SCIENCE LETTERS

Journal of e-Science Letters

Short Communication | ISSN 3041-5454

Serum cr (scr) a tool for assessing kidney status in pregnancy induced hypertension?

Affi Ayuba[1], Imoh Lucius[1], Longwap S. A[1], Alfred Odo[1], Solomon Luka Mercy[1] and Anzaku A[2]

[1]*Department of Chemical Pathology, University of Jos, Plateau, Nigeria*
[2]*Department of Anatomical Pathology, Jos University Teaching Hospital, Jos, Plateau, Nigeria*

ABSTRACT

The determination of kidney status before and during pregnancy has clinical importance. Kidney disease can affect maternal and prenatal health. Glomerular hyperfiltratin is typical physiological adaption to pregnancy reflected by decrease in levels of serum creatinine (Scr). Accordingly physical typically rely on (SCr) levels This is retrospective study using the records of antenatal subjects attending metabolic clinic of chemical pathology department of Jos University Teaching Hospital (JUTH) in the month January to December 2024. The serum samples these women were assayed for creatinine and the mean serum creatinine was found to be 63.17 dmol/.L. With a smaller number of subjects (21) found to have higher (Scr). It was concluded that 21 subjects stand the risk of kidney failure and need to be closely monitored. Nine (9) subjects have Scr above 77 mmol/L with hypertension BP= $^{130}/_{90}$ *mmHg.*

Keywords: *kidney, pathology, serum, creatinine, women, hypertension*

Abbreviations: *SCr = Serum Creatinine, eGFR= Estimated Glomerular Filtration Rate, PIH = Pregnancy Induced Hypertension*

Introduction

Approximately about 20% of the cardiac output circulates through the kidneys. As the blood passes through each glomerulus, a portion is filtered at the glomerular filtered rate (GFR). GFR decreases with age, and can be estimated from the Cockcrofi-Gault relationship: [1] Serum creatinine is defined as a biochemical marker used to assess kidney function, with its biological variation influencing the estimation of the biological variation of the estimated glomerular filtration rate (eGFR). It serves as a critical input in the calculation of eGFR through established equations. Serum creatinine remain the standard biomarker for kidney function in pregnancy, but b=normal level change day [2].

The determination of renal function before and during pregnancy has clinical importance: kidney disease can affect maternal and prenatal health. Glomerular hyperfiltration is a typical physiological adaption to pregnancy, reflected by a decrease in levels of serum creatinine (SCr) with advancing gestational age. A 24 – hour collection of urine to measure creatinine clearance is impractical. Accordingly, physicians typically rely on (SCr) level. PIH Pregnancy induced hypertension is a disorder of pregnancy characterized by the onset of high blood pressure and may lead to kidney disease [3]. PIH increases the risk of poor outcomes for both the mother and the baby (if left untreated, it may result in seizures at which point is known as PIH represents an important cause of maternal as well as prenatal morbidity and mortality. The excessive activation of inflammatory or other systems lead to immune system disorders and the deposition of an overdose of immune complexes in the kidney, which increase vascular permeability to a certain degree and impair the kidney function. An assessment of kidney function is therefore necessary for adequate function of kidney in gestation function found in patients with hypertensive disorder complicating pregnancy is impaired [4].

Serum (blood) creatinine is a very common test, A “normal” creatinine level as reported in their laboratory result may actually have kidney disease. The opposite can also be true - some people with a “high” creatinine level may not have kidney disease, or it may be less severe than it seems. To know how well your kidney are working is to look at your estimated glomerular filtration rate (eGFR). eGFR is calculated using your serum (blood) creatinine level, age and sex [5 and 6]. SCr through pregnancy may be associated with adverse pregnancy outcome. Hence the utility of creatinine monitoring to predict pregnancy out comes warrant further investigation.

Subjects and Methods

Study design

This is a retrospective descriptive study conducted using edictal records of 138 Ante natal clinic (ANC) women who attended the metabolic clinic of chemical pathology department JUTH Jos University Teaching Jos, Plateau State between the months of January 2024 and December 2024.

Citation: Affi Ayuba, Imoh Lucius, Longwap S. A, Alfred Odo, Solomon Luka Mercy and Anzaku A (2025). Serum cr (scr) a tool for assessing kidney status in pregnancy induced hypertension?. *Journal of e-Science Letters.*
DOI: https://doi.org/10.51470/eSL.2025.6.1.26

Received: 31 January 2025
Revised: 26 February 2025
Accepted: 24 March 2025
Available: April 30 2025

Corresponding Authors: **Affi Ayuba**
Email: **ayubaaffi67@gmail.com**

Results

This result presents findings from the analysis of patients' clinical date focusing on creatinine Serum Creatinine (Scr), Blood pressure (BP).

