated which is seated in *hridaya* and due to the same seat, it further vitiates *oja*.
- 13) **Daurgandhya:** Foul smell to the body, it may be to infection in the diabetic patient, like, diabetic foot, ulcer, or carbuncle formation. It is also due to excessive sweating in diabetic patients.

Kaphaja Prameha:

- 1) **Avipakam:** Indigestion, is due to excessive food taken by the diabetic patient when there is already *agnimandya* present.
- 2) **Chhardi:** Vomiting tendency, may be co-related with the symptoms of diabetic keto-acidosis, lactic acidosis, or gastro-intestinal neuropathies.
- 3) **Kasa:** Cough, the cough may be due to upper respiratory tract infection tuberculosis infection, etc.
- 4) **Kapha prasek:** Excessive salivation, may be due to polyphagia and excessive *Shleshma* and *kleda* in the patient of *prameha*.
- 5) **Aalasya:** Laziness, may be due to excessive weight (obesity), *agnimandya,* and early tiredness. *Pramehi* avoids the physical activities of *mansadushti, balakshaya,* and *kaphadushti* these are the cause of *Aalasya*.
- 6) **Makshikopsarpanam:** files get attracted towards urine, and sweat of *pramehi* patient, it is due to -
 - i) *Madhusaman mutra* – Passing of urine like *madhu* i.e., *madhur rasatmak.*
 - ii) *Madhuryaccha Tanoratah* - It means *sharir madhurya* (increase BSL).
- 7) **Aruchi:** loss of appetite, is due to *ama-utpatti* and *agnimandya* in *pramehi* patients.
- 8) **Peenas:** cold with a running nose it may be due to recurring upper respiratory tract infection in *pramehi* patients.
- 9) **Mansopachaya:** Obesity and inactivity are associated with the down-regulation of insulin- sensitive kinases and may also increase the accumulation of FFAs within skeletal muscles. Sedentary people are therefore more insulin-resistant than active people with the same degree of obesity. In *prameha,* there are *dhatvagnimandya* and *nmedodushti,* so it causes excessive accumulation of *medo dhatu* in *pramehi* patients.

- 10) **Shaithilya:** Flaccidity, in *pramehi* all dhatus get vitiated i.e., *Rasa, Mansa, Meda,* and *Majja.* Due to vitiated *Mansa dhatu,* there is a loosening of muscles and thus *Shaithilya* occurs.

According to *guna* and *karma* of *doshas* diabetic complications (*prameha upadravas*), may be correlated with neuropathy, retinopathy, and nephropathy in modern science. *Vataja prameha upadrava* may be correlated with neuropathy-like symptoms. *Pittaja* and *raktaja upadravas* may be correlated with retinopathy and *kaphaja upadrava* may be correlated to nephropathy in diabetics.

Then, *Vataja upadrav* – Neuropathy

Pittaja and *Raktaja updrava* – Retinopathy

Kaphaja Upadrava - Nephropathy

Complications of Diabetes:

The most common and difficult complications are diabetic (1) Neuropathy (2) Tuberculosis (3) Wound (4) Hypertension (5) ischemic heart disease (6) Retinopathy. According to modern science complications like Tuberculosis and diabetic wound are due to infection. Hypertension and I.H.D. are mostly due to hyper cholesterolaemia. The cause of nephropathy is unknown. But according to *ayurveda* nephropathy, UTI. Tuberculosis is due to a faulty diet. Hypertension and I.H.D. etc are also due to *Ama* and *Kapha* (hyper cholesterolaemia). Diabetes predisposes to degenerative, changes in blood vessels of all sizes. The vascular complications of diabetes are the end route of two processes.

a) Accelerated atherosclerosis occurs mainly in the medium-sized arteries e.g., coronary peripheral. b) Micro angiopathy occurs mainly in the retinal and renal vessels. Atherosclerosis can produce coronary heart disease hypertension, cerebrovascular disease, and peripheral vascular disease. The predominant pathology is atherosclerotic involvement of the smaller peripheral arteries with deposition of cholesterol in the intima. As controversies to non-diabetics, the process begins at an earlier age, progresses more rapidly, and become more extensive and serves diabetics. Hypertension and coronary artery involvement are frequent sequences.

CONCLUSION

This study highlights the diabetic complication described in modern science and correlated to *prameha upadrava* described in Ayurvedic texts. The study was carried out in the form of a conceptual study as well as an observational study.

The following facts come forth during the study -

1. *Prameha* is a urinary disorder, *madhumeha* is one of the types of *Prameha*, if it is not treated properly all *prameha* will get converted into *madhumeha*.
2. Mostly the *santarpanjanya* diet, and behaviour (sedentary lifestyle) cause the *prameha*.
3. *Beej dushti* are a causative factor in *prameha*.
4. The maximum no. of *Prameha Upadrava* formed may suggest the multisystem involvement, the disease of several complications.
5. The patient with IDDM (Type I) observed a minimum than that of NIDDM (Type - II). The lifestyle and habits are, responsible for causing the NIDDM (Type - II). Type – II (NIDDM) diabetes is a disease of the middle-aged, affecting the population.
6. The majority of diabetes patients in India develop diabetes in the 4th or 5th decade of age. The female also was more prone to diabetes.
7. *Daurbalya* and *shoolam* are mostly seen in *Vataja Upadrava* of *Prameha*.
8. *Daham*, *Daugandhya*, and *Trishna* are mostly seen in the *Pittaja upadrava* of *Prameha*.
9. *Shaithilya*, *Atinidra*, *Aruchi*, and *Aalasya* are mostly seen in the *kaphaja upadrava* of *Prameha*.
10. The mostly found *prameha Upadrava* is related to Diabetic neuropathy, so diabetic neuropathy is a major complication in *Prameha*.
11. We can conclude diabetic neuropathy as *vataja*, retinopathy as *pittaja* and *Raktaja*, and Nephropathy as *kaphaja Upadrava* respectively in the present era.
12. *Prameha pidaka* was found in 3 patients out of 100, so it is not a major complication of *prameha* in the present era.

The present study was conducted with a small sample; hence the study conducted with a large sample size will give more information and helps in the verification of the *Prameha – Upadrava* concept.

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