DESCRIPTION OF URINALYSIS IN AYURVEDA AND ITS PRACTICAL UTILITY IN MODERN ERA

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ABSTRACT
Now a day’s modern medical science use various laboratory investigation like blood test, urine examination, stool examination etc., for diagnosis of a disease. We are grateful to modern science for inventing such useful methods for easy diagnosis of disease, but do we are aware of the fact that germ of laboratory diagnostic parameters comes from the primeval medical science known as Ayurveda. Thousand of year ago when the embryo of modern science was wrapped in endosperm at that time Indian medical science attain the maturity and blossom with all its fragrance. Diagnosing a disease using urine or stool as a laboratory parameter is well described in Ayurveda. This paper will throw light on the description of urine analysis for diagnosis of different stages of diabetes (Prameha) as explained in the most authentic text book of Ayurveda- Charaka Samhita.

KEYWORDS: Mutrapariksha, Prameha, Urinalysis.

INTRODUCTION
Ayurveda, the ancient Indian medical science has vivid description of all diseases that are prevalent in this modern era. The best example is description of Prameha, a disease well-known as Diabetes these days. Diagnosis of Diabetes depends upon estimation of sugar in blood and urine. Presently urinalysis is used for detecting many diseases like various forms of glomerulonephritis, chronic urinary tract infections, etc.\(^1\) Macroscopic urine analysis with the help of dipstick and microscopic examination through urine centrifugation are popular methods of urinalysis now a days.\(^2\) These two methods help in detecting glucose, bilirubin, nitrites, ketones, etc. in urine.\(^3\)
But in ancient time without adding the help of microscope merely by minutely observing the change in physical characteristic of urine like colour, smell, consistency, etc. the disease were diagnosed. In Charaka Samhita- 10 types of *Kaphaja Prameha*, 6 types of *Pittaja Prameha* and 4 types of *Vataja Prameha* are described to be diagnosed by urinalysis. These different types of *Prameha* are basically various stages of Diabetes. This can be easily understood by comparative study of both contemporary and Ayurveda concurrently as follows:-

1. **Kaphaja Prameha (Progressive stage from Pre-diabetic to Diabetes mellitus type-2)**
   a. *Udakameha* – Osmotic diuresis (having characteristic similar to that of water)
      - Pre-diabetic stage - hyperglycemia causes decrease reabsorption of water and excessive loss of water through urine.
   b. *Ikshumeha* – Alimentary glycosuria (having characteristic similar to sugarcane juice)
      - Pre-diabetic stage when liver is unable to metabolize excessive glucose due to hepatic insulin resistance and thus presence of glucose in urine.
   c. & d. *Sandrameha & Sandraprashadameha* – (layered urine: 3 layers: a top layer of chylomicrons, a middle layer rich in protein, and a bottom layer containing fibrin clots and cellular debris).
      - Intermediately Stage between Pre-diabetic and Diabetic mellitus started with the involvement of kidneys.
   e. *Lalameha* – Albuminuria (Heavy whitish foam in urine)
      - Progressive stage of diabetes mellitus type-2 which may show the presence of albumin.
   f. *Saklameha*– (urine having white colour like that of pasted flour)
      - White & Cloudy urine
      - Progressive stage of diabetes mellitus type-2 with the further derangement in the functioning of nephrons (Proteinuria).
   g. *Sanirmeha* – Reduced urinary flow (reduced urinary flow with increased frequency)
      - Stage of diabetes involving advanced nephropathy. Infective and reduced urinary flow.
   h. *Sitameha*– (the patient gets frequent micturition which is exceedingly sweet and cold)
- Stage of kidney failure due to diabetic nephropathy presence of excessive ammonical substance in urine.
  
i- Sukrameha – Spermaturia (patient passes semen like urine or urine mixed with semen)
- Autonomic diabetic neuropathy leading to retrograde ejaculation of sperm.

- **Pittaja Prameha** (Stage of Infection & Inflammation in Diabetes)
  
a- Ksharamahe- the patient passes urine having the smell, colour, taste and touch like those of alkalies. (pH of urine become alkaline)
- Increase urinary pH due to UTI in diabetes.
- Alkaline fermentation causes an ammoniacal smell, and patients with diabetic ketoacidosis produce urine that may have a sweet or fruity odour.
  
b- Kalameha- the patient passes black colour urine.
  
c- Highly concentrated urine due to dehydration.
  
c- Nilameha- the patient passes urine having sour taste and colour like that of the feather of chasa bird.
- Blue colour urine indicative of bacterial urinary tract infection
  
d- Raktameha - the patient passes urine having red colour, saline taste and smell like that of raw fish.
- Microscopic hematuria due to UTI.
  
e- Manjisthameha - the patient frequently passes urine having the smell like that of raw flesh and colour like that of the juice of *manjistha* (*Rubia cordifolia* Linn.)
- Gross hematuria due to UTI.
  
f- Haridrameha - the patient passes urine having pungent taste and colour like that of the juice of haridra (*Curcuma longa* Linn.)
- dark yellow colour urine due to dehydration. Highly concentrated urine due to UTI/ dark yellow colour due to jaundice.

3. **Vataja Prameha**- (Type-1Diabetes mellitus)
  
a. Vasameha (Lipiduria) presence of lipid in urine) in Nephrotic syndrome associated with type-1 diabetes mellitus(30-40%) known as Kimmelstiel –Wilsons Syndrome.
  
b. Majjameha – presence of bone marrow.
  
c. Lasikameha/ Hastimeha- Proteinuria/ Diabetic Ketoacidosis due to diabetes mellitus
d. Ojomeha/ Madhumeha- Type – 1 Diabetes mellitus

**Parameter used in above Urinalysis:**

1. Physical parameters: Colour
   - Raktameha, Haridrameha, Majjisthameha, Kalameha etc.
   
   Appearance
   - Cloudy: Shuklameha
   - Layered: Sandrameha,
   - Sandraprasadameha. Foamy
   - Lalameha Temperature
   - Shitameha

2. Chemical parameters: pH
   - Ksharameha Sp.graity
   - Udakameha

3. Microscopic Examination
   
   Hematuria
   - Manjjisthameha Red blood casts
   - Raktameha Crystalluria
   - Siktameha
   - Leukocytes – Shuklameha
   - Nitrite – Sitameha
   - Protein – Lalameha, Lasikameha
   - Blood – Raktameha
   - Glucose: Ikshumeha, Madhumeha
   - Bilirubin : Haridrameha

**DISCUSSION**

Vivid description of Manjjisthameha, Raktameha, Siktameha clearly indicate that microscopic examination of urine was available at that time. Analyzing details of urine characteristics undoubtedly established the scientific approach of Ayurveda. For example Ikshumeha (subtype of Kaphaja Prameha) and Madhumeha (subtype of Vatika Prameha) both are described to have sweet taste, but their sweetness varies and exemplify by
**CONCLUSION**

It is really appreciable that a disease can be classified and identified at every stage merely by urinalysis. Even hundred of year after that the modern science has not given such monotonous laboratory parameter to classify different stages of a disease. Hopefully incorporation of these simple and easy parameters of urinalysis in routine urinalysis will helps in reducing the enormous increase in the cost of medical care. In future, it will be helpful to use combination of diagnostic criteria of both systems to provide better care at less expense.

**REFERENCES**

