



CODEN [USA]: IAJPBB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES<http://doi.org/10.5281/zenodo.3690864>Available online at: <http://www.iajps.com>

Research Article

**TO DETERMINE THE UROLOGICAL DISORDERS AMONG
PREGNANT FEMALES AND ITS COMPLICATIONS**¹Dr Uzma Mumtaz, ²DR Sadiq Jan, ³Dr Sadia Aslam¹FCPS Obstetrics and Gynecology, District Gynecologist, Aziz Bhatti Shaheed Teaching Hospital Gujrat²MBBS FCPS Assistant Professor, Obstetrics and Gynecology, Islamic International Medical College, Rawalpindi³Nishtar Medical College and Hospital Multan**Article Received:** December 2019 **Accepted:** January 2020 **Published:** February 2020**Abstract:*****Aim:** The aim of the study the urological disorders among pregnant females.****Study Design:** A prospective longitudinal study.****Place and duration:** In the Obstetrics and Gynecology department of Aziz Bhatti Shaheed Teaching Hospital Gujrat for two year duration from May 2017 to May 2019.****Methods:** A total of 50 women with existing or newly diagnosed urological disorders were included. The age and parity of women with pregnancy were treated as controls. Regular antenatal follow-up was carried out. Among the two groups, Numeric variables were compared using the unpaired Student's t-test. For pair comparisons, paired t-test was applied. A chi-square test or an exact Fisher test was used to compare categorical variables between groups. All analyzes were bipolar and $P < 0.05$ was taken statistically substantial. The software used is statistical version 6 (Tulsa, Oklahoma, USA: Stat Soft Inc., 2001) and Graph Pad Prism (San Diego, California, USA: Graph Pad Software Inc., 2007).****Results:** A total of 50 gravid females diagnosed with urological problems were included in the study. The study population revealed the following urological diseases: macroscopic hydronephrosis 5 (10%), moderate hydronephrosis 38 (76%), kidney stones 6 (12%), hydro ureter 32 (64%), nephrolithiasis 4 (8%), Cases of PUJ obstruction 9 (18%), pyelonephritis 10 (20%) and bladder tumor and abscess of the kidney 2 (4%).****Conclusion:** There may be several urological problems that lead to poor results during pregnancy. It is necessary to distinguish physiological changes from pathological conditions by making the first diagnosis. Urologists play a key role in managing the complex processes of urological diseases. In the coordinated approach of obstetricians, urologists are required to provide the best care to both mother and fetus.****Key Words:** Urological disorders, pregnancy, complications.***Corresponding author:****Dr Uzma Mumtaz,**

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Please cite this article in press Uzma Mumtaz et al, **To Determine The Urological Disorders Among Pregnant Females And Its Complications.**, Indo Am. J. P. Sci, 2020; 07(02).

INTRODUCTION:

Pregnancy usually changes the physiology and anatomy of the kidneys and urinary tract, which can later lead to numerous symptoms and pathological conditions¹. The size of the kidneys increases by 1-1.5 cm during pregnancy, and 30% volume rises due to kidney growth and interstitial vascular volume². The total number of nephrons remains constant, but the GFR rises by about 40-50%. The pelvic and calyx systems expand due to the relaxing progesterone effect on smooth muscles, as well as the mechanical compression of the ureter by an enlarged pregnant uterus at the pelvic rim³. Dilation of ureters and renal pelvis (ureter hydrocele and hydronephrosis) is more pronounced than on the left and observed in 80% of pregnant women due to the physiological dextrorotation of the pregnant uterus and distended right ovarian vein draining on the right side into renal vein⁴⁻⁵. These changes are visualized during ultrasound examination in the middle of the second trimester and recovery in the postpartum period takes 4 to 6 weeks. Ultrasound measurements in the series show that the incidence of hydronephrosis reaches a maximum in week 28, which is 60 to 80% of the overall incidence⁶. The extended collection system contains more than 200 to 300 ml of urine responsible for urinary retention and a 40% higher risk of developing pyelonephritis in pregnant women compared to pregnant women. Treatment options for gestational hydronephrosis are based on concomitant kidney diseases such as stones, pyelonephritis and internal kidney disease⁷. A previous study was conducted in which double placement of the J stent was more operative than conventional treatment alone in moderate to severe hydronephrosis. During pregnancy, various urological problems may occur with various symptoms, such as hydronephrosis, hydroureter, pyelonephritis, urolithiasis, pelvic obstruction (PUJ) and bladder tumor, pain in the side, fever, and urinary retention, and hematuria, combination of dysuria and / or multiple symptoms⁸. Differentiating physiological changes in pregnancy is an important issue. Against this background, our study was conducted to detect various urological

disorders in pregnancy and their interventions for better obstetric results.

