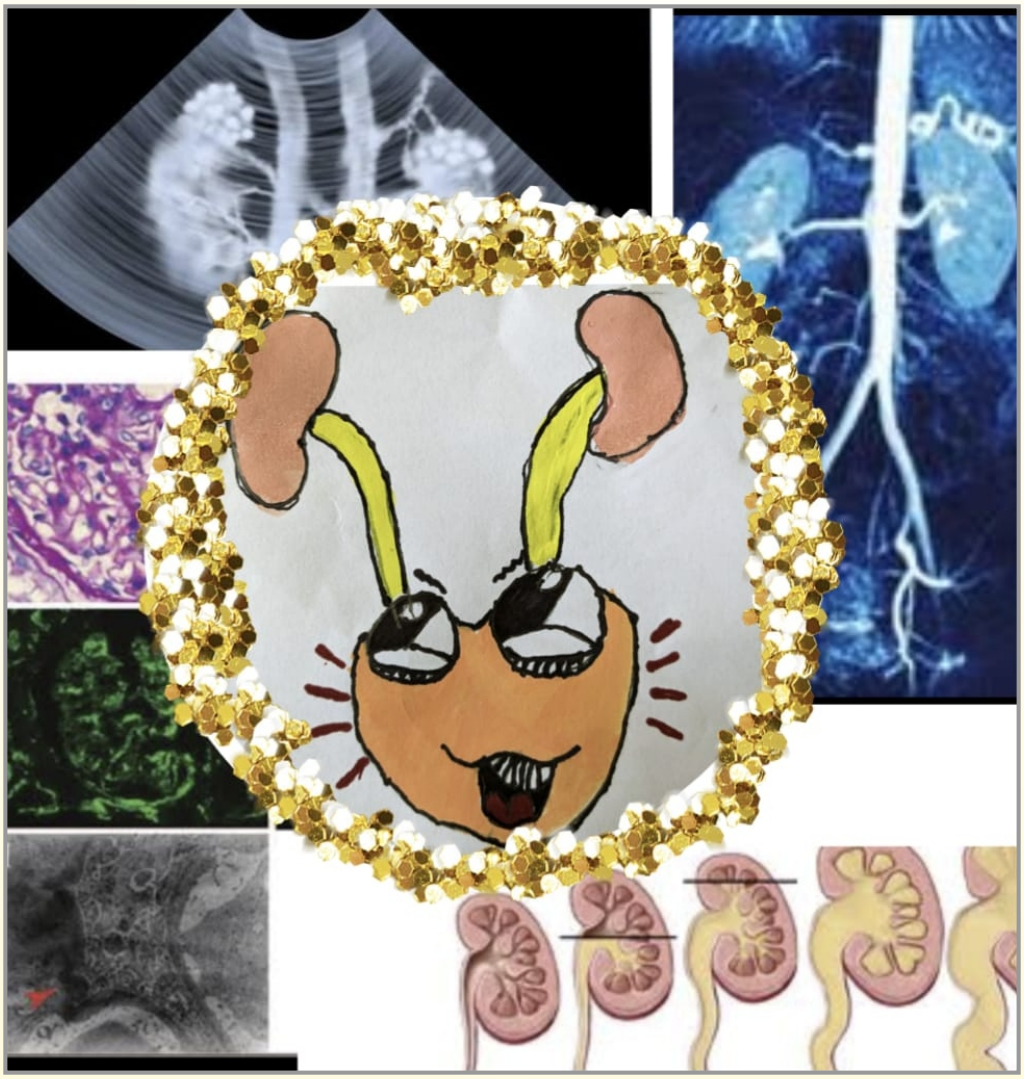
ISSUE - 2

IAP BPS

PEDISCAN

MONTHLY NEWSLETTER OF

IAP BANGALORE - BPS



FEBRUARY - 2023

From the Editor's Desk

"If January is the month of change, February is the month of lasting change. January is for dreamers….February is for doers."

- Marc Parent

February is a short and sweet month, giving us just enough time to reflect upon our goals and plans for the year ahead, and a little reminder about the already completed brand new January. The IAP-BPS inaugural ceremony was held with great pomp and enthusiasm on the 21st January. The new team was inducted, bidding grateful adieu to the old team. There was an amazing scientific session with eminent speakers and an interactive audience.

The National Girl Child Day was celebrated on 24th Jan, all over the country. It reinforces the fundamental rights of every child and gender equity. We have a beautiful article written by Dr Deepthi R. regarding the history and theme of this day.

In keeping up of our promise to dedicate each month to a specific speciality, this month's edition is dedicated to ***Nephro-Urology.***

One common concern for every pediatrician is, when to refer a child with UTI/ any renal abnormality noticed on a routine ultrasound scan of the abdomen, to a pediatric surgeon? Dr RameshS., one of the senior-most and proficient surgeons, and Dr Vinay Jadhav, have written an amazing article addressing these concerns.

Post graduate education is a primary duty of every pediatrician, irrespective of whether they are practicing in an academic institution or in a private setup. It is our small way of repaying the debt of Gurudakshina we owe. Dr Zameer has contributed an article especially for the PG students regarding renal scans.

A very exhaustive, yet easy to understand, flowchart approach to hematuria and proteinuria has been contributed by Dr Alkarani and Dr Abdul Rahman.

The interesting case reports by Dr Anil Vasudevan would be a big learning for each of us.

On the lighter side, we have a beautiful poem written by Dr Sumitha Nayak, about the beach side, temple town, Puri.

The new section, Down Memory Lane, has Dr Ravi Shankar reminiscing about his experiences in the forum.

We have our monthly quiz by Dr Shalini. A reminder to all the IAP BPS members that a prize awaits you at the Bengaluru Pedicon, if you consistently answer them early and correctly.

Hope you enjoy this edition!

Happy reading folks!!

