

# ACUTE RENAL PROBLEMS STILL A GREAT CHALLENGE IN OBSTETRICS

## ABSTRACT

**Objective:** To determine the early risk factors and outcome of the patients presented with acute renal problems at tertiary care Hospital.

**Methodology:** This descriptive study was conducted at gynaecology and obstetrics department of Liaquat University of medical and health Sciences. Study duration was one year from 2017 to 2018. Women having age 18 to 40 years, developed renal impairment as serum creatinine level more than 1.2mg/dl were included. All data was collected via self-made proforma. SPSS version 20 was used for the data analysis.

**Results:** Total 58 women having renal problems during pregnancy were studied, their mean age was 28.40±4.68 years and mean gestational age was 28.40±4.68 years. Most of the women 70.2% were un-booked. Parity 1-3 was commonest.

Anaemic women were on high risk of renal impairment as most of the patients had moderate anemia. Hypertension was in 35.1% patients, abruption in 10.5% cases, tow patients had diabetes, 12.3% presented with pregnancy induced hypertension and postpartum haemorrhage was in 05.3% cases. There was a significant negative correlation between haemoglobin level and serum creatinine level, creatinine (r-value 0.029).

**Conclusion:** Anemia was the commonest reason for renal impairment during pregnancy. Most of the women were un-booked, having high parity and were presented with anemia. This morbidity can be decreased and prevented by stabilizing the haemoglobin level by taking proper antenatal care.

**Key words:** Creatinine, challenge, obstetrics, anemia

## INTRODUCTION

Acute kidney injury itself is a clinical condition defined by a rapid reduction in the rate of glomerular filtration resulting in decline in the excretion of the nitrogenous wastes such as creatinine, urea and further uremic pollutants. In early pregnancy, obstetric AKI commonly results from septic abortions as well as by postpartum hemorrhage, antepartum hemorrhage, pregnancy toxemia and late pregnancy HELLP syndrome.<sup>1,2</sup> It is a complex multi-etiology involving condition that can take place during pregnancy and at postpartum periods at any time. A major obstetric complication correlated with severe foetomaternal mortality and morbidity is PR-AKI.<sup>3</sup> The incidence has declined due to improvements in reproductive health but it is still correlated with significant perinatal

**Comment [h1]:** To assess the early risk factors and outcomes of tertiary care hospital patients with acute renal issues.

**Comment [h2]:** Why were ages between 18 and 40 determined for the study? Was it determined based on previous studies or what?

**Comment [h3]:** Statistical analysis is added as a single paragraph with the addition of a source for statistics in the last paragraph of the articles and work methods

**Comment [h4]:** ??????

**Comment [h5]:** ??????????????

**Comment [h6]:** Abruption of whats???????

**Comment [h7]:** Why was the anemia criterion relied on and linked to kidney failure? We as a knowledgeable people know that pregnancy outcome causes anemia in the mother with weak immunity and may accompany pregnancy high blood pressure or gestational diabetes and may continue until after birth

**Comment [h8]:**

**Comment [h9]:** Acute kidney injury itself is known as a clinical condition

**Comment [h10]:** The full reformer is added and the abbreviation is in parentheses

**Comment [h11]:** Correct spelling of the word

**Comment [h12]:** PR-AKI is a serious obstetric complication due to extreme foetomaternal mortality and morbidity.

mortality and maternal morbidity.<sup>4</sup> It may be due to ischemic tubular necrosis or decline in renal perfusion from various conditions encountered during pregnancy.<sup>4</sup> Major PRAKI factors involving hypertensive conditions during pregnancy, sepsis, obstetric hemorrhage, acute fatty liver and thrombotic microangiopathy during pregnancy,<sup>5</sup> and freshly reported 10.55% incidence of postpartum AKI (PP-AKI) along with sepsis and haemorrhage being the most common etiologies.<sup>4,6</sup> ARF poses a high risk for bilateral cortical necrosis of kidney in pregnancy and thus of chronic kidney dysfunction.<sup>7</sup> Cortical necrosis of kidney is a rare phenomenon and is responsible for just 2% of all ARF events.<sup>7</sup> In normal pregnancy, substantial variations occur within urinary tract: because of interstitial and renal vascular space size expansions, the kidneys grow in volume by around 1-1.5 cm.<sup>8</sup> More than 90% of pregnant females undergo physiological hydronephrosis marked by dilation of ureter, calyces, and renal pelvis.<sup>8,9</sup> Upto the 16th week postpartum, this anatomical irregularity could be functional and induces urinary stasis within ureter, contributing to UTI development.<sup>8</sup> Pregnancy associated acute kidney injuries are still frequent in developing countries; and its incidence there varies considerably from one country to the other and within the same country, from one region to the other.<sup>10</sup> Many national and international studies showed different responsible factors and incidence of acute renal problems as in a local recent study observed that postpartum haemorrhage (PPH) in addition to Sepsis is the leading factors for Pregnancy associated acute kidney problems.<sup>11</sup> Another study observed puerperal sepsis as the most frequent etiological cause of pregnancy-related acute kidney injury.<sup>12</sup> This study has been conducted to evaluate the risk factors of acute renal problems and outcome at tertiary care Hospital.

