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Research Article

OBSERVATIONAL STUDY TO FIND OUT AND DECIDE ABOUT PREGNANCY ASSOCIATED ARF THROUGH CALCULATING CONCLUSION AND ETIOLOGY

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Abstract:

Objective: The purpose of this study was to find out and decide about pregnancy associated acute renal failure through calculating conclusion, etiology and to conclude the occurrence of it.

Study Design: Hospital base prospective and observational research study.

Place and Duration: Present research was carried out in the time duration of 12 months from April 2017 to March, 2018 at the department of nephrology, Mayo Hospital Lahore.

Methodology: Including 19% (40) women with ARF (Acute Renal Failure) 56% (118) women and 44% (92) men making a total number 210 having ARF (Acute Renal Failure) selected for the current study. Out of 40 pregnancy cases 16 were from urban areas and 24 were from rural areas of Punjab, Pakistan. Used a pre-formulated proforma for collection of data. Carried out physical examination and collected medical history information of all patients. Carried out all related laboratory tests and in some cases performed renal biopsy. Recorded the final results derived from observations and comparisons.

Results: 40 women with pregnancy found affected by ARF out of which 45% (18) patients were primigravida and multipara were 55% (22) with mean age as 29 ± 4.50 years. 20% (08) patients got adequate antenatal care and remaining 80% (32) patients did not received any antenatal treatment. Found ARF (Acute Renal Failure) in 15% (12) patients during 1st and 2nd trimester of pregnancy whereas, during puerperium or 3rd trimester 70% (28) cases developed acute renal failure. Patients of anuria were 60% (24). Found HELLPs in 5% (02), IUD (Intrauterine Fetal Death) in 30% (12), DIC in 10% (04), puerperal sepsis in 20% (8), Septic abortion in 15% (06), PPH (Post-Partum Hemorrhage) in 15% (06) and APH (Antepartum Hemorrhage) in 05% (02) cases. The most common cause of ARF was sepsis. 15% (06) patients didn't required any dialysis whereas, 85% (34) patients got hemodialysis. Acute Tubular Necrosis (ATN) was the most common medical diagnosis. 20% (08) patients showed 100% recovery. Patchy cortical necrosis was there in 45% (18) patients and observed acute renal cortical necrosis in 35% (14) patients. Recorded 30% overall death ratio.

Conclusion: Average of infection and death was high in pregnancy related acute renal failure. Particularly in the villages of Punjab, Pakistan, it is a major healthiness problem. Acute Tubular Necrosis (ATN) was a leading cause with reversible ARF, whereas, the reason of permanent loss of kidney functions was cortical necrosis. Lack of prompt management, lack of poor healthcare facilities and fewer numbers of antenatal health care centres are the main diagnosed issues of possibly reversible ARF (Acute Renal Failure).

Key Words: Pregnancy, Patients, ARF (Acute Renal Failure).

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INTRODUCTION:

Because of obstetric complications during pregnancy period induced acute renal failure, as this is not an intrinsic renal disease, is widely a preventable problem [1]. ARF (Acute Renal Failure) related to pregnancy linked with mortality and raised risk of parental disease and in under development countries it may compromise up to 25%. ARF is quite rare in developed countries as found in one among 20,000 or even less but it is severe enough to require dialysis [02].

ARF arises with a bimodal distribution during pregnancy. A zenith in initial pregnancy is related with infection, particularly septic abortion, while a third trimester zenith is linked with late obstetric problems such as retained dead fetus, postpartum hemorrhage, abruptio placenta and pre-eclampsia [03]. A severe problem in developing countries is obstetric ARF. The percentage of obstetric acute renal failure secondary to septic abortion reduced from 65 percent to 19 percent. With infection by *Clostridium Welchii* because of its production of a toxin which causes hemolysis and renal failure is commonest and it may also occur in the situation of sepsis from any organism tailing abortion.