Dr. Sushma V
Editorial Team Pediscan 2023

Down The Memory Lane

Dr. Ravishankara Marpalli
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It was the year 1991. I joined CSI hospital as Senior Registrar. The Lakeside hospital was not very far off from CSI. It was just 2 stops away. I heard that on Wednesday there will be good clinical case discussions in the evening. As I wanted to learn more, I needed one platform where essentially real good academic discussions happen away from PG case discussions. Out of curiosity I attended one on Wednesday along with Dr Vasanth Kamath who was my boss at CSI hospital. Actually it was Dr Vasanth Kamath who inspired me to join IAP. The meeting was attended by great academic personalities of those days like Dr Paramesh, Dr Mahadevaiah, Dr Kasi, Dr Jagadish Chinnappa, and so on. It was really a new experience and inspiring. As long as I was in CSI hospital, I never missed it. Enjoyed listening to the talks of Dr Kasi , Dr Jagadish Chinnappa, who were presenting some good, twisting, googly cases and made me read more and get good clinical acumen.

Dr Vasanth Kamath made me the member of IAP-BPS first and later Central IAP member after few years passed on.

After joining St Martha's, my saga of attending the good monthly IAP meets started along with Dr Kishore Baindur who was a diehard IAP follower..

It was the few practical tips which was rare to get in the textbooks and made me an addict of IAP meets. The neonatal meets at the St Martha's hall which were attended by Dr Maiya, Dr Swarna Rekha Bhat, Dr Subba Rao was a feast to learn in neonatology, as neonatology was an upcoming subject and not much practical experiences were known. I am indebted to these great academicians for my neonatal knowledge who discussed thoroughly every bit and thread.

My journey in IAP continued with the association with other great personalities like Dr Vasudev Dhananjay, Dr Nandini Mundkur.

During this time in one of these meetings, met another person who changed my life in IAP greatly. It was Dr. Gnana Murthy who with his punctuality, sincerity and innocence and internal urge to know more got attracted to me and started becoming closer. The saga of that closeness made me to work more and more for IAP and him urging me to take more and more responsibilities and not to look back, forced me to work without any hesitation. He is a man of principles, and added more people to his philosophy and one such person was none other than Dr Basavraj our president elect. The working friendship with these two people was always positive intoxicating, never tiring, religious, and heart warming and philosophical. We understood each other very well and were determined to do more and more good things for IAP in all aspects. I am really thankful to IAP for giving me the best friends, guides, best wishers, teachers, and finally changing my attitude towards the society, and relationship.

It was the IAP which made me to work in close relationship with the people who once were my idols like Dr Shivanand sir in IAP-BPS, my college day teachers like Dr Narayanappa sir, and others. Also it allowed me to move with, talk to them and associate with other great personalities like Dr Amdekar, Dr Veerabhadrappa sir, Dr Sanjeev Rai and others at state and national levels.

I could not imagine that one day I can have a great association with the most friendly face of IAP Dr Santhosh Soans who could influence me in many ways .

Everyday adding new friends, well wishers because of my IAP journey and a big salute to this association called IAP.

Imaging in UTI in Children

Dr. Zameer
Consultant Pediatric Surgeon
Robotic and Liver Transplant Surgeon
Narayana Health Bangalore.

UTI is one of the most common causes of fever and bacteremia in infants. It is estimated that 3–7% girls and 1-2% boys experience an episode of UTI before the age of 6 years. UTI can cause permanent renal damage which might lead to renal failure. For this reason, early diagnosis and treatment followed by evaluation for and treatment of an underlying cause, commonly vesicoureteral reflux (VUR), is very important.

Diagnostic evaluation of a child with UTI is performed to identify conditions that predispose the child to UTI which may be either anatomical or functional.

1. Anatomical e.g., VUR, ureterocoele, ectopic ureter, megaureter, uretero-pelvic junction obstruction, horseshoe kidney, posterior urethral valves, neurogenic bladder, bladder diverticula, urogenital sinus and cloaca
2. Functional, i.e., bladder-bowel dysfunction (BBD) or neurogenic bladder.

The evaluation of a child with UTI can be divided into two scenarios :

1. An Acute setting of UTI
2. Further evaluation to prevent future attacks of UTI.

The basic investigations done in an Acute setting of UTI are :

1. Blood investigations : CBC, RFTs primarily
2. Urine investigations :
   a. Microscopy : for pus cells / RBCs
   b. Urine Leukocyte Esterase
   c. Urine Culture
3. Imaging : USG , DMSA

USG KUB :

It is a non-invasive, relatively inexpensive, and safe investigation in any age group. It is the most commonly used modality to evaluate for anatomic abnormalities such as duplication, dilation, and obstruction in the genitourinary tract. All children, regardless of age, should have an ultrasound of the urinary tract performed after the first episode of pyelonephritis.

For young children with first UTI, USG is unlikely to alter clinical management and is not universally recommended.

- NICE guidelines: Recommend USG after first febrile UTI in children under 6 months of age or older than 6 months with atypical or recurrent UTI.
- AAP guidelines: Recommend USG for children 2–24 months of age after first febrile UTI.

DMSA (Dimercaptosuccinic acid) Scan :

Cortical renal scan with 99mTc-dimercaptosuccinic acid (DMSA) is considered the clinical gold standard for identifying renal scars or foci of acute pyelonephritis. Renal scars characteristically alter the renal outline and cause loss of volume, while in acute pyelonephritis there is patchwork appearance with preservation of both renal volume and outline.

Swedish Reflux Study Group from Goteborg, advocates to perform DMSA during the acute phase of infection (“acute-DMSA”), for accurately distinguishing true acute pyelonephritis from febrile UTI without renal involvement and, consequently, carrying no risk of renal irreversible damage.

Further Evaluation :

This is done to diagnose the anatomical and functional abnormalities that can lead to recurrent UTIs in children. The evaluation will primarily depend on the history and the USG KUB findings.

In cases where the USG KUB shows hydro-ureteronephrosis (unilateral or bilateral) suggestive of VUR / VUJ obstruction or PUV (in boys) or neurogenic bladders, the next investigation of choice is MCU.

