



ROLE OF POCUS IN DETECTION OF EMPHYSEMATOUS PYELONEPHRITIS IN COVID WARDS: OUR INSTITUTIONAL EXPERIENCE

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ABSTRACT

Introduction: Our institution has been at the forefront in the management of COVID 19 cases since the beginning of the pandemic. With more than 2000 dedicated covid beds at the peak of 2nd wave and a daily inpatient admission of 350 and outpatient census of 1000, resource availability was at its lowest,necessitating judicious use. With an increased incidence of emphysematous pyelonephritis in covid patients, we present our experience with use of point of care ultrasound(POCUS) in screening and management of emphysematous pyelonephritis

Materials And Methods: Abdominal pain is a symptoms in upto 15% of covid 19 patients . A wide variety of diseases can present with abdominal pain, ruling out urological emergencies takes precedence. We used POCUS in screening of 97 patients with loin pain, fever who were on O2 support. Patients were screened for signs of parenchymal irregularities(including dirty echoes), hydronephrosis, renal abscess, perinephric collection. Patients with no major changes were followed up with conservative management. Patients with clear parenchymal changes and highly suspicious signs were only suggested plain CT scans to confirm changes.POCUS was also used to insert a Percutaneous nephrostomy in patients as a bedside procedure

Results: Of the 97 patients screened using POCUS, only 28 had lesions suspicious of infection and parenchymal changes and only 13 had suspicion of gas or obstructive features in kidney. CT scan was prescribed to 25 patients which revealed 11 cases of emphysematous pyelonephritis. 3 patients were conservatively managed , 7 needed percutaneous drainage which was done as a bedside procedure and 1 patient with bilateral disease was taken up for emergency stenting

Conclusion: While ultrasound has a poor sensitivity compared to computed tomography in detecting parenchymal changes, easy availability,portability,no radiation risk make ultrasound a RELIABLE tool in times of the pandemic.

KEYWORDS : Covid, Pocus, Emphysematous Pyelonephritis

AIM

Our institution located in southern India was one of the largest covid centres of the region with an inpatient census of 2000 patients during the peak of the second wave of COVID pandemic. After the first peak we noticed a number of patients presenting with high grades of emphysematous pyelonephritis who had recently been treated for COVID 19. As Fever, abdominal pain(15%) and increased total leucocyte count are also seen in covid, it may not give rise to suspicion of emphysematous pyelonephritis in the treating clinician which can result in delay in diagnosis and treatment .Hence during the peak of second wave we decided to use point of care ultrasound in patients in covid wards for detection of emphysematous pyelonephritis.

MATERIALS AND METHODS:

The duration of study was from May to June 2021 . Patients in high dependancy wards on O₂ support with complaints of loin pain, and any one of following (Fever,Dysuria,Diabetes,Raised wbc counts) were screened using POCUS. Patients with any known cause of abdominal pain, previously diagnosed case of emphysematous pyelonephritis, patients with prior ct abdomen taken were excluded from the study. Patients were screened for parenchymal irregularities (dirty echoes),stone disease, hydronephrosis, renal abscess, perirenal collections. Patients without any specific detectable abnormality were advised to continue conservative management, while patients with detected lesion were prescribed a CT scan to confirm findings and definitive treatment was planned.

RESULTS

97 patients were screened using ultrasound. There were 31 male and 66 female patients. Of these 6 patients were on ventilator support, 29 were on continuous positive pressure ventilation and 43 patients were on oxygen mask/cannula. 19 patients were on room air. While loin pain (94 patients) was the most common symptom, fever (67), dysuria(29)and increased leucocytes >10,000(91) were seen in the other patients. 62 of these patients had a history of diabetes mellitus and were on treatment.

28 patients had abnormalities on POCUS (refer picture 1) of which 25 were advised to undergo a computed tomogram(refer picture 2) . In 3 patients CT was not done- two due to poor general condition and in one patient with cystic disease. Emphysematous pyelonephritis was detected in 11 patients. Type 2 was the most common(five patients),type 3 was seen in four patients and type 1 and type 4 in one

patient each. The patient were treated conservatively or with percutaneous drainage. 3 patients needed nephrectomy due to extensive disease and unsalvageable kidney.

10 of these patients were diabetics, all were on steroid therapy for covid pneumonia. E.coli was grown in urine culture of 7 patients.Proteus and Kliebsiella were seen in the other patients and Candida was grown in one patient.

Ultrasound findings

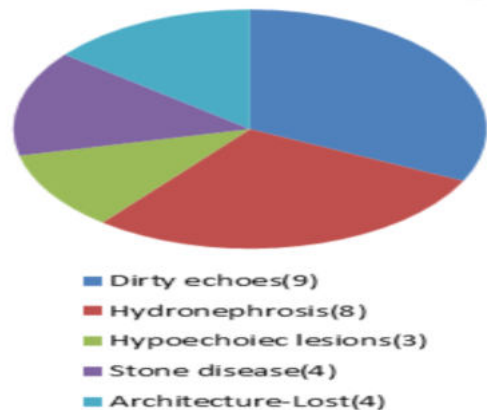
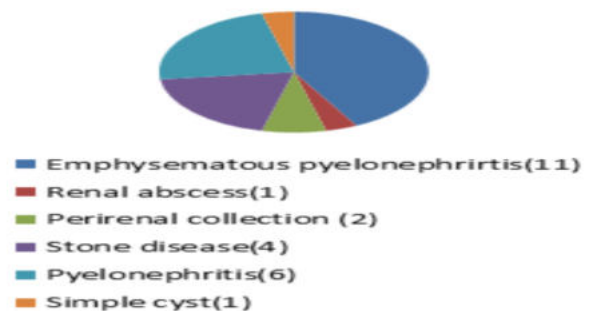


Figure 1: Ultrasound Findings

CT findings Chart 2



DISCUSSION

Uncontrolled Diabetics, steroid usage causing immunosuppression, delay in approaching health care, delay in diagnosis and initiating treatment can be reasons for increased incidence of emphysematous pyelonephritis in the patients. There is a possibility of Covid causing vascular emboli and papillary necrosis predisposing these patients to development of emphysematous pyelonephritis.

Ultrasound is widely available and can be used bedside by the treating urologist. It serves as a good screening tool in emergency setting. While it has drawbacks of lower sensitivity/specificity, being operator dependant. CT scan is undoubtedly the gold standard for diagnosis of emphysematous pyelonephritis.

LIMITATIONS

This study had no control group. Patients with no finding on ultrasound were not subjected to CT, to find out cases missed by ultrasound. Our study also had a small sample size (97) due to shorter duration of the second wave.

CONCLUSION:

Although CT is the gold standard investigation modality for EPN, POCUS in trained hands can be used as a reliable modality of investigation to screen patients for emphysematous pyelonephritis in point care-Acute emergency setting when judicious use of resources is required in times of pandemic.

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