Compared to other pathological lesions associated with HELLP syndrome in which glomerular involvement is predominant, severe eclampsia, hemolytic uremic syndrome (HUS) and disseminated intravascular coagulation (DIC), Acute Tubular Necrosis (ATN) has good prognosis and commonest pathological lesion [02,04,05,06]. Due to deficiency of NO dependent endothelial relaxing factors, it is hypothesized that all such like infections are symptoms of thrombotic micro-angiopathy caused by endothelial injury. Many problems produced due to the prognosis of pregnancy like prognosis of pregnancy, HUS and HELLP syndrome (hemolysis, elevated liver enzymes, and low platelets) which is very bad and chronic dialysis or survival with too much reduced renal functions required by the affected patients [05,07]. Acute Bilateral Renal Cortical Necrosis (ABCN) is another worst prognostic lesion observed in obstetric induced ARF [08,09]. These symptoms already observed in modern countries. Occurrence of cortical necrosis is too much huge in underdevelopment countries. According to Parkash *et al* it is approximately 24.0% and according to the report of Ramzan *et al* it is 13.0% in Pakistan [09]. Also, there is inadequate (patchy) cortical necrosis trailed by a mutable development of renal function and a steady duration

of reasonable renal inadequacy over some years, nevertheless it may increase to last stage renal failure a few years after [07].

METHODOLOGY:

Carried out this observational study in the time period of one year starting from April 2017 to March, 2018 at the department of nephrology, Mayo Hospital Lahore. Amongst admitted patients in nephrology ward which were from the rural and urban areas of Punjab, selected 40 females facing acute renal failure with pregnancy as the selection criteria for the current study was to select only those patients who are suffering from pregnancy related ARF. After observing the abnormal renal functions all these women shifted to nephrology ward whereas these patients were previously healthy. Collected all data on pre-designed pro-forma and recorded the intake, urine out-put, physical examination and medical history of every patient. Regarding need for blood transfusions, fetal out-come, operation intervention and mode of delivery made special investigation.

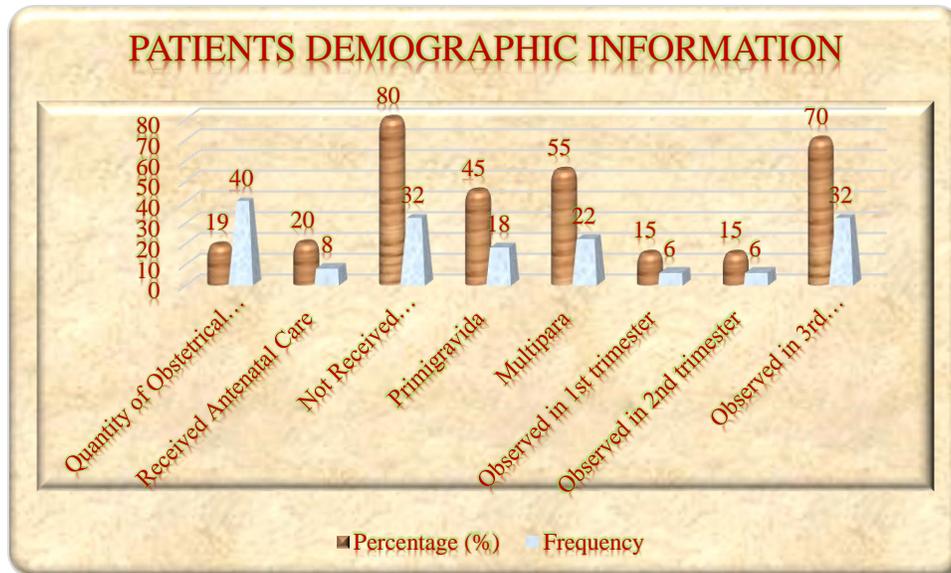
Completed and maintained the records as patient specific sheets. Carried out all tests in lab concerned to each case and where recovery was delayed for more than three months, carried out special tests for example renal biopsies, renal and pelvic ultrasonography of such cases. Normal medical treatments comprising of every therapeutic modality existing such as antibiotics, blood transfusions, electrolytes and management of fluids. When indicated after acute vascular access which was gained either subclavian or internal jugular vein route, carried out hemodialysis as a part of medical treatment. When achieved normal ranges of renal functions declared it as the recovery from ARF. When renal functions displayed improvement but did not return to normal even after 03 months, declared it as a partial recovery because of patchy cortical necrosis. When patient remained anuric for more than three weeks diagnosed the cortical necrosis. The patient remained reliant on dialysis and with small size kidneys and distributed cortical calcification when the renal ultrasound displayed bilateral augmented echogenicity.