MATERIALS AND METHODS:

This is a prospective longitudinal study held in the Obstetrics and Gynecology department of Aziz Bhatti Shaheed Teaching Hospital Gujrat for two year duration from May 2017 to May 2019. A total of 50 women with existing or newly diagnosed urological disorders were included. The age and parity of women with lonely pregnancy were treated as controls. Excluded from the study are: active urinary tract infection (UTI), lower urinary tract disorder, gestational or non-gestational diabetes, chronic hypertension or preeclampsia, liver disease or chronic kidney, and connective tissue or chronic vascular disease. Regular prenatal tests were performed. The goodness of the fetus and pregnancy was created with the result of a biophysical profile. Gestational age was measured on the 1st day of the last menstrual period and by ultrasound results of the first trimester were confirmed. Pregnancy-related events were defined in accordance with the 22nd birth book, issue 22. Demographic data, including maternal age, pregnancy, parity and abortions, and previous pregnancies were obtained during the first application.

Among the two groups, Numeric variables were compared using the unpaired Student's t-test. For pair comparisons, paired t-test was applied. A chi-square test or an exact Fisher test was used to compare categorical variables between groups. All analyzes were bipolar and P <0.05 was taken statistically substantial. The software used is statistical version 6 (Tulsa, Oklahoma, USA: Stat Soft Inc., 2001) and Graph Pad Prism (San Diego, California, USA: Graph Pad Software Inc., 2007).

RESULTS:

The study included 66 pregnant women who were diagnosed with urological problems. An additional 60 pregnant women were enrolled without any complications for comparison.

Table 1: Demographic Variables of Pregnant Women with Urological Disorders.

Characters	# of Patients (n=50)	Study Group %	# of Patients (n=60)	Control Group %	P
Age in years					
19-24	16	32.00%	43	71.67%	0.009
25-29	24	48.00%	11	18.33%	
30-34	10	20.00%	6	10.00%	
Parity					
Primigravida	26	52.00%	58	96.67%	<0.001
Multi	24	48.00%	2	3.33%	
Body mass Index					
≥ 24	47	94.00%	54	90.00%	1
≥ 30	3	6.00%	6	10.00%	
Residing place					
Urban	21	42.00%	19	31.67%	1
Rural	29	58.00%	41	68.33%	

Table 1 did not show a statistically significant difference between the demographic, study and control variables in terms of age, body mass index and place of residence. While all patients in the control group were Primigravida, 26 (52.00%) and 24 (48.00%) patients in the study group were Primigravida and Multigravida (P <0.001).

Table II: Presenting features in the study group

Presenting features	Number of patients (n=50)	%age
Moderate hydronephrosis	38	76%
Gross hydronephrosis	5	10%
Hydroureter	32	64%
Urolithiasis	6	12%
Nephrolithiasis	4	8%
pelviureteric junction obstruction	9	18%
pyelonephritis	10	20%
renal abscess	2	4%

The study population revealed the following urological diseases [Table 2]: moderate hydronephrosis 38 (76%), gross hydronephrosis 5 (10%), hydroureter 32 (64%), kidney stones 6 (12%), kidney stones 4 (8%), Cases of PUJ 9 obstruction (18%), pyelonephritis 10 (20%) and abscess of the kidney and bladder tumor 2 (4%).

Table III: Presenting symptoms in the study group

Presenting symptoms	Number of Patients	%age
swollen abdomen	35	70.00%
pain abdomen(loin to groin)	42	84.00%
Hematuria	5	10.00%
Dysuia	50	100.00%
Retention of Urine	42	84.00%
Fever	18	36.00%

Symptoms presented [Table 3] abdominal pain (lateral pain) 42 (84%), hematuria 5 (10%), dysuria 50 (100%), urinary retention 42 (84%), fever 18 (36%) and many symptoms it appeared as a synonym of one patient.

