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Hydronephrosis in Pregnancy and Its Associated Findings in Urinalysis

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ABSTRACT

This study aims to assess the incidence of maternal hydronephrosis in pregnancy and the associated findings in urinalysis. One thousand pregnant women were included in this study: 400 were primigravida and 600 were multigravida. We found that 80% of pregnant women suffer from some degree of hydronephrosis, with primigravida significantly higher than multigravida (90% and 73%, respectively). In urinalysis, 40% of pregnant women with hydronephrosis suffer from urinary tract infections.

Introduction

Hydronephrosis and hydroureter in pregnancy are regarded as normal physiological occurrences. They are closely related to increased symptomatic urinary tract infections during pregnancy. However, the condition is frequently overlooked. With the increased use of ultrasound, hydronephrosis, and hydroureter are observed and considered pathological, necessitating further investigations and treatment.

The etiological factors for dilatation of the upper urinary tract in pregnancy include hormonal and anatomical elements. During pregnancy, it is common for the muscles of the ureter to become hypotonic and exhibit reduced motility. Because the urinary and genital tracts share a similar embryological origin, many researchers believe that hormonal effects responsible for the relaxation of the genital tract during pregnancy also lead to abnormal relaxation of the urinary tract. Harrow et al. suggested that this dilatation may be caused by the pressure exerted by the uterus on the ureters.

The physiological, symptomless enlargement of the upper urinary tract during pregnancy is not clinically significant unless an infection develops. The occurrence of asymptomatic bacteriuria is similar between pregnant and non-pregnant women, ranging from 2% to 10%. However, symptomatic bacteriuria is more common in pregnant women, with a rate of 15%, compared to 5% in non-pregnant women.

Dilatation of the upper urinary tract is more common and pronounced in women during their first pregnancy (primigravida). It typically begins suddenly around the 20th week of pregnancy, with the right side being more affected due to the ureter's increased vulnerability to compression by the iliac vessels. The condition gradually worsens until childbirth. In about 75% of cases, the dilatation resolves within a month after delivery. This involves both the renal pelvis and the upper ureter, though it is not observed in pregnant women who have a pelvic kidney.

The objective of this study is to find the rate of hydronephrosis in pregnancy and the associated findings in urinalysis.

METHODS

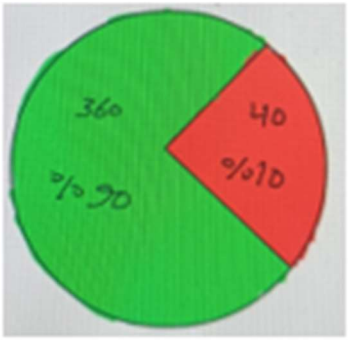
This study was conducted in private urology and ultrasound clinics from October 2019 to February 2021. One thousand pregnant women attended after the 20th week of gestation: 400 primigravida and 600 multipara. Fifty percent of them attended for routine check-ups of pregnancy and the urinary system, while 50% suffered from loin pain and/or dysuria. Ultrasounds for the urinary system and urinalysis were conducted for all patients. Pregnant women presenting with kidney stones, ureteric colic, and the presence of RBCs in urinalysis were excluded from the study.

RESULTS

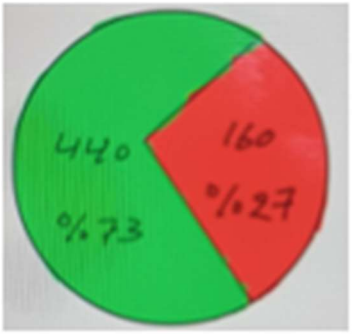
The ultrasonic study showed mild to moderate hydronephrosis and hydroureter in 800 (80%) out of the 1,000 pregnant women included in this study: 360 primigravida (90%) and 440 multipara (73%). In 560 pregnant women (70%), there was right hydronephrosis and hydroureter, and in the other 240 pregnant women (30%), there was bilateral hydronephrosis and hydroureter. Urinalysis showed pus cells (more than 5 per HPF) in 320 pregnant women suffering from hydronephrosis and hydroureter (40%). All pregnant women with hydronephrosis and infection were treated conservatively with antibiotics and simple analgesia. Severe cases, with symptoms such as fever, vomiting, and hypotension, were treated with intravenous fluids and parenteral antibiotics. In 30 pregnant women without hydronephrosis (15%), urinalysis showed more than 5 pus cells in HPF.

Discussion

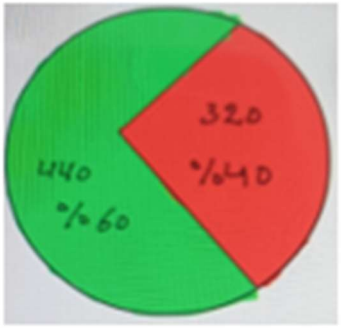
All studies conducted in different parts of the world show a high incidence of hydronephrosis and hydroureter in pregnant women. In 1975, Shulman and Herlinger conducted a study involving 220 intravenous urographies on pregnant women with no urological abnormalities. Their findings indicated that dilatation of the upper urinary tract was minimal and uncommon before the 20th week of pregnancy. However, after the 20th week, dilatation occurred suddenly and remained consistent in both frequency and severity until the end of the pregnancy. The right ureter and renal pelvis were affected in 76% of cases, while the left side showed dilatation in 36%. Severe dilation, especially on the left side, was rare.



Dilated pelvis and ureter in multipara



UTI in patient with dilated pelvis and ureter



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