RESULTS:

During one-year total number of 210 patients suffering from different etiologies were admitted in hospital. Out of all these patients the quantity of female and male was as 118 (56%) and 92 (44%) as shown in demographic data table number one.

Table No 1: Patients Demographic Information

Statistics	Percentage (%)	Frequency
Quantity of ARF Patients	210	
Mean Age of Patients	29 ± 4.50	
Quantity of Obstetrical ARF Patients	19	40
Received Antenatal Care	20	08
Not Received Antenatal Care	80	32
Primigravida	45	18
Multipara	55	22
Observed in 1 st trimester	15	06
Observed in 2 nd trimester	15	06
Observed in 3 rd trimester (Puerperium Period)	70	32

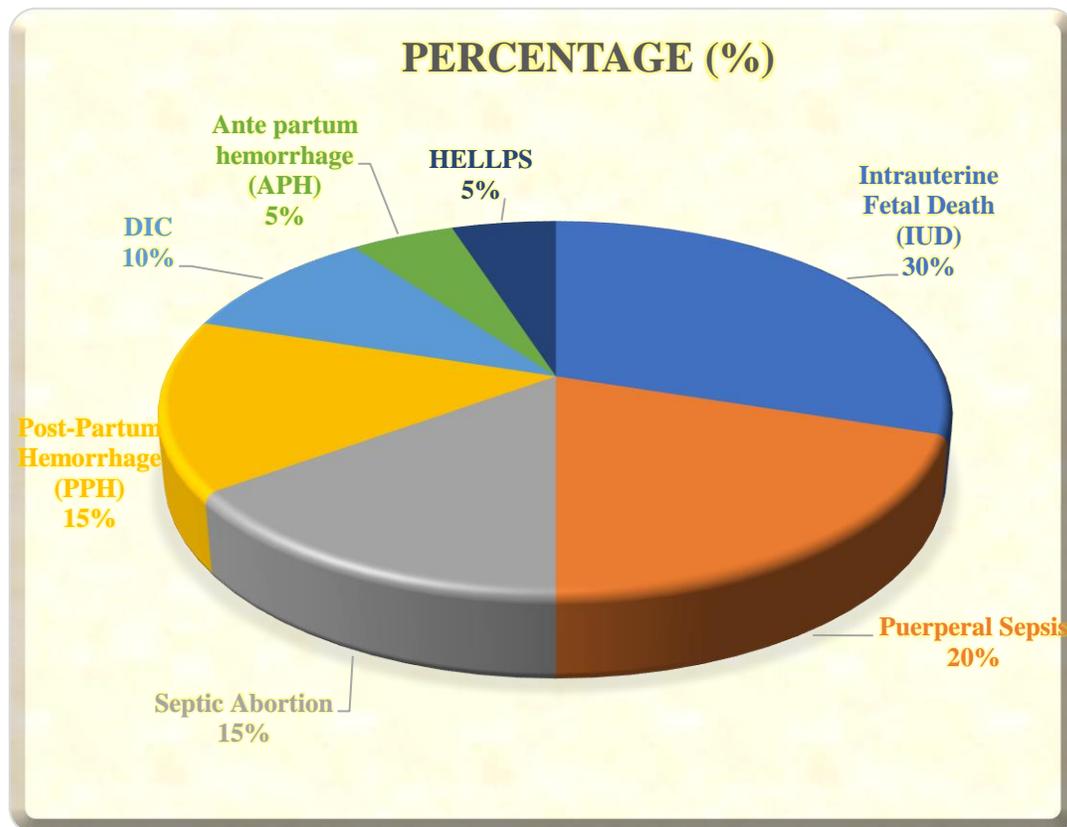


40 women with pregnancy found affected by ARF chosen for the study out of which 45% (18) patients were primigravida and multipara were 55% (22) with mean age as 29 ± 4.50 years. 20% (08) patients got adequate antenatal care and remaining 80% (32) patients did not received any antenatal treatment. Acute Tubular Necrosis (ATN) was the most common medical diagnosis. 20% (08) patients showed 100% recovery. Patchy cortical necrosis was there in 45% (18) patients and observed acute renal cortical necrosis in 35% (14) patients. Recorded 30% (12) overall death ratio. The most common cause of ARF was sepsis. 15% (06) patients didn't required