MCU (Micturating Cysto Urethrogram) :

The aim of MCU is to detect conditions like :

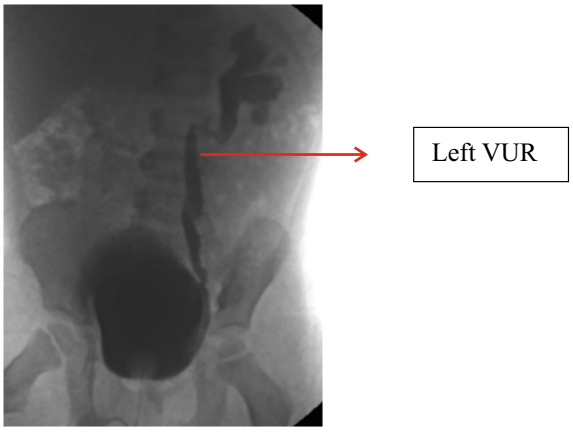
- VUR (Vesico Ureteric Reflux)
- Posterior urethral valves (PUV) in boys
- Bladder and ureteric anomalies (for example ureterocele, bladder diverticula etc)

It is an invasive investigation and exposes patients to radiation. Hence it should not be a routine investigation done in all children with UTI. It is recommended only in certain circumstances like :

- CAKUT and/or dilatation of the urinary tract on ultrasound
- Poor urine flow, oliguria not due to dehydration, urinary retention suspicious of PUV in boys
- Failure to respond to treatment with suitable antibiotics within 48 h
- Increased creatinine
- Pyelonephritis

The "top-down approach" involves performing a DMSA scan during / after an episode of UTI. DMSA scan is considered the reference standard for diagnosing renal parenchymal involvement in UTI (pyelonephritis). If the DMSA scan shows no scars then MCU can be avoided (in older children).

- NICE guidelines : Recommend MCU for children under 6 months of age with atypical or recurrent UTI and children 6 months to 3 years with atypical or recurrent UTI and abnormalities on USG KUB, poor urine flow or family history of VUR.
- AAP guidelines : Recommend MCU for children 2 to 24 months of age after the second febrile UTI, and after the first for patients with abnormalities on USG KUB or with high grade VUR.



MCU Showing left grade 3 VUR.

If MCU is suggestive of VUR, the next investigation to be done is DMSA.

DMSA Scan :

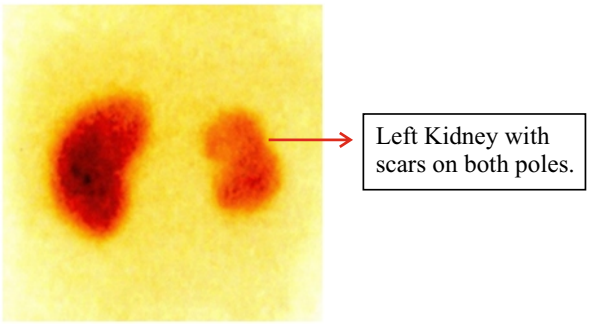
DMSA is done in to look for the status of the kidneys (function and presence of scars). No scars on the DMSA suggests preserved renal function. No uptake or very poor uptake in DMSA will help in deciding regarding nephrectomy or hemi-nephrectomy (in Duplex Cases). Also formation of new scars on follow up will aid in shifting from conservative management to surgical intervention.

PRIVENT and RIVUR trials recommend MCU as a diagnostic tool for VUR, and DMSA, as the most sensitive tool, for evaluating renal scarring, at least six months after the last infectious episode.

- NICE guidelines recommend DMSA 4–6 months after:
  - A typical or recurrent infection in children under 3 years of age.
  - Recurrent infection in children over 3 years of age.
- AAP guidelines did not include the use of

DMSA in their recommendations.

The approach recommended by the NICE and AAP guidelines presents some criticism and drawbacks.Both are based on the principle that acute pyelonephritis is ineffective in preventing relapses, a matter still under evaluation.

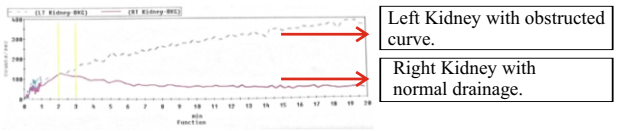


DMSA Scan showing Right Kidney normal, Left Kidney showing scars in both the poles.

DTPA / EC Scan :

If the screening USG KUB suggests hydronephrosis with normal ureters, the next investigation advocated is DTPA / EC scan to rule out or diagnose PUJ Obstruction. It is also done in cases of hydro-ureteronephrosis with MCU showing no reflux suggesting a case of VUJ Obstruction.

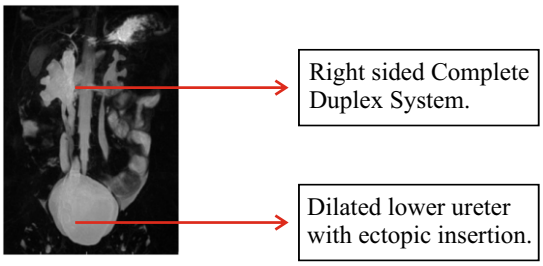
This diuretic renography gives us information regarding the drainage pattern of the kidney. It also tells us about the relative function of each kidney. EC renograghy is preferred in neonates and infants as it has better renal uptake while DTPA is done in older children.



EC Scan showing normal right curve s/o normal drainage and an upward curve of the left kidney suggestive of Left PUJO.

CT / MR Urography :

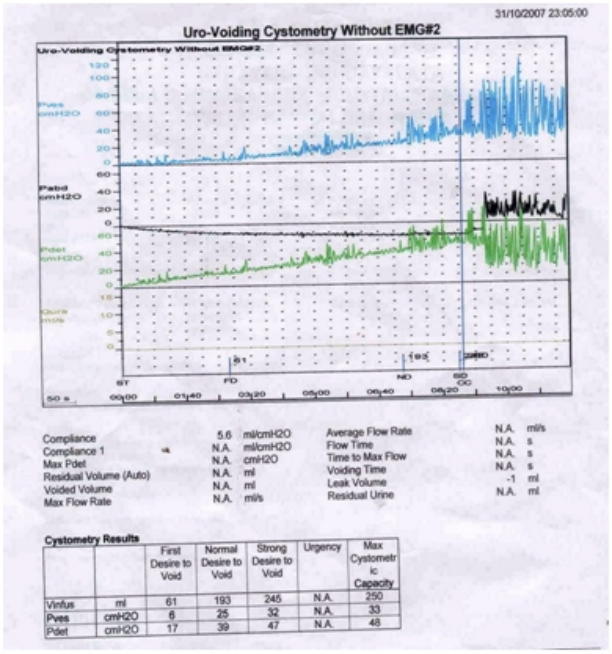
This is done in cases where detailed anatomical delineation is required. Ideally done for duplex moieties or in cases of ectopic ureters in order to define the anatomy and plan surgical intervention.



