Summary And Conclusion

Urinary tract infection in children is a disease of major concern as it causes morbidity and inconvenience to many patients and may end up with end stage renal failure with large financial burden on both the family and the society.

Clinical diagnosis of urinary tract infection can not be relied upon. The symptoms and signs are rather non-specific and may result in false-positive or false-negative diagnosis. Appropriate management of urinary tract infection depends almost entirely on specific microbiologic studies and radiologic imaging evaluation.

Microbiologically, the commonest causative pathogen in the study was E. coli (99%) followed by proteus (15%), staphylococcus aureus (13%), Klebsiella and Pseudomonas (4%) and Streptococcus (3%).

All children with urinary tract infection require imaging evaluation to determine those with or at risk for sustaining renal scarring, it is advisable to perform the imaging work-up following the first infection in both sexes especially for the younger age group at risk. This is in part due to the fact that some children with urinary tract infection have anomalies, principally vesicoureteric reflux, often with associated renal scarring. Because anomalies can not be

excluded clinically, it is advisable that all cases should be imaged.

Ultrasonography and plain abdominal radiograph alone are insufficient for routine screening of childhood urinary tract infection. Though further investigations remain advisable in infants, i.e. voiding cystourethrography and static renal scintigraphy, in older children, they can be restricted to a minority who have positive ultrasound examination or have had fever and/or vomiting. This policy minimizes the number of children requiring invasive investigations while ensuring that consequential urinary anomalies are rarely overlooked.

Renal scarring is best assessed by static renal scan (DMSA) as it is the gold standard followed by US that has a sensitivity 100% and specificity 98%, then excretory urography with a sensitivity 52.5% and specificity 100%.

Also dynamic diuresis renography (DTPA) is the best in distinguishing obstructive from non obstructive uropathies followed by US that has a specificity 100% and sensitivity 61%, then EU with a specificity 96.5% and sensitivity 65%. Therefore, US and radioisotopic examinations largely eliminate the need for excretory urography, except in cases of duplex system with ectopic ureter where the necessity for excretory urography is undebated.

Follow-up of these cases with early onset of recurrent urinary tract infection by repeated cultures, imaging, medical and or surgical treatment can save many children from progression to end stage renal disease. Measurement of renal size and assessment of renal growth are important parts of the radiologic evaluation of the urinary tract in children. Sonography is now the standard technique for evaluation of renal growth.

Sonographic measurement of renal length is used commonly to evaluate growth of the kidneys in children. Measurements of renal length on follow-up sonograms (on half yearly basis) are used to determine if renal growth in the interval between examinations has been appropriate. Comparing renal length with age is the easiest and the most practical approach.

In the present study follow-up of renal length by ultrasonography of 100 cases (half yearly for 2 years) were recorded in follow-up curves compared to a normal renal growth curve **(Rosenbaum et al., 1984)**. It was found that 19 right kidneys and 18 left kidneys showed retarded growth in their follow-up curves. Positive correlation was found between the early onset of 1st infection (especially before first 2 years age) and renal growth retardation, as the more rapid change in kidney size is during the first year of life. It was found also that structural pathology and scar presence

have a significant correlation with delayed (retarded) renal growth.

We conclude that the diagnostic imaging techniques for pediatric renal diseases have grown considerably in the last decade and a variety of imaging modalities are available today for investigating UTI in pediatric patients. Used intelligently singly or in combination, these imaging modalities provide information for the clinical evaluation as well as short and long-term management of infections, their causes, complications and their effects on renal function.

Repeated ultrasound examination is very important to diagnose and emphasize renal scarring.

Apparent difference in size between both kidneys and/or between the kidney versus the normal on the standard growth curve highlights further proceeding to radionuclide scanning.

Ultrasonography has many advantages in comparison to other imaging modalities. It is inexpensive, the child is not exposed to ionizing radiation, also it is non invasive procedure so can be performed on outpatient basis, i.e. doesn't require hospitalization before or after examination and doesn't require special preparation of the patient. Moreover, it is easily and unharmfully repeatable.