any dialysis whereas, 85% (34) patients got hemodialysis. Patients of anuria were 60% (24). Found HELLPs in 5% (02), IUD (Intrauterine Fetal Death) in 30% (12), DIC in 10% (04), puerperal sepsis in 20% (8), Septic abortion in 15% (06), PPH (Post-Partum Hemorrhage) in 15% (06) and APH (Antepartum Hemorrhage) in 05% (02) cases. Found ARF (Acute Renal Failure) in 15% (12) patients during 1st and 2nd trimester of pregnancy whereas, during puerperium or 3rd trimester 70% (28) cases developed acute renal failure. Table number 02 describes the etiology and table number 03 shows the outcome of renal failure.

Table No 02: Etiology of Pregnancy Associated ARF (Acute Renal failure)

Reason	Percentage (%)	Frequency
Intrauterine Fetal Death (IUD)	30	12
Puerperal Sepsis	20	08
Septic Abortion	15	06
Post-Partum Hemorrhage (PPH)	15	06
DIC	10	04
Ante partum hemorrhage (APH)	05	02
HELLPS	05	02



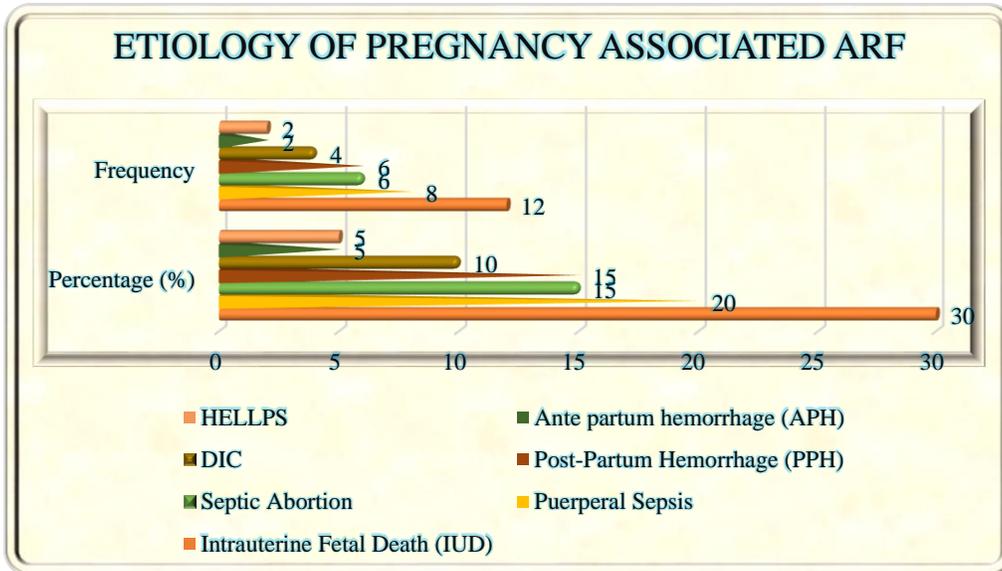
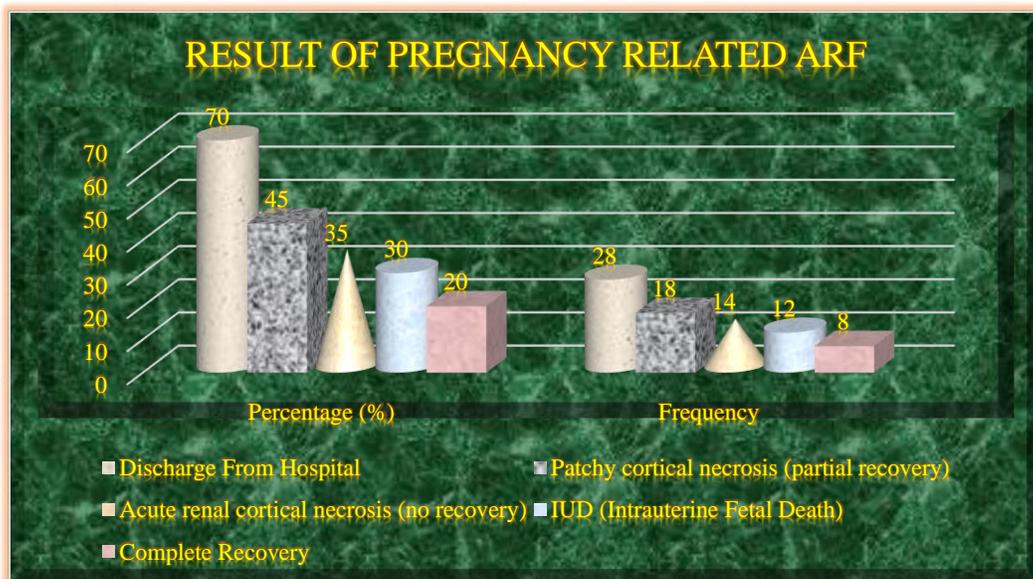