Table IV: Intervention carried out in the study group.

Interventions	Number of Patients	%age
Double J Stenting	38	76.00%
Pyeloplasty	8	16.00%
Ureteroscopic lithotripsy	3	6.00%
abscess drainage	6	12.00%
antitubercular therapy	5	10.00%
antibiotics	33	66.00%

The following interventions were carried out [Table 4]: placement of double J stent (DJ placement) 38 (76%), testicular plastic surgery 8 (16%), ureteroscopy lithotripsy 3 (6%), abscess drainage 6 (12%), anti-tuberculosis treatment 5 (10%) and 33 antibiotics (66%).

Table V: Pregnancy outcome in the both study and control group

Pregnancy outcome	No of patients in Study Group(n=50)	%age	No of patients in Control Group(n=60)	%age
Preterm Labor	23	46%	11	18.33%
Abortion	3	6%	1	1.67%
Oligiohydromnios	13	26%	7	11.67%
PIH	7	14%	2	3.33%
PPH	9	18%	0	0.00%
Preeclampsia	4	8%	3	5.00%
FGR	18	36%	0	0.00%
Still Birth	5	10%	2	3.33%
Operative intervention	7	14%	19	31.67%
Vaginal Delivery	47	94%	39	65.00%

Obstetric study results in the study group [Table 5] included preterm labor 23 (46%), Abortion 3 (6%), oligohydramnios 13 (26%), pregnancy-induced hypertension 7 (14%), Postpartum hemorrhage 9 (18%), preeclampsia 4 (8%), fetal growth reduction 18 (36%) and Still childbirth 5 (10%). However, in the control group, premature delivery was observed only in 11 cases (18.33%). In 47 (94%) cases in the study group, the mode of delivery was vaginal, and 7 (14%) patients underwent caesarean section. Fetal outcome was mainly observed in infants with low birth weight and premature babies [Table 6].

Table VI: Fetal outcome

Fetal outcome	Number of fetuses in the study group (n=50)	%age	Number of fetuses in the control group (n=60)	%age
Fetal demise	5	10%	1	1.7%
NICU admission	35	70%	15	25.0%
Low birth weight babies	38	76%	23	38.3%
Prematurity	26	52%	9	15.0%

DISCUSSION:

Hydronephrosis occurs in many pregnant women and affects the right side more than the left side. Due to the action of progesterone, mild physiological hydronephrosis is sometimes seen after 6 weeks of pregnancy and recovery in the postpartum period takes 4 to 6 weeks, which is not a pathological condition. Dilation is usually limited to the proximal ureter to the pelvic edge. Moderate to severe hydronephrosis is a problem and occurs mainly at the beginning of the third trimester⁹. The right side is more affected, and the left side is protected from enlargement by a loaded sigmoidal column. Treatment of severe pure gestational hydronephrosis can be carried out by conservative treatment or by inserting a double J stent. Symptoms of severe pure pregnancy hydronephrosis have improved after conservative or double J. therapy. Predefined cup diameter values to classify the severity of gestational hydronephrosis, variability to define hydronephrosis 20% to 100%. Faundes et al presented a normal curve of urinary tract dilatation in which the upper limit of the diameter of the cup was over 15 mm in the middle of the second trimester¹⁰. To overcome the variability in hydronephrosis definition, patients with side pain symptoms with a cup diameter > 15 mm on both sides were included¹¹. The conservative treatment

used in this study was hospitalization, intravenous hydration and intravenous antibiotics, and some patients who did not respond to conservative treatment had to undergo surgery such as placing the DJ stent during follow-up. When conservative treatment did not respond effectively, a double J stent was placed and then patients became asymptomatic. Although we did not experience any serious complications with the placement of the double J stent during pregnancy, previous publications noted that the procedure was not completely safe and effective¹². Ringel et al found that 32% of stents require pre-planned extraction because of their side effects. Patients with ureteral stents may experience frequency, urgency, painful urination, side pain or suprapubic pain. Although no stent-related complications have been observed in our series, urinary tract infection, stent migration, stent forgetting, and stent obstruction require device removal or replacement¹³.

