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Ayurvedic Interpretation of eGFR Test in Chronic Kidney Disease: An integrative Review

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ABSTRACT:
Chronic kidney disease (CKD) is a gradual, irreversible kidney disease. When Such patients come to ayurveda practitioner they insist to take note of their pre investigation reports and be able to interpret it. The best measure to know kidney function in both health and illness is GFR test. One particular diagnostic criterion for CKD is a consistently low GFR. In modern science, there are limitations in the treatment of CKD. Therefore, to reduce the rising rates of death and morbidity brought on by CKD's microvascular problems that lead to cardiovascular events. It is necessary to understand how to read eGFR report & relate it in terms of ayurveda perspective to arrive at diagnosis.

KEYWORDS: eGFR, CKD, Ayurveda, Dosh Dushti, Dhatu Dushti, Vrukka Vikruti, Kleda

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INTRODUCTION :

PCOS is a prevalent condition among women of reproductive age, characterized by hyperandrogenism, irregular menstrual cycles, and Chronic Kidney Disease (CKD) represents a serious health issue which grows over time, is frequently asymptomatic in its early stages, and eventually demands dialysis or a kidney transplant. The estimated Glomerular Filtration Rate (eGFR) is the main measure used in modern nephrology to evaluate kidney function. The kidneys' filtration capacity is quantitatively expressed by eGFR in mL/min/1.73 m^2. According to KDIGO recommendations, it enables clinicians to categorize CKD into five stages (G1–G5), directing both diagnostic as well as therapeutic approaches. In Ayurveda, kidney-related disorders can be understood through the framework of Mutravaha Srotas Dushti and systemic disease entities such as Prameha, Mutraghata, Vrikkashotha, Shotha, and Udara roga. These conditions highlight the involvement of Doṣha (Kapha accumulation, Pitta dushti, and later Vata prakopa), Dhatu Kṣhaya (Rasa, Rakta, Mamsa, Meda, Majja), and Srotorodha (obstruction of microchannels) in the disease progression. Therefore, this narrative review attempts an integrative interpretation of eGFR through Ayurveda view offers a link between modern quantitative diagnostics and Ayurvedic qualitative assessment highlighting the relevance of Doṣha, Dhātu, and Srotas in kidney pathology.

Aim & Objective:

To interpret the role of eGFR in chronic kidney disease (CKD)through ayurvedic perspective.

To correlate CKD staging with ayurvedic pathophysiology for integrative diagnostic understanding.

Material and Methods: The respective review is mainly focused on eGFR test and CKD. For that Ayurvedic classics, books, and published works from PubMed as well as non-PubMed journals for Ayurveda and modern science with self-narrative explanations are reviewed.

DISCUSSION:

Definition of eGFR - Estimated glomerular filtration rate (eGFR)is calculated value that estimates the rate at which the kidneys filter blood expressed in mL/min/1.73$m^2$of body surface area CKD staging (G1 To G5) based on eGFR-

Stage	Values
G1	>=90 mL/Min/1.73m^2
G2	60-89 mL/Min/1.73m^2
G3	45-59 mL/Min/1.73m^2
G4	30-44 mL/Min/1.73m^2
G5	15-29 mL/Min/1.73m^2

Premhajnya (diabetic nephropathy)
Panduprabala (anaemic -secondary complication)
Medopradosha vrukka dosha
Mutraghaat (obstructive condition)
Udaarvartajanya
Udar vyadhi Janya (ascitic condition-secondary complication)
Mutrakrichha (UTI)
Bastirog related Vrukka Vikruti/Dushti (excretory system related)
Shothajyna (inflammatory condition)
Yakrut Dushtijyna (liver disorder)

Chronic kidney disease (CKD) is clinically staged using the estimated glomerular filtration rate(eGFR) which quantitatively reflects renal function hampers with

decline in eGFR correlated with, In early stages (eGFR >60) Kapha & Meda dushti leads to srotorodha in mutravaha srotas .As per "Mutrasya Kleda Vehanam karyam" where Kleda indicates Aap mahabhut dushti. There are two sources of kleda- a) kosta/Amashaya and b) Shareeragata kleda. The terms such as Rasakleda. Sonitakleda. Mamsakleda, Dhatukleda. Srotokleda etc. clearly suggests the formation and presence of kleda at different tissue levels in the body, which is formed because of dhatwagni dushti. With further fall in eGFR(30-59), Pitta & rakta dushti (as pitta and rakta shows ashryashrayitva) shows inflammatory damage to oxidative stress in CKD patients can be manifested as krishna varna, dourghandhya and tanutva of rakta dhatu, peeta mutra rakta mutra etc .In advanced ckd (eGFR<30), Vata dosh dushti **(**ruksh guna) causes gradually increasing irreversible degenerative changes which are seen at the cellular level of the kidney showing low urine output oedema.