MR Urography showing right sided complete duplex system with ectopic insertion of a ureter.

URODYNAMICS :

Urodynamics is an investigation of choice in cases where functional abnormalities are suspected eg in neurogenic bladder or DES (Dysfunctional Elimination Syndrome). It needs to be done in slightly older children and after all the prerequisite investigations are done. Video urodynamics is to be done in cases with VUR to interpret the results correctly.



Urodynamics of a 10 year old child with DES.

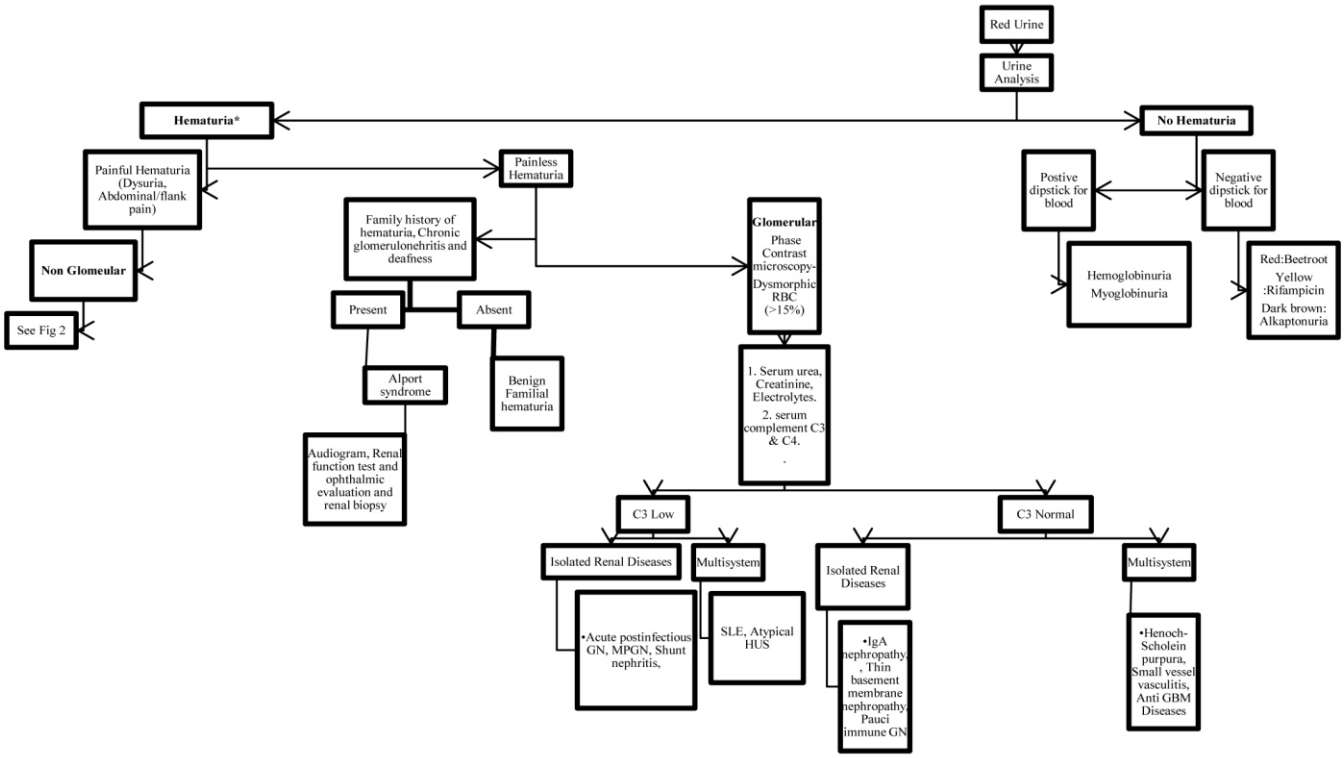
To Conclude, there are many investigations in the armamentarium of a paediatrician / pediatric surgeon in evaluating a child with UTI. One needs to be cautious and conservative in deciding which test to do and when to do it.

Dr. A Abdul Rahman

Dr. Alkarani T Patil

APPROACH TO HEMATURIA/PROTEINURIA

From Indira Gandhi Institute of Child Health
Dr. A. Abdul Rahman, Fellow in pediatric Nephrology.
Dr. Alkarani T Patil, Professor in Pediatrics & In charge Pediatric Nephrology.



Other investigations: Serum Albumin, SPCR, Serum cholesterol, ASO titre, C- Reactive protein, ANA, Anti dsDNA, ANCA, 24hr urine protein, Renal Ultrasonogram, Renal biopsy.

Fig 1 Approach to red urine

*Presence of more than 5RBCs per HPF in a centrifuged specimen of urine.