Table No 03: Result of Pregnancy Related ARF (Acute Renal failure)

Results	Percentage (%)	Frequency
Discharge From Hospital	70	28
Patchy cortical necrosis (partial recovery)	45	18
Acute renal cortical necrosis (no recovery)	35	14
IUD (Intrauterine Fetal Death)	30	12
Complete Recovery	20	08



DISCUSSION:

Purpose of this study was to show off the nephrological related acute obstetrical problems and this is the first study in its type of nature. According to the results found in current study, dangerously high situation observed regarding pregnancy related ARF. Whereas, in developed countries obstetrical ARF is very rare as less than one amongst twenty thousand from all gestations [02]. No case of maternal death or irreversible renal damage detected in last seven years and occurrence of obstetrical ARF from 1956 A.D to 1967 A.D was 43% which reduced to 0.50% as compared to total ARF cases from 1988 A.D to 1994 A.D as reported by Stratta et al [05, 07]. Improvement observed in the incidence of pregnancy related ARF in a few developing countries like Turkey, Africa and India as occurrence of this disease reduced from 25.0% to > 16.0% from 1977 to 1991 in South Africa [02].

Where without aseptic measure pregnancy cases handled at home by accoucheuse and patients did not receive any type of antenatal care, pregnancy related ARF observed most common in such patients. According to the findings of our study main reason of ARF was septicemia due to puerperal sepsis and septic abortion which was also the main leading reason of ARF in underdevelopment countries [09]. Whereas, in modern nations observations about it are very rare. In 3rd world countries occurrence of septicemia is still too much high as in India, according to the report of Goplani et al it is approximately 61.0% and in Pakistan according to the findings of Akhtar et al and Rafique et al it is 24.0% and 31.0% accordingly [10].

Even ARF regarding pregnancy is a major health related issue, information about it is inadequate. Found no info for comparison about such a big health issue from central Punjab. According to the findings of this research study with death ratio of 30.0% reported cases were 19.0 percent. With the maximum clinical services compared to the rest of the states of country, from Karachi city obstetrical ARF stated as 18.0 percent with morbidity and mortality ratio as 26.0 % and 23.0 % respectively by Naqvi et al in 1994 [04]. Obstetrical ARF with mortality rate of 18.0% occurrence rate observed as 7.0% to 10.0 % in Northern areas of Pakistan [03]. Occurrence of pregnancy related ARF in Pakistan is very high in accordance to these figures. Dangerously high rate of incidence observed in Punjab as we compared the collected information to the other data available in rest of the country. These statistics clearly show the lack of medical care and clinical facilities particularly antenatal care in central Punjab, Pakistan.

CONCLUSION:

Found 19 % patients of Acute obstetrical renal failure amongst total patients of ARF which clearly describes that it is very common condition and it is very dangerous if not cured in time as it leads to very high morbidity and mortality rate. In the light of these observations, gynecological care is very important in pregnancy related acute renal failure. Through more effective measures of careful prevention, liberalization of abortion laws and improved clinical treatment facilities many modern countries and some 3rd world nations achieved prevention from pregnancy related ARF.

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