Interpretation:

a) Ayurvedic interpretation of declining eGFR:

Dosha with Dushta Guna involved:	Decreased eGFR value may indicate- Vata - Ruksh, Khara Pitta -Ushna, Sara, Drav and Visra. (dhatupaka) kapha-Shikshna, mrutsna Guna (kleda Sanchay)
Dushya involved:	Rasa, Rakta and meda dushti
Dosha Gati affected:	Koshta shakha gati -Sanchit mala, Vruddhi Tiryak gati -Mutravaha srotas
Vyadhi Marga seen:	Madhyam Marga
Vyadhi Avastha seen:	Chirkari vyadhi with saamta
Agni dushti happen at level:	Jatharagni mandya with dhatwagni dushti (sharigata kleda)
Srotas Dushti Type:	Decreased eGFR value indicates-Strotorodha ,sanga
Upadrava / Udark(complication)	Decreased eGFR indicates - cardiovascular disease, anemia, metabolic bone disease
Vyadhi Sankara (secondary complication)	Pandu; shotha; pameha Upadrava; Udaavarta; Ashmaree Upadrava, Kshatksheen; Vaatvyadhi; Mutrakrichchra
Arishta (advanced conditions)	Decreased eGFR indicates - poor prognosis and serverity of disease
Sadhyasadhyatwa (prognosis)	decreased eGFR indicates – asadhya Vyadhi with lakshan

a) Mapping eGFR stages for ayurveda diagnostic integration are as follows -

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CKD Stag	Srotas Dushti	Lakshan Samucchya	Interpretation
Stage 1	Annavaha, Pranavaha, Udaka, Rasa, Mamsa	Anannabhiasha, Daurbalya, Pranadushti, Shotha	Mildly low e GFR Reversible stage Kapha meda dushti Kleda Sanchaya
Stage 2	Anavaha, Pranavaha, udaka, rasa, Mutra	Anannabhiasha, chhardi, Shotha, Prandushti, Mutra Dushti	
Stage 3	Anavaha, Pranavaha, Udaka, Rasa, Mutra	Anannabhiasha, Chhardi, Shotha, Prandushti, Mutra dushti	Moderately low eGFR Inflammatory damage, pitta dushti, Srotorodha Dhatu Paka
Stage 4	Anavaha, Pranavaha, Udaka, Rasa, Mamsa	Anannabhiasha, Shotha, Daurbalya, Prandushti	
Stage 5	Anavaha, Pranavaha, Udaka, Rasa, Rakta, Mamsa	Anannabhiasha, Daurblaya, Prandushti, Shotha	Severely low e GFR Irreversible Degenerative changes Vata prakopa due to Dhatukshaya

Observations and Results: Vata dosha dushti gunataha ruksh guna, in which gradually increasing irreversible degenerative changes in the cellular level of the kidney are seen. Kapha dosh dushti is seen with styanata, which leads to the Utpatti of ama, which obstructs (avarodha) in microvessles. Pitta dushti in CKD patients can be seen through krishna varna, dourghandhya, and tanutva of rakta dhatu. Sharigata kleda sanchiti shows dhatwagni dushti at the dhatu level.

Future research directions: Prospective studies combining eGFR with Ayurvedic staging.

CONCLUSION:

EGFR serves as an objective biomarker for diagnosis and prognosis of CKD and its stages. While in ayurveda it correlated as reflection of tridosh dushti, kled sanchiti, agni dushti, specific mutravaha srotas dushti & its lakshana samuchhay as with declining eGFR values can be correlated with stages of Doṣha vitiation and Dhātu depletion like Kapha dominance in early stages (fluid retention, proteinuria), Pitta involvement in mid-stages (inflammation, oxidative stress, hematuria), and Vata aggravation in advanced stages (catabolism, cachexia, oliguria. Therefore, this narrative review on ayurvedic interpretation of eGFR allows ayurveda clinicians to consider and work on it from a clinical point of view also.

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