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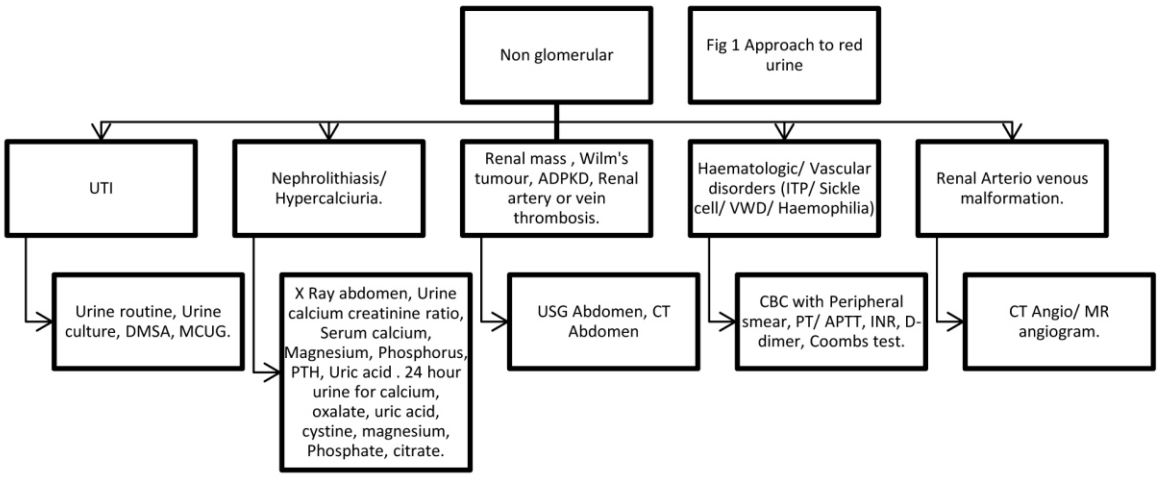

Fig 2 Approach to Non-Glomerular cause of Hematuria

APPROACH TO HEMATURIA/PROTEINURIA

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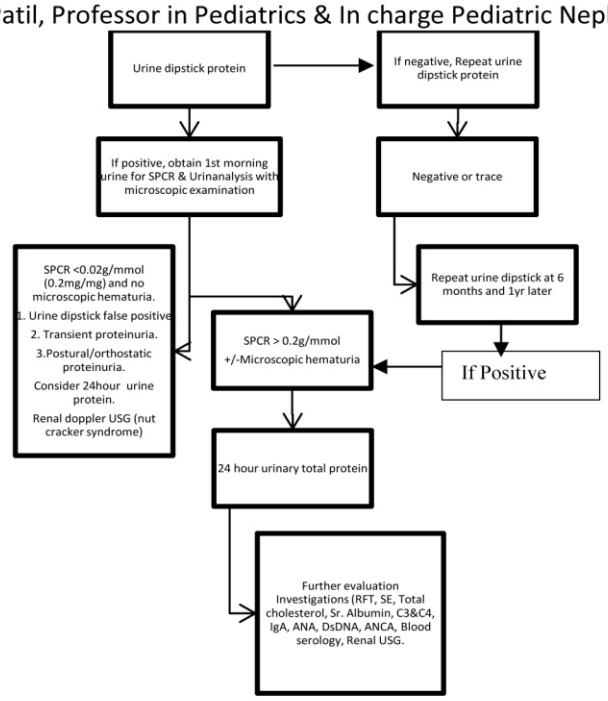

Fig 3: Approach to Proteinuria

Classification of Proteinuria:

Non-Pathological proteinuria	Pathological proteinuria
1. Postural (orthostatic) 2. Febrile 3. Exercise-induced	Glomerular a. Nephrotic syndrome b. Glomerulonephritis c. Hypertension d. Diabetes mellitus e. Hemolytic uremic syndrome f. Hyperfiltration secondary to nephron loss (with or without focal sclerosis) due to chronic pyelonephritis.
	Tubular a. Inherited: Cystinosis, Wilson disease, Lowe Syndrome. b. Acquired: Antibiotic induced interstitial nephritis, Acute tubular necrosis, Heavy metal poisoning.

APPROACH TO HEMATURIA/PROTEINURIA

From Indira Gandhi Institute of Child Health
Dr. A. Abdul Rahman, Fellow in pediatric Nephrology.
Dr. Alkarani T Patil, Professor in Pediatrics & In charge Pediatric Nephrology.

Indication for Renal Biopsy:

Hematuria	Proteinuria
1. Oliguria, hypertension and/or azotemia persisting past 7-10 days 2. Gross hematuria persisting past 12 weeks 3. Nephrotic range proteinuria beyond 2 weeks 4. Low C3 levels beyond 12 weeks 5. Persistent microscopic hematuria beyond 12-18 months 6. Evidence of a collagen vascular disease or vasculitis (such as systemic lupus erythematosus, Henoch-Schönlein purpura, or ANCA-positive vasculitis) either clinically or serologically.	1. Isolated persistent proteinuria of more than 1 g/1.73 m^2 per day. 2. Atypical Nephrotic syndrome A. Age: less than 1yr or greater than 12 yrs. B. Associated Systemic illness. C. Renal failure. D. Primary steroid resistance. E. Late steroid resistance. 3. Evidence of a collagen vascular disease or vasculitis (such as systemic lupus erythematosus, Henoch-Schönlein purpura, or ANCA-positive vasculitis) either clinically or serologically.

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Urinary Tract Infections in Children

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Urinary tract infection (UTI) is a huge burden in Indian setup. Nearly 5% of infants presenting with fever and with no other identifiable source have UTI. Typical symptoms of UTI are rarely seen in smaller children and may have minimal non-specific symptoms.

Early detection and prompt treatment is crucial. Even a single episode of urinary tract infection in younger children can have long term sequalae like renal scarring and parenchymal injury and its consequences.

In this article we will cover the definition, diagnosis, investigation &the management of UTI in children.

Definition :

Urinary tract infection by definition is presence of number of colony forming units (CFU) per of urine in a symptomatic child. The number of CFUs criteria differ by the method of collection.

- > 105 CFUs in a **Clean Catch mid-stream sample** of urine.
- > 104 CFUs in a sterile catheterized child.
- And detection of **any number of organism** in a suprapubic aspirated sample.

UTI can also be classified as follows:

Simple UTI: UTI with low grade fever, dysuria, urgency and frequency with absence of complicated UTI symptoms.

Complicated UTI: fever > 390C, persistent vomiting, dehydration, flank pain and lethargy. This is synonymous with acute pyelonephritis (APN).

Recurrent UTI: repeat UTI after urine has been documented to be sterile after the first episode of infection.