## MATERIALS AND METHOD

This descriptive study was performed at gynaecology and obstetrics department of Liaquat University of medical and health Sciences. Study duration was one year from 2017 to 2018. All the women having age 18 to 40 years, developed renal impairment as serum creatinine level more than 1.2mg/dl were included. Patients those were already known regarding renal problems before the pregnancy, history of diabetes mellitus and hypertension were excluded. All of the partaking patients enrolled following informed consent. Complete clinical examination including blood pressure and required laboratory investigation were done. Patients were interviewed regarding age, parity, booking status, socioeconomic status and residential status. After taking informed consent a 5ml blood sample was taken from each patient to assess the haemoglobin level, serum creatinine level, blood urea and uric acid level. Anemia was defined as normal = haemoglobin level >11g/dl, mild= haemoglobin level 9-10.9g/dl, moderate haemoglobin level 7-8.9g/dl and severe haemoglobin level <7 g. All data was collected via self-made proforma. SPSS version 20 was used for the data analysis.

## RESULTS

**Comment [h13]:** caseous necrosis, or liquefactive necrosis, or coagulative

**Comment [h14]:** The full reformer is added and the abbreviation is in parentheses

**Comment [h15]:** The volume of the kidneys increases by about 1-1.5 cm.

**Comment [h16]:** ????

**Comment [h17]:** ????????????????

**Comment [h18]:** Acute kidney injuries due to pregnancy are still common in developed countries

**Comment [h19]:** Puerperal sepsis was the most common etiological cause of pregnancy-related acute kidney injury in another study.

**Comment [h20]:** This descriptive research was carried out in the Department of Gynaecology and Obstetrics of the University of Medical and Health Sciences of Liaquat. From 2017 to 2018.

**Comment [h21]:** Why exactly were these ages chosen

**Comment [h22]:** They are arranged more clearly and preferably as a separate paragraph. Come on and statistical analysis as well

Total 58 women having renal problems during pregnancy were studied, their mean age was 28.40±4.68 years and mean gestational age was 28.40±4.68 years. Most of the women 70.2% were un-booked and 29.85 were booked. Edema was seen in 21.1% of the patients. most of the women had parity 1-3 followed by 15.8% were nulliparous, 24.6% had parity 4-6 and only 03.5% had parity more than 6. Majority of the patients had poor and middle socioeconomic status as 29.8% and 59.6% respectively. Table.1.

**Comment [h23]:** Change the whole phrase

According to the risk factors anaemic women were on high risk of renal impairment as most of the patients had moderate anemia. Hypertension was seen in 35.1% patients, abruption was in 10.5% cases, tow patients had diabetes, 12.3% presented with pregnancy induced hypertension and postpartum haemorrhage was in 05.3% cases. Table.2

There was a significant negative correlation between haemoglobin level and serum creatinine level, creatinine (r-value 0.029) and (p-0.058). Fig.1

**Comment [h24]:** significant difference

**Table:1. Demographic characteristics of the patients n=58**

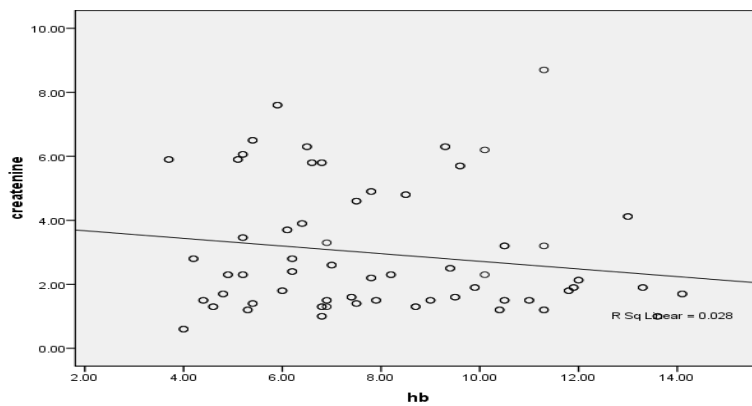
**Comment [h25]:** Table 1 showed the demographic .....

