MANAGEMENT OF RENAL COLIC DURING PREGNANCY

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MANAGEMENT OF RENAL COLIC DURING PREGNANCY (Abstract): The diagnosis of urological diseases in pregnancy involves particularities requiring both the knowledge of the pathophysiological mechanisms of the respective diseases and a experience of the urologist and gynecologist in assessing the physiological conditions of pregnancy. **Aim:** To identify the specific features of renal colic in pregnant women, in the context in which the urological assessment of them is not mandatory. **Material and methods:** The study included a group of 86 pregnant women diagnosed with urological diseases and renal colic as their main symptom. **Results:** There are two major difficulties faced by urologists in these cases: firstly, the impossibility of conducting X-ray imaging investigations to determine the location and type of the obstruction and, on secondly, the ureteral catheterization and insertion of the ureteral catheter in the absence of adequate fluoroscopic control. **Conclusions:** The urologist’s experience is decisive in establishing intraoperatively if the introduction of the ureteric probe is possible, the risk of a ureteral perforation with severe consequences requiring a percutaneous nephrostomy to be performed under ultrasound guidance. **Keywords:** PREGNANCY, RENAL COLIC, URINARY DISEASES.

During normal pregnancy there are profound changes in the genitourinary tract affecting the pregnant woman. Management of urological emergencies during pregnancy remains a challenge because clinical signs are subtle diagnostic tools and treatment options are limited.

Mild symptoms of urinary tract infection, urolithiasis or hematuria can progress to true medical emergencies with devastating results for the mother and the fetus if they are not diagnosed and treated promptly (1).

The clinical picture of urological conditions during pregnancy is like the manifestations of these diseases in other categories of patients, but differences may occur in their progression and complications through effects for both mother and fetus.

Urological disorders that may occur during pregnancy are acute hydronephrosis of pregnancy, infections, urinary lithiasis, kidney failure, and clinically these manifestations are dominated by pain, septic status or symptoms associated with impaired renal function.

The aim of this study was to evaluate the issue of the diagnosis of certainty and
the optimal therapeutic choice, related to a symptom that affects relatively frequently (11-20%) pregnant patients - renal colic. Because the number of patients presenting to urology clinics is increasing, it is necessary to standardize the methods for diagnosis and treatment of these diseases, with the implementation of a patient management protocol.

**MATERIAL AND METHODS**

This retrospective study was performed in a group of 86 patients of different gestational age that experienced this symptom. The reasons for the presentation, age of the patients, gestational age, and the differential diagnosis were considered.

In this research, the STATISTICA program, dedicated to medical research, was used for statistical data processing. The following tests were used: ANOVA, Scheffé, Pearson, Mantel-Haenszel, Fisher test, and specific correlation tests for quantitative and for qualitative variables.

Following these tests, the main parameters of interest were discussed and, according to their values, the conclusions were drawn.

**RESULTS**

The analysis of the age of patients with urological disorders during pregnancy revealed a high frequency of cases between the age of 25 and 30 years (35.76%). Comparable frequencies were recorded for the age groups 15-20 years - 15.15%, 30-35 years - 16.97%, and 20-25 years - 25.45%. A lower incidence of urological disease in pregnancy was found in patients over 35 years of age.

There was a high frequency of cases in the second and third trimester of pregnancy, with a very low number of pregnant women in the first trimester of pregnancy - 9.09% (fig.1).

![Fig. 1. Distribution of cases by age of pregnancy](image)

The number of pregnancies has a homogeneous distribution, the highest frequency being found for cases with 1 or 2 pregnancies, representing 69.09%. Pregnant women at the 3-rd pregnancy accounted for 30.91% of the study group (tab. 1).
The main reason for admission was the presence of collateral lumbar pain, which was identified in 82 cases. Absence of lumbar pain was very rare, in just 4 cases.

The diagnosis on admission was ureterohydronephrosis in 52.12% of cases, infected ureterohydronephrosis in 26.67%, and acute pyelonephritis in 15.15% of pregnant women.

A diagnosis of lumbar ureteral calculi was made in 3.3% of cases and of pelvic ureteral calculi in 3.03% (fig. 2).

The urological history of pregnant women in the studied group was most frequently represented by the spontaneous elimination of calculi (8.48%) and pathological documented lithiasis episode (2.42%).

In our study most, pregnant women did not have a history of urinary disease (89.09%), which shows that pregnancy makes it that the pathological urological aspects that were clinically silent before pregnancy to become clinically manifest.