Urinary calcium excretion doubles during pregnancy due to an increase in GFR and therefore reduces tubular reabsorption. Increased absorption of calcium in the intestines, mobilization of calcium from bones (driven by the formation of 125-dihydroxycholecalciferol through the placenta) and suppression of the parathyroid hormone together, these changes lead to hypercalciuria

through absorption. It may contribute to the formation of calcium oxalate stones due to an increase in GFR during pregnancy, followed by an increase in net urinary uric acid excretion¹⁴. The first factor in the treatment of urolithiasis during pregnancy should be conservative treatment (adequate hydration and relief of pain). With conservative treatment, about 70-80% of the stones spontaneously pass through the renal canal during pregnancy. Surgical intervention is required when conservative treatment fails in some patients. Absolute indications for surgical intervention are similar to those for pregnant patients and include infected obstructive stones (usually associated with UTI, fever and sepsis), blocked lone kidney or acute renal failure.

Most pregnant women who require intervention for symptomatic urolithiasis can go through the placement of a ureteral stent or nephrostomy tube. Final treatment of urolithiasis is delayed after birth. Ureteral stents were placed under local anesthesia, and the patient - under ultrasound examination. Ureteroscopy is gaining more and more popularity in the area of precise diagnosis and treatment of urolithiasis during pregnancy. Several studies have proven the safety and effectiveness of ureteroscopy in all trimesters of pregnancy. Others believe that ureteroscopy is a first-line drug that does not provide conservative treatment of urolithiasis during pregnancy. The advantages of ureteroscopy include not only the need for a single surgical intervention during pregnancy, but also the avoidance of stent or nephrostomy complications and a faster resolution of symptoms.

Pyelonephritis is a common non-obstetric indication for use during pregnancy. Complicates about 1-2% of pregnancies and can cause serious illness in mothers and fetuses. Physiological changes in pregnancy, including low ureteral peristalsis, mechanical compression of the ureters, reduced detrusor tone and incomplete emptying of the bladder, may predispose a pregnant woman to develop pyelonephritis. This is usually associated with preterm delivery and increases the risk of preterm delivery from 6% to 50%. In our study, preterm delivery was observed 30 (45.45%) time in the study group. Although our institution does not have a strict protocol for the treatment of pyelonephritis, all patients in the study were treated with intravenous antibiotics for more than 24 hours with fever and hospitalized until the pain subsided. Ceftriaxone is the most common primary empirical antibiotic used to treat pyelonephritis in our institution, and other antibiotics are used, according to the crop sensitivity report. Anti-tuberculosis drugs were used in six patients with a documented source of tuberculosis infection. In our study,

abscess was aspirated in four patients under sonological control¹⁵.

Malignant neoplasms are rare during pregnancy and their overall incidence is 1 in 1000. Magnetic resonance imaging is a useful diagnostic technique for assessing kidney masses due to radiation exposure. There was no difference between tumor progression during pregnancy and the non-pregnant state. Treatment of the tumor during pregnancy takes place after considering the malignant tumor potential and the survival rate of the fetus at different gestational ages. Developed tumors should be treated aggressively despite an increased risk of fetal mortality, smaller tumors can be seen before delivery or until fetal lung maturity. In our study, we observed four bladder tumors during pregnancy with close monitoring.

The method of delivery should be based on obstetric indications. However, when the risk of pelvic floor damage is high, vaginal delivery is contraindicated, as with bladder, the abstinence mechanism is expected to be interrupted, such as the bladder neck and history of cystoplasty restructuring. In such cases, Caesarean section is recommended before starting labor. In our study, no bladder neck obstruction or urinary diversion was found. Therefore, over 80% of cases were born from the vagina, 70%, even more in the study group than in the control group. In addition to urological complications, other incidental obstetric complications may contribute to this situation in the control group.

CONCLUSION:

There may be several urological problems that lead to poor results during pregnancy. It is necessary to distinguish physiological changes from pathological conditions by making the first diagnosis. Urologists play a key role in managing the complex processes of urological diseases. In the coordinated approach of obstetricians, urologists are required to provide the best care to both mother and fetus.

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