Asymptomatic Bacteriuria (ASB): presence of same bacterial pathogen (CFU > 105) in two consecutive urine samples in a asymptomatic child.

Diagnosis:

At the most basic level, UTI is invasion of a pathogenic bacteria into the urinary tract. Apart from clinical diagnosis and preliminary urine analysis, **children with suspected UTI should be started with antibiotic therapy only after urine is collected for culture.**

Symptoms

The classic symptoms that are seen in adults with UTI is difficult to identify in pediatric practice, more so in infants and younger child.

Classic symptoms	Infants and younger children
• Dysuria	• Refusal to feed,
• Frequency	• fever
• Urgency	• Irritability, lethargy
• Suprapubic pain	• Vomiting, diarrhea
• Recent Urinary incontinence	• Jaundice, abdominal distension
	• Foul smelling urine

As prevalence of UTI is common, Pediatricians should be aware that children may present with these non-specific symptoms and probability of missing an UTI in them is high. The other risk factors that care givers should be aware of is the history of previous UTIs, sibling UTIs, history of abnormal antenatal scans, genitourinary anomalies and genitourinary surgeries.

Clinical findings

Specific findings are difficult to elicit, especially in smaller infants. In both boys and girls abdomen should be examined for a palpable bladder (persistent even after voiding), suprapubic tenderness and costo-

condral angle tenderness. I

In boys, external genitalia should be examined for local inflammation, tight phimosis, meatal stenosis,meatal discharge, and testis for signs of epididymo-orchitis. In girls, introitus should be inspected for labial synechiae, introital excoriation, any prolapsing mass, or any continuous urinary leak.

Examination in both genders is incomplete without the inspection of anus for anal tone / anal fissures and the back for any signs of neurocutaneous markers of spina bifida like tuff of hair, neavus, lipoma, dermal sinus or vascular lesions.

Bladder and bowel dysfunction, as called as Dysfunctional elimination syndrome, is a known entity contributing to UTI and VUR in children. This subset of children suffer from infrequent voiding, urinary dribble, urinary leaks, day or night time incontinence and constipation. Dysfunctional voiders are relatively common in routine pediatric practices and clinical they are neurologically normal.

Most of these children present with recurrent UTIs to their treating physicians, hence any child with recurrent UTI should be thoroughly evaluated for bowel and bladder dysfunction. Two clues about the possibility of DES are late onset of the symptoms with normal voiding earlier and the combination of voiding issues and constipation.

Investigations:

Urine evaluation: Urinalysis should ideally performed with in 1 hour of a freshly collected urine sample, or less than 4 hours in a refrigerated urine sample. The gold standard test for diagnosis is urinary culture, but a positive report of growth will be available only after 2 - 3 days. The other major shortcoming of Urine culture is the difficulty in collecting a clean midstream sample of urine and the hesitancy among parents and pediatricians to get a suprapubic sample. Thus, the culture report in most cases is quite unreliable. Hence urinalysis gives a rapid, supportive evidence for the likelihood of an UTI, and the most commonly performed test include urine microscopy and dipstick test.

Urine microscopy: A centrifuged urine sample is used for assessing pyuria by microscopy.

Traditionally accepted	**More reliable in children< 2 years**
>5 WBC/ HPE	>10 WBC/HPE

The most reliable test identification of pus cells and bacteria in urine sample. Mere identification of bacteria in urine sample may be due to contamination during collection. Presence of pus cells indicate established UTI.

Urine Dipstick tests

Leucocyte esterase	**Nitrite**
It is released from broken down WBCs	Gram negative bacteria converts urinary dietary nitrate to nitrites
Specificity rate – 88%	Specificity rate – 98%

A positive nitrite test likely represents a true UTI. Specificity increases when both these tests are positive.

Urine Culture: Urine culture is the gold standard investigation and mandatory for diagnosing UTI. The definition of what constitutes a true positive culture is based on the number of colony forming units (CFUs) per ml of urine and the method of urine collection, both of which are debatable.

`	Clean mid catch urine	Catheterization	Supra-pubic aspiration
CFUs	$>10^5$	$> 10^4$	Any number of organism
Probability	90-95%	95%	99%

Contamination is considered if culture grows non-pathogenic organisms like lactobacillus, cornyebacterium, alpha hemolytic streptococci and candida or if mixed bacterial growths are demonstrated.

Initial therapy

Importance of early and specific antibiotic therapy in limiting renal involvement and renal scarring cannot be overemphasized. As

multiple studies have shown reduction in incidence of renal scarring on DMSA scans in children treated with early prompt antibiotic therapy.

Decision on inpatient/ outpatient management depends on the age of the child (</> 3months), clinical status, prescence or absence of dehydration, high grade fever and family compliance for therapy.

The prevalence of common Uro-pathogens by gender and organism is as under:

Organism	Male	Female
Escherichia coli	50%	83%
Enterobacter	5-10%	1-4%
Enterococcus	20%	10%
Klebsiella	10%	5-10%
Pseudomonas Aeruginosa	7%	2-6%
Proteus mirabilis	11%	2-4%

The choice of initial antibiotics is as follows :

Oral antibiotics	Dose	Comments
Amoxicillin - clavulanate	20-40mg/kg/day TID	
Trimethoprim - Sulphamethoxozole	6-12 mg/kg/day of TMP BD	Contraindicated in < 6 weeks age
Cefixime	8mg/kg/day single dose	
Cephalexin	50-100mg/kg/day TID	
Cefopodoxime	10mg/kg/day BD	
Nitrofurantoin	3-5mg/kg in 2 doses	CI - < 3months / GFR < 50% with G6PD deficiency

Parenteral antibiotics	Dose	Comments
Ceftriaxone	75-100mg/kg BD or OD	Single dose acceptable
Cefotaxime	100-150mg/kg BD or TID	
Gentamycin	7.5mg/kg/day TID	Single dose acceptable
Amicakin	10-15mg/kg OD	Single dose acceptable
Piperacillin	300mg/kg/day TID	

The duration of therapy is 10-14 days in infants and children with complicated UTI and 7-10 days in children with simple UTI.