Variables		Frequency	Percent
<b>Booking status</b>	Booked	17	29.8
	Un-booked	40	70.2
<b>Edema</b>	Yes	12	21.1
	No	45	78.9
<b>Parity</b>	00	09	15.8
	1-3	32	56.1
	4-6	14	24.6
	>6	02	03.5
<b>Socioeconomic status</b>	Poor	17	29.8
	Middle	34	59.6
	Average	06	10.5
<b>Age</b>	Mean±SD	28.40±4.68 years	
<b>Gestational age</b>	Mean±SD	33.0±3.73 weeks	

**Table:2. Patients distribution according to risk factors n=58**

**Comment [h26]:** Table 2 showed the distribution of patients according to .....

Variables		Frequency	Percent
Hypertension	Yes	20	35.1
	No	37	64.9
Abruption	Yes	06	10.5
	No	51	89.5
Diabetes	Yes	02	03.5
	No	55	96.5
Pregnancy induced hypertension	yes	07	12.3
	no	50	87.7
PPH	Yes	03	05.3
	No	54	94.7
Anemia	No anemia	10	17.5
	Mild anemia	10	17.5
	Moderate anemia	27	47.4
	Severe anemia	10	17.5
Haemoglobin	Mean±SD	07.91±2.71 g/dl	
Serum creatinine level	Mean±SD	3.03±2.02 mg/dl	



**Fig:1.** Correlation between haemoglobin level and serum creatinine (r-value 0.029) at significant level (p=0.058)

Comment [h27]: Delete it

## DISCUSSION

Renal insufficiency in pregnancy is mostly due to prerenal and ischemic causes, but can be due to specific pregnancy disorders. In this study, mean age was 28.40±4.68 years and mean gestational age was 28.40±4.68 years and 24.6% had parity 4-6. Most of the women 70.2% were un-booked. In comparison to our results, study conducted by Arrayhani et al<sup>13</sup> reported an age range of 18-40 years and an average age of 29 ± 6 years. The patients participating in the study had a median parity of 0-5. Similarly, study conducted by Bokhari SR et al<sup>14</sup> reported mean age for remaining 41 subjects as 26±6 years, wherein Multigravida patients were 22 (54%), and primigravida were 19 (46%). The patients who did not obtain antenatal care of any form were 20 (48%), traditional birth attendants had visited 13 (31%) subjects, and gynecologist-provided sufficient antenatal care was received by just 8 (19%) subjects.

Comment [h28]: At the present study

Comment [h29]: all oblique

Comment [h30]: Delete it

Comment [h31]: all oblique

In this study, majority of the patients had poor and middle socioeconomic status as 29.8% and 59.6% respectively. Similarly, study conducted by Chaudhri N et al<sup>15</sup> reported that most patients were from low socioeconomic setting. According to the risk factors anaemic women were on high risk of renal impairment as most of the patients had moderate anemia. Hypertension was seen in 35.1% patients, abruption was in 10.5% cases, two patients had diabetes, 12.3% presented with pregnancy induced hypertension and postpartum haemorrhage was in 05.3% cases. Similar to our results, study conducted by Aggarwal RS et al<sup>16</sup> reported that hemorrhage in 15 (30%) subjects was an etiological factor for ARF, in 10(20%) cases APH and in 5(10%) cases PPH had been etiological factor for ARF. 11(22%) cases had undergone lower segment C-section (LSCS), whereas 36 (78%) cases had undergone normal vaginal delivery. In 20 patients (40%), puerperal sepsis appeared as an etiological factor, whereas pre-eclampsia, HELLP syndrome and eclampsia represented 18 (36%) cases. 2(4%) patients on presentation had disseminated intravascular coagulation, however hemolytic uremic syndrome was diagnosed in only 1 (2%) case. Another study conducted by Goplani et al<sup>17</sup> also reported, hemorrhage as the etiology for ARF was present in 38.56% of the patients, APH in 14.28% and PPH in 24.28% of patients. Preeclampsia, eclampsia and HELLP syndrome accounted for 28.57% of patients with pregnancy-related

Comment [h32]: at the current work

Comment [h33]: As well Chaudhri N et al reported

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ARF. reported that the excessive obstetric bleeding has been a major factor for PRAKI. In Pakistan 28% and in India 5% cases of PRAKI have been observed.

Our results are relevant to the study of Ali et al.<sup>19</sup> that showed obstetric hemorrhage leading to AKI among 58% of cases. Study conducted by Sivakumar et al<sup>20</sup> reported that the PE as a cause of renal impairment to 75.2% of cases in Turkey. Another study by Hassan et al.<sup>21</sup> from Pakistan reported a substantially higher incidence of PRAKI (30%) in their series. The most frequent factor of renal cortical necrosis of kidney is obstetrical complications. Most patients in present study were found with >1 etiological factors, with the most frequent factor being sepsis. Preeclampsia was exacerbated by DIC bleeding and abruption of the placenta resulting in hemodynamic disruption (APH, ATN), IUD and occasionally RPOC induced sepsis. Only in a few cases, Preeclampsia by itself was accountable.

**Comment [h37]:** Change the meaning of the phrase

**Comment [h38]:** Delete it

## CONCLUSION

In this study it was observed that anemia was the commonest reason for renal impairment during pregnancy. Most of the women were un-booked, having high parity and were presented with anemia. By taking above scenario, this morbidity can be decreased and prevented by stabilizing the haemoglobin level by taking proper antenatal care. This was a single center and little sample study. However multicenter large sample size studies should be done on this subject.

**Comment [h39]:** Results of the current study revealed that anemia

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