In this study, the results of the multiple correlations were considered considering...
the changes in the admission profile of pregnant women with urological disorders. The insignificant value of the significance level (p) calculated for the intercept variable indicates that besides the factors under study there are no other predictive factors in determining the pursued profile (tab. II, fig. 3).

TABLE II

<table>
<thead>
<tr>
<th>Partial correlation</th>
<th>Coefficient of correlation (Beta)</th>
<th>Std. Err. (Beta)</th>
<th>B</th>
<th>Std. Err. B</th>
<th>t</th>
<th>95% interval of confidentiality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.9509</td>
<td>0.4.78984</td>
<td>0.6160</td>
<td>7</td>
<td>0.540818</td>
<td></td>
</tr>
<tr>
<td>trimester pregnancy</td>
<td>0.741629</td>
<td>0.10601</td>
<td>3.4002</td>
<td>6</td>
<td>0.81626</td>
<td>4.1656</td>
</tr>
<tr>
<td>Renal colic</td>
<td>0.799004</td>
<td>0.13150</td>
<td>3.8078</td>
<td>9</td>
<td>1.00353</td>
<td>3.7944</td>
</tr>
<tr>
<td>Microscopic pyuria</td>
<td>0.122716</td>
<td>0.17744</td>
<td>0.1314</td>
<td>9</td>
<td>0.19000</td>
<td>0.6915</td>
</tr>
<tr>
<td>Fever, shiver</td>
<td>0.661120</td>
<td>0.10961</td>
<td>2.8781</td>
<td>9</td>
<td>0.87362</td>
<td>3.2945</td>
</tr>
<tr>
<td>Bladder</td>
<td>0.075457</td>
<td>0.12871</td>
<td>0.0487</td>
<td>9</td>
<td>0.83137</td>
<td>0.0586</td>
</tr>
</tbody>
</table>

| Trimester                  | 19.1051                          | 5.6788 | 2.4023 | 2.8663 | 2.9531 | 0.0014 |
| Nephritic colic           |                                   | 3.4023 | 2.8663 | 2.9531 | 0.0014 |
| Fever, Shiver             |                                   | 3.4023 | 2.8663 | 2.9531 | 0.0014 |
| Leukocytosis              |                                   | 2.8663 | 2.9531 | 0.0014 |
| Ureteral hydronephrosis   |                                   | 2.8663 | 2.9531 | 0.0014 |
| Bladder phenomena         |                                   | 2.8663 | 2.9531 | 0.0014 |
| Macro/microscopic pyuria  |                                   | 2.8663 | 2.9531 | 0.0014 |

**Fig. 3.** Statistical t-values in the multiple correlation of the age of pregnancy vs. clinical findings on admission

Lumbar pain was located on the right side in 43.64% of pregnant women in this study, while in 18.79% it was bilateral. Left-side location was reported in 35.15%
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of cases (fig. 4).

Fig. 4. Clinical aspects on admission - lumbar pain vs. trimester of pregnancy

DISCUSSION

Renal colic on admission was particularly noted in patients in the second trimester of pregnancy (52.17%), the results demonstrating a significant correlation between the age of pregnancy and the incidence of lumbar pain ($\chi^2 = 6.14$, $p = 0.036$, 95% CI). The results of the study are consistent with literature data (2).

The statistical data show that the incidence of urological diseases during pregnancy is significantly higher in primiparas women (35.15%) than in the other pregnant categories studied.

The clinical findings on admission have shown a significant correlation with the age of pregnancy, a conclusion demonstrated by the results of the multiple correlation test (3).

In other words, the age of pregnancy significantly influences the clinical aspect of pregnancy-related urological conditions. To highlight the most relevant clinical and laboratory findings depending on gestation age, multivariate analysis was used.

The results of multivariate analysis indicate the predictive factors of the profile of pregnant women with urological disorder and gestational age.

Correlation analysis using nonparametric tests demonstrated the association between the presence of lumbar pain and the trimester of pregnancy by the high value of the non-parametric correlation coefficient and low significance level of the test. In statistical estimations a 95% confidence interval was used.

Ureteral calculi during pregnancy represent not only a diagnostic challenge, but also a management dilemma. Some studies report an incidence of symptomatic urolithiasis during pregnancy of 0.35%, occurring especially in the third trimester of pregnancy (55.5%) (4).