Radiological evaluation after treatment of UTI

It is highly advisable to investigate all children less than 2 years of age after the treatment of the episode of UTI to identify any anatomical cause predisposing to UTI.

Failure to investigate for any underlying cause for UTI is one of the leading causes of renal injury in children and its attendant consequences.

Ultrasound (USG)

It is now acceptable in all international/ national UTI guidelines to get an USG kidney and bladder in all children with 1st episode of UTI. USG is non-invasive with no radiation exposure and widely available, its routine usage has become common and popular.

It is prudent to obtain another USG in UTI children, even though 3rd trimester scans would have normal. USG helps screening undiagnosed congenital abnormalities, hydronephrosis, pyonephrosis, high grade reflux, stones and renal abscesses.

It is essential to understand that a normal USG does not rule out VUR, which is one of the leading causes of UTI in children.

Micturating Cysto Urethrography (MCU)

Even though MCU is the gold standard imaging technique for detection and grading VUR, MCU should be reserved for children with specific indication. The previous recommendations of getting an MCU for all children with UTIs has come under scrutiny, as MCU has radiation exposure, bladder catheterization, parental anxiety and quite significantly, the pain and discomfort to the child.

The recommended guidelines& specific indications for MCU in pediatric UTIs are as follows :

- USG suggestive of renal or bladder abnormalities like hydroureteronephrosis, bladder diverticulum or a thickened bladder.· Family h/o of VUR or sibling VUR
- UTI in boys <6 months
- Infants presented with poor stream, dysuria or septicemia.
- Recurrent UTI (children of any age).

- Febrile UTI
- Complicated UTI requiring admission or parenteral antibiotics.

DMSA Scan (^{99m}Tc-Dimercaptosuccinic Acid)

Cortical renal scan is considered by many as the gold standard for identification of renal parenchymal injury. DMSA scans were considered as first line of investigation in UTI in "Top-down" approach in UTI management.

Renal scars appear as decreased uptake in the cortex during DMSA study. As most of the acute parenchymal injury due to UTI resolves by 6 months after 1st episode, hence assessment of irreversible renal damage/ scar should be performed only after 6 months. DMSA scan are obtained as a late investigation in children with VUR or positive ultrasonography.

The general guidelines can be summarized thus

First episode of UTI

Investigation	<6months	>6months
Ultrasound	Yes	Yes
MCU	Yes	Only if USG is positive, h/o VUR, sibling VUR, poor stream, dysuria
DMSA scan *(after 6 months)*	Only if USG is positive, or proven VUR	Only if USG is positive, or proven VUR

All children with recurrent UTI, irrespective of age should be thoroughly evaluated with USG, MCU and DMSA scans.

Selected References-

Christopher S Cooper et al. Infection and inflammation of the pediatric genitourinary tract. Campbell -Walsh Urology, 12 edition. 2022, Chapter 25:426-446.

M Vijaykumar et al. Revised statement on management of urinary tract infections. Indian pediatrics 2011; 48: 709-717.

Case Report

C3 Glomerulopathy Masquerading as Acute Post Infectious Glomerulonephritis

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Introduction

Post infectious glomerulonephritis (PIGN) and C 3 glomerulopathy (C3G) though classified asseparate entities, have overlapping clinical and histological findings resulting in a diagnosticdilemma. While PIGN has a benign self-remitting course, C3Gis a heterogenous entity with diverse clinico-histological profile, unpredictable response to immunosuppression and varied outcomes.C3G is a prototype of alternate complement pathway dysregulation and has two major subgroups - dense deposit disease (DDD) and C3 glomerulonephritis (C3GN). This case report highlights the importance of watchful monitoring to distinguish between PIGN and C3 G for timely intervention.

Case Details

A 15year adolescent boy, previously well,presented with a short history of febrile illness, non-projectile vomiting, painless cola coloured urine, reduced urine output and right focal seizures. He had no history of skin rashes, oral ulcers, nasal bleed or joint pains. On examination he was found to have stage 2 hypertension (Blood pressure - 158/110mmHg in right arm, supine) with papilledema, mild facial edema and healed pyodermal scars on the left leg. Laboratory evaluation showed hematuria with nephrotic-range proteinuria (urine albumin 4+), deranged kidney functions (S.Creatinine - 1.5mg/dl, S. urea - 98mg/dl), hypoalbuminemia (S.Albumin - 2.6g/dl), hypocomplementemia (Serum C3 - 76 m/dl) and elevated ASO titres (350 U/ml). He was diagnosed to have post infectious glomerulonephritis and managed with intravenous antihypertensive infusion and intravenous diuretic therapy with restricted fluid, salt and potassium intake. His general condition and kidney parameters improved during the initial 72hours of hospital stay. Subsequently however, he had progressive worsening of kidney functions (peak S.Creatinine - 6.5mg/dl) warranting a kidney biopsy which showed features of C3G (membranoproliferative glomerulonephritis with C3 dominant deposits).Electron microscopy showed no evidence of DDD. He was treated with intravenous pulse steroids followed by oral steroid therapy. During his recent follow up (6 months post diagnosis), his kidney functions were stable (S.Creatinine - 0.7mg/dl) with no proteinuria on steroid and antiproteinuric (ACE inhibitor) therapy.

Discussion

The overlapping clinical, laboratory and histopathological features between PIGN and C3G poses a diagnostic challenge for clinicians. It is critical to identify atypical features of PIGN such as absence of obvious infections, persistent nephrotic-range proteinuria, gross hematuriabeyond second week of illness, hypocomplementemia not normalizing by 12 weeks and progressive kidney dysfunction, to enable early and appropriate intervention.

"NATIONAL GIRL CHILD DAY"
Educate and Support Girl Children to Empower India

Dr. Deepthi R
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In India, girls still have a very long way to go before they can enjoy the same rights that boys do. Many socioeconomic and cultural factors are responsible for this disparity, which is why 'National Girl Child Day' is celebrated every year on 24th of January to spread awareness about the rights of girl child, and the exploitation and discrimination girls in India are subjected to.