Data set Summary

Creatinine (Cr)

- Average Cr: 63.17
- Minimum Cr: 7
- Maximum Cr: 95

Uric Acid (U/A)

Creatinine level classification (Cr threshold = 77 umol/L)

- Normal range creatinine (Cr7-77 umol/L) 106 patients
- High creatinine (Cr>77 umol/L): 21 patients
- The majority of patients (106 out of 127) had creatinine values within the normal range.
- A smaller group (21 patients) had elevated creatinine level, indicating potential renal damage.

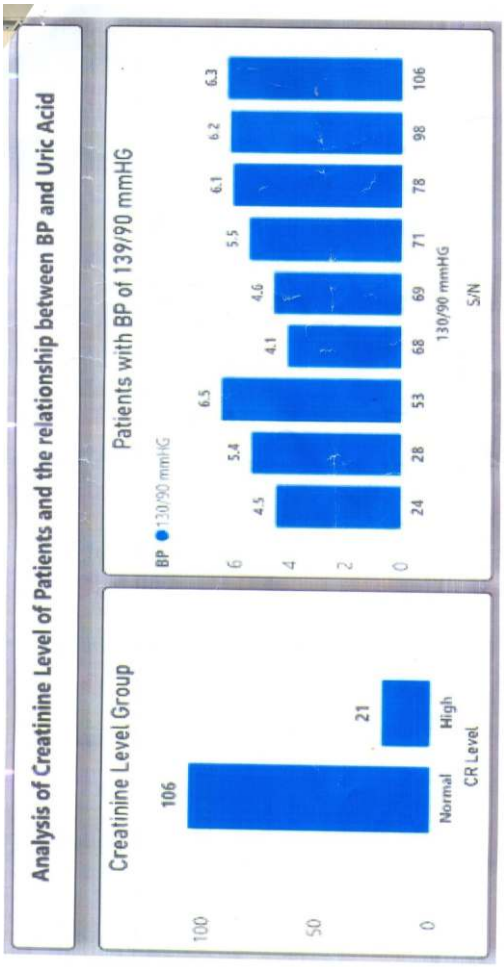
Combined Risk Classification (creatinine and BP)

To identify higher-risk patients, a combined condition was applied:High creatinine: Cr > 77High BP: BP ≥ 130/90 nmol/L

Patients with Cr > 77 AND BP ≥ 130/90 mmHg: 9 patients
Patients with Cr > 77 AND BP < 130/90 mmHg: 69 patients

Summary

Creatinine levels:106 patients without kidney damage creatinine
21 patients had high creatinine (>77) umol/L
9 patients had both high creatinine (>77 umol/L) and high BP (>130/90 mmHg).



Discussion

The results obtained shows high risk patients with creatinine SCr 77umol/L with hypertension $\geq \frac{130}{90} mmHg$

function can be asuspected when serum Cr concentration rises to 77 umol/L. Compared to UK recommendation that abnormal kidney limit. In this study of pregnant women mean SCr concentration was found to be 63.17 mmol/L and blood pressure was found to be $^{130}/_{90}$mmHg. In another study the mean SCr of pregnant women was found to be SCr = 84.5 which was higher than for this study. The higher SCr in our study 7 was be because there in Hypertension and higher sample size. The utility of SCr monitoring to predict pregnancy outcomes will warrant further investigation.

REFERENCES

1. Agampodi SB, Agampodi TC. Amarasinghe GS et al. Serum creatinine and estimated glomerular filtration rate (eGFR) in early pregnancy and changes during the pregnancy. *PUBLIC Health 2023;3:*
2. Beers K, Patel N. Kidney physiology in pregnancy. Adv Chronic c Kidney Dis 2020;27:449- 54.
3. Giring JC. Re-evaluation of Plasma Creatinine coreatinine concentration III normal pregnancy. *Jobstet Gynaecol 2000:20:* 128-31.
4. Harel Z, MCArthur E, Hladunewich Metal. Serumcreatinine levels before, during, and after pregnancy. JAMA 2019;32 1:205-7,
5. Larsson A. Palm M, Hansson LO, Axelsson O. Reference values for clinical chemistry tests during normal *pregnancy.BJOG.* 2008; 115(7):874-881.
6. Lopes ven Balen VA, van Gansewinkel TAG, de Haas S et al. Maternal kidney function during pregnancy: systematic review and meta-analysis. *Ultrasound Obstet Gynecol 2019:54: 297-307.*
7. Wiles KS, Nelson-Piercy C, Bramham K. Reproductive health and pregnancy in women with chronic kidney disease. Nat Rev Nephrol 2018;14:165-84.