

Pregnancy and kidney stones

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ABSTRACT

The pregnant population is not exempt from the prevalence of kidney stones. While a plain stone occurrence is typically uncomplicated in the general population, it is complicated during pregnancy. Due to imaging

constraints, diagnosing acute nephrolithiasis during pregnancy is difficult and is linked with a distinct set of consequences. The secret to making wise management decisions is multidisciplinary care. The mechanism of kidney stone development during pregnancy is also distinct.

Keywords: Pregnancy; Kidney; Nephrolithiasis; Hematuria; Hydronephrosis

INTRODUCTION

10% of the population will experience kidney stone disease in their lifetime and prevalence is increasing across all populations. However, pregnant women are not immune to this problem; incidence studies have indicated that symptomatic stone occurrences occur in 1 in 200 to 1500 pregnancies, with a higher prevalence in the second and third trimesters. Pregnancy related nephrolithiasis is complicated since both the mother and the fetus face serious risks. The fact that radiation is used in the gold standard imaging modalities for stone diagnosis further complicates the diagnostic process. A personal approach should be taken when making medical decisions because optimal management is still challenging. Nephrolithiasis during pregnancy also has a distinct pathogenesis.

The majority (89%) of individuals with an acute stone incident during pregnancy present with flank discomfort, which is similar to the non-pregnant population. Other common symptoms include lower urinary tract symptoms (dysuria, pyuria), nausea, vomiting, hematuria and abdominal pain. Fever is a sign of concurrent infection. Urinalysis aids in the diagnosis of infections. Nephrolithiasis cannot be ruled out by a routine urinalysis. Premature labor, widespread abdominal pain, or preeclampsias are examples of unusual presentations. The mainstay for nephrolithiasis diagnosis is imaging. The best method for diagnosing a stone during pregnancy is still up for debate. The conventional modality for assessing non-pregnant patients who may have kidney stones is non-contrast Computed Tomography (CT), although this exposes the patient to radiation.

DESCRIPTION

The mainstay for nephrolithiasis diagnosis is imaging. The best method for diagnosing a stone during pregnancy is still up for debate. The conventional modality for assessing non-pregnant patients who may have kidney stones is non-contrast Computed Tomography (CT), although this exposes the patient to radiation. Radiation has not been proven to harm the fetus in large quantities (50 mGy) while pregnant, but higher doses are known teratogens and should be avoided, especially in the first trimester. As a result, ultrasonography is regarded as the first line of evaluation for kidney colic during pregnancy. While having a relatively high specificity, ultrasound's sensitivity of just 34% makes it difficult to accurately rule out kidney stones if they are not visible. Accurate diagnosis still poses challenges due to the prevalence of physiological hydronephrosis during pregnancy and the inadequate visibility of stones during pregnancy by ultrasonography. Transvaginal ultrasound is occasionally useful, but it's clear that more advanced, pregnancy-safe imaging techniques are required. Although intravenous urograms and plain radiography have both been used in conjunction with ultrasonography, they both involve radiation and the additional anatomical information they provide is frequently insufficient.

In the past ten years, a more recent technique known as Half-fourier Single-shot Turbo-spin Echo (HASTE) Magnetic Resonance Urography (MRU) without contrast has gained popularity as an effective way to diagnose kidney stones that is also safe to use while pregnant. Similar to a CT scan in terms of sensitivity and specificity for the diagnosis of stones is HASTE MRU. The urinary system may be seen clearly using this fast acquisition, strongly T2-weighted method, which also identifies the stone as a signal void. The sensitivity and specificity for stone diagnosis are increased by combining the filling defect with secondary symptoms of acute obstruction (hydronephrosis and perinephric stranding). Although it is an excellent alternative in difficult situations, its use is still restricted due to the expense and lack of availability. HASTE MRU noncontrast is the second modality of choice when ultrasonography is unclear.

Gadolinium is not required and its safety during pregnancy, especially in the first trimester, is still up for debate. The positive predictive value of low dose CT, MRU and ultrasonography was shown to be 95.8%, 80% and 77% respectively, in a recent study that used ureteroscopy as a confirmatory diagnostic test during pregnancy. Low-dose CT is an alluring novel modality that has been considered with a lower fetal radiation dose than regular CT (4 mGy versus 25 mGy), but it still uses radiation, which is best avoided when pregnant. Nuclear medicine scans and magnetic resonance imaging with gadolinium are two other techniques mentioned in the literature, however they both use radiation or contrast media.

The first line imaging modality for a pregnant patient with signs and symptoms that suggest an obstructing kidney stone is renal ultrasonography. Transvaginal ultrasound may be helpful if this is uncertain. We believe that HASTE MRU without contrast should be used as the second line imaging modality if ultrasound results are unclear. Options include conservative therapy versus stent implantation or diagnostic ureteroscopy if a diagnosis is still not possible.

CONCLUSION

Because there are few imaging modalities that are advised during pregnancy, kidney stone occurrences might be difficult to diagnose. Management after a diagnosis is still debatable, however in carefully chosen patients, definitive ureteroscopy treatment is acceptable if conservative therapy fails. There are situations when just temporary relief with a stent or nephrostomy tube is necessary. Safe management relies on a multidisciplinary approach. The incidence is the same as in the general population, but a particular set of comorbidities can make nephrolithiasis more severe than in the non-pregnant population. In patients who have a history of stones, the unique pathophysiology of stone development in the pregnant patient may offer alternative targets for modification.

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