It was initiated in 2008 by the Ministry of Women and Child Development, Government of India. On this day Indira Gandhi was elected as the Prime Minister of India, so it was decided to celebrate this day as 'National Girl Child Day'. It is celebrated to discuss issues related to girls' health, education, respect and nutrition.

According to WHO, worldwide nearly 1 in 4 girls aged 15-19 years is neither employed nor in education compared to 1 in 10 boys of the same age. As per recent census, one third of girls in India are malnourished and suffer from various diseases like anemia, and its complications. Some of the major causes for the increase in child mortality and morbidity are female feticide, female infanticide, lack of health care facilities and ignorance. Several national nutritional programs like Anemia-mukt Bharat, National Vitamin A prophylaxis program, Mid-Day Meal program and national health programshave been initiated to spread awareness about communicable and non-communicable diseases and to improve health care facilities in India.

On this special day, the main focus is on changing society's attitude towards girls, prevent female feticide and create awareness about the decreasing sex ratio. In this regard, government has started several campaigns and programs such as 'Save the Girl child', 'Beti Bachao Beti Padhao', 'Sukanya Samriddhi Yojana' (SSY), free or subsidized education for the girl child and reservations for women in colleges and universities.

Beti Bachao Beti Padhao was launched by the Ministry of Child and Women Development, Government of India in 2015. The key objectives are to prevent sex-selective abortion, protection and education of the girl child and increase in girls' participation in the field of sports.

Sukanya Samriddhi Yojana. Families with a girl child below 10 years of age are eligible for this scheme. They need to open a Sukanya Samriddhi account in any Indian bank or in a post office in the name of the girl child, which is completely tax-free. This account is exclusively used for parents to save money for their daughters, wherein a minimum amount of Rs.250, upto Rs.1.5lakhs per year can be deposited. The payment period for SSY is 15 years, while the maturity period of the account is 21 years from date of opening the account. If one deposits Rs.12,500 per month for 15 years in the SSY account, she will get Rs.42.48 lakhs after 15 years. After maturity period (21 years), one can get Rs.65 lakhs without further deposits. Only the girl child on turning 18 years of age will be allowed to withdraw from this account, which promises the girl her financial security.

The Constitution of India provides for the **fundamental rights** for the safeguard and empowerment of girl child. These provisions include equality, prohibition of trafficking among humans etc.

Pre-conception and Pre-natal Diagnostic Techniques Act, 1994 prohibits sex-determination, before or after conception by which misuse of prenatal diagnostics for

sex selection is prevented. Even in the recent years, female feticide statistics remain unchanged. Last year multiple cases of female feticide were suspected when fetuses were found dumped in the areas around Karnataka's Belgavi and West Bengal's Howrah areas.

Prohibition of Child Marriage Act, 2006. According to this Act, the marriageable age for girls is 18. Any marriage below this age is considered child marriage and is illegal in terms of the law. Parents should also be aware of the complications of teenage pregnancies like anemia, preterm labor.

Girls should be made aware of these laws, so they know of their rights and have the confidence to face any challenges. Unfortunately, these laws alone cannot make any difference. It is only when the government takes stringent actions towards the criminals that we will be able to make the country a safe place for girl children.

The educational status of the girl child is the key to achieve women's equality and dignity which is, in many ways, a litmus test of the maturity of a society. Gender discrimination is a major problem that girls face throughout their lives. It is important to promote awareness about the rights of girl children who are subjected to severe abuse at workplaces, in households and on several socioeconomic and political platforms.

Girls are to be the future mothers, besides future policy makers and leaders. Nehru once said "To awake the nation, it is the women who should be awakened first. Once she is on, the family moves, the nation moves."

So, on this special day, let's take a pledge to create awareness among parents and young girls regarding education, health and nutrition and to give moral support to all those who are working hard for the betterment of their families and society. **Little girls with dreams become women with vision.** So, let us make efforts to educate each and every mother, to give proper nutrition and education to her child and to get her married at an appropriate age so that she can lead a life with dignity and respect. With proper knowledge and awareness among the citizens of our country,may our country become a safer and happier place for a girl child to live happily.

PURI - BY THE SEASIDE

Standing on the sandy sea shore
One bright and clear summer morning
Watching the Vast blue expanse of water that I so adore
With the glittering sun-rays on it, adorning

Azure and gold meeting the eyes
Far and beyond till the horizon deep
Stark and cloudless are the skies
An occasional sea gull lingering over the mountains steep.

Tiny boats criss-crossing the waters high
With waves rising and crashing down gently as if shy
Frothing and foaming bubbles a plenty
In a seemingly unrhythmic and chaotic frenzy

Far in the horizon, with a strained look and eye
Silhouettes of ships large I do espy
Like gentle giants awaiting their signal to push ahead
Cutting across the currents gracefully to the shore's bed.

Out of the blue, the grey slips in unannounced
Thick and heavy , like a shroud pronounced
The sun is hidden, the sky is blurred,
Where is the glow? seems it has been fettered
Large round droplets steadily rain down
The horizon has melted , the shore is drowned
With a cacophony and bustle annoying
Steps run helter -skelter ,while I stand drenched, enjoying.

Dr. Sumitha Nayak
CIAP EB Member 2023
Consultant Pediatrician, Bangalore

IAP BPS receiving The Best Branch Award

Inauguration of IAP BPS 2023 Team

NRP at Kinder Hospital, Whitefield

PALS at BMCRCI

Dr. Kasi
delivering Oration
at IAP Telangana

Dr. Ravishankar
election officer being
felicitated at Gulbarga

Dr. Basavaraj
being honoured at
Inauguration of IAP KKT

PG Teaching Program at IGICH

PG Teaching Program at BMCRI

Upcoming Events

Topic :
Pediatric Pulmonology

Monthly CME Tentative Topics

Clinicoradiological correlation of chest X-ray s._ An interactive session By Dr. Subba RaoApproach to Atypical pneumonia.

PG Teaching Session
Tentative Topics
Respiratory System Examination_ A
Practical Demonstration of all RS Signs
GINA Guidelines _ Update
Practical demonstration for inhaler therapy_ right techniques for OSCE