The reported incidence of symptomatic nephrolithiasis during pregnancy varies greatly between 1 in 244 pregnancies to 1 in 1,240 pregnancies (5). The occurrence of urolithiasis during pregnancy is a risk not only for the mother but also for the fetus and may be a factor which contributes to premature birth. The diagnosis during pregnancy is difficult, primarily because of limitations of X-ray use and physiological hydronephrosis during pregnancy (6). In cases requiring invasive treatment, double-J stent or percutaneous nephrostomy may be used, which are the less invasive techniques for urinary drainage. The insertion of a double-J catheter can be performed under control until the end of pregnancy. Percutaneous nephrostomy can also be performed with local anesthesia under ultrasound guidance, realizing an external drainage without irritation of the bladder.

In rare situations where obstruction is bilateral, the colic is accompanied by oliguria or even anuria. These urinary phenomena may be accompanied by reflexive digestive manifestations, namely nausea, vomit-
ing, or ileus which may sometimes be severe. These symptoms may be explained by the direct compression in pregnancy on the celiac plexus and the phenomena of angiogenesis and vascular hypertrophy.

Renal colic is the most common manifestation of acute hydronephrosis in pregnancy and occurs in most cases on the right side. In contrast to colic of lithiasis where there is typically no antalgic position for the patient, in the colic of hydronephrosis the pain improves or even disappears if the pregnant woman is lying on the opposite side to the painful one.

During pregnancy, symptomatic urolithiasis associated with ureteral obstruction and upper urinary tract infection is a major urological emergency that may cause perineal urosepsis, or even patient death. Also, the presence of urinary calculi can cause premature rupture of membranes and premature birth in a percentage ranging from 2.9% to 7%, presenting a high degree of risk for the fetus.

The presence of an associated pathology in pregnant women, e.g. hypothyroidism, further complicates the situation and outcomes of treatment, raising doubts about the continuation of pregnancy.

These reasons lead to the conclusion that although urolithiasis is a relatively rare condition during pregnancy, its correct approach requires a very good collaboration between obstetricians, urologists, radiologists and anesthetists.

Renal colic during pregnancy can be determined by both acute gestational hydronephrosis and intrinsic obstruction caused by a calculus in the excretory pathway. Differential diagnosis can only be made when the ultrasound directly shows the presence of calculi in the pyelo-ureteral junction or in the first portion of the lumbar ureter. Whatever the cause, renal colic pain should be treated as a matter of urgency. Minimal or non-invasive imaging techniques are preferred. The inflammation of the fascia overlying the neighboring organs can be distinguished by MRI. Anatomical imaging evidence is extremely valuable in differential diagnosis.

Urological complications in pregnancy are caused by pain and can take the form of uterine contractions and fetal distress. If urine is infected, there may be bacteremia, septicemia, or even toxic-septic shock that may result in fetal and even maternal death. A rare, but very severe complication is the spontaneous rupture of the kidney that is often fatal.

CONCLUSIONS

In our study the clinical picture of the patients is almost like the manifestations of other urological diseases; differences that can occur in the disease course and complications could affect both the mother and the fetus. Our statistical data show that the incidence of urological diseases during pregnancy is significantly higher in primiparas women. The imaging investigations should be performed due to the possible harmful effects on the product of conception. In the studied group we were able to make an ultrasound diagnosis so that it was not necessary to use X-rays in any case. The renal colic will be initially treated conservatively by controlled ingestion of fluids, antalgic and antispasmodic drugs, and in the case of hyperalgesic febrile colic the emergency drainage of the upper urinary tract, most commonly performed by ureteral catheterization or percutaneous nephrostomy.
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REFERENCES


NEWS

A NEW APPROACH TO SKIN CANCER DIAGNOSIS: THE ELECTRICAL IMPEDANCE SPECTROSCOPY

In a study by L. Rocha et al. the effect of adding electrical impedance spectroscopy (EIS) measurement at baseline to suspicious melanocytic lesions undergoing routine short-term sequential digital dermoscopy imaging (SDDI) was assessed. Patients with suspicious melanocytic lesions eligible for short-term SDDI were evaluated with EIS measurement which was performed at the first visit following SDDI. Melanocytic lesions with an EIS score ≥ 7 were excised because of the high risk of melanoma while lesions with a score < 7 were monitored with standard SDDI over a 3-month period. The results showed that an EIS score ≤ 3 requires no SDDI and values ≥ 7 require immediate excision of melanocytic lesions reducing the need for SDDI. The study offered a new approach to skin cancer diagnosis and showed that new protocol combining EIS at baseline with SDDI reduced the need to proceed to SDDI in just under half of cases. (Rocha L., Menzies S.W., Lo S. et al. Analysis of an electrical impedance spectroscopy system in short-term digital dermoscopy of melanocytic lesions. BJ ID 2017 Oct. 11. doi:10.1111/bjd.15595).

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