Editorial

The number of children diagnosed with and treated for urolithiasis has considerably increased in the last decade. Statistical data have shown that stones in most pediatric patients tend to form in a recurrent pattern, with recurrence rates between 6.5% and 44%. Recurrent formation of stones can lead to progressive decline in renal function. In this issue, we feature an article that discusses clinical manifestations, investigations, treatment modalities, and prevention strategies of pediatric urolithiasis. The article also highlights the role of Cystone, a polyherbal formulation from The Himalaya Drug Company, in effective treatment and management of pediatric urolithiasis.

In this issue, we also focus on commonly reported learning disorders in children. The article highlights the diagnosis, treatment, and prognosis of these disorders. Also, we discuss about the role of herbs such as Centella asiatica, Celastrus paniculatus, and Evolvulus alsinoides in the treatment of learning disorders. An exclusive article on Bacopa monnieri highlights the memory enhancing property of this herb.

This issue also includes other interesting features such as “Herbs for Summer Skin Care,” “Upcoming Events,” and “Difficult Case.” We look forward to receiving your valuable feedback/suggestions on this issue as well as your answers to the “Picture Quiz.” Do write to us at pediritz@himalayahealthcare.com.

Happy reading!

– Editor
Urolithiasis is a common condition observed in many children. It is often associated with abdominal or flank pain, urinary tract infection, and gross hematuria (rare). Microscopic hematuria is present in >90% of children with stones. The classical description of excruciating loin pain associated with the passage of the stone is uncommon. In infants, it may be confused with colic. Sometimes, stones may be accidentally discovered on ultrasonography or radiography.

Once a urinary stone is detected, the next step is to determine if urinary obstruction is present and address it, if present. Then further steps are taken to determine etiology, ascertain type of stone, and treat accordingly. Concurrent infections and evidence of renal failure must be looked for and treated.

The pathophysiology of formation of urinary stones must be understood before initiating the investigations. Most patients with kidney stone disease have at least one identifiable physiologic disturbance causing abnormal levels of one or more stone-forming constituents. Dehydration increases the concentration of stone-forming solutes in urine.

Investigations

Following investigations are recommended for urolithiasis.

... Urine analysis including pH: hematuria and pyuria
... Urine microscopy: may detect crystalline substances
... Culture and sensitivity: to identify bacterial infection
... Abdominal radiographs: to detect small radiopaque stones
... Abdominal ultrasound: to detect radiolucent stones
... Intravenous pyelography, CT scan: stones may appear as filling defects
... Voiding or micturating cystourethrography: to detect vesicoureteral reflux in children with urolithiasis
... Analysis of stone: chemical analysis of a calculus passed in the urine or removed surgically is important to diagnose the underlying condition
... Metabolic workup: indicated for children with recurrent stones, a family history, or sterile urine.
  - A spot urine collection, usually the first or second morning sample: to determine the excretion

Clinical Course of Pediatric Urolithiasis

A study was conducted to evaluate the natural course of stone disease in pediatric patients from different perspectives among which spontaneous passage and stone recurrence rates were evaluated during follow-up.

A total of 142 children referring with primary urinary stone disease were evaluated and followed up. All children in the study were divided into two groups with respect to age (Group 1: 0-5 years and Group 2: 6-15 years). Children were followed up with respect to spontaneous passage rates, recurrence-regrowth rates, and physical as well as renal growth rates.

Stone recurrence was noted in 44% of patients in group 1; this value was 31% in group 2. Children with at least one identifiable metabolic abnormality tended to have higher recurrence rates than the others despite conservative measures. The average stone recurrence rate in children without any metabolic abnormality was 14% and nearly 50% in children with an identifiable metabolic abnormality.

Due to high recurrence and regrowth rates, all children with urinary stone disease should be followed up closely with regular visits. The evaluation of metabolic risk factors in children with renal stone disease is the basis of medical treatment aimed at preventing recurrent stone events and the growth of preexisting calculi.

of a substance in the urine by comparing it to the concentration of creatinine in the urine (creatinine clearance of the substance)

- Spot urine test for cystinuria
- Urine amino acids and organic acids tests in cases of suspected cystine and oxalate stones
- Serum calcium, magnesium, phosphate, bicarbonate, creatinine, parathyroid hormone test in suspected calcium stones

**Prevention of Recurrences**

After the successful management of initial stone episode, there is a high rate of recurrence of stone disease. Adequate hydration and diuresis would prevent recurrence in most cases. Altering urinary pH, such as alkalization for cystine and uric acid stones and acidification for struvite stones, may also prevent recurrence of calculi.

**Cystone syrup**, a polyherbal formulation from The Himalaya Drug Company, has been proven to be safe and effective in the management of pediatric urolithiasis and urinary tract infection (UTI), and significantly reduces associated symptoms. Cystone syrup has antilithiatic, lithotriptic, pH-renormalizing, diuretic, antimicrobial, anti-inflammatory, demulcent, spasmolytic, and antioxidant activities along with bioavailability-enhancing property.

Cystone syrup helps in preventing recurrent UTI. It creates an unfavorable environment for bacterial growth by decreasing bacterial adhesion, exhibits anti-inflammatory and diuretic action, and offers antimicrobial action.

<table>
<thead>
<tr>
<th>Struvite stones (infective soft stones)</th>
<th>Calcium oxalate stones</th>
</tr>
</thead>
<tbody>
<tr>
<td>... Often occur in young male children with <em>Proteus</em> urinary tract infection</td>
<td>... Occurrence is rare; usually secondary to hyperoxalurias that cause excessive endogenous oxalate production</td>
</tr>
<tr>
<td>... Appear like paste and pass easily in urine</td>
<td>... Primary hyperoxaluria (PH) type I varies from severe infantile oxalosis and death, to milder forms with renal stone disease</td>
</tr>
<tr>
<td>... Cause obstruction if it is present in the renal pelvis (staghorn calculi)</td>
<td></td>
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<table>
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<tr>
<th>Calcium stones</th>
<th>Uric acid stones</th>
</tr>
</thead>
<tbody>
<tr>
<td>... Generally associated with an underlying metabolic abnormality</td>
<td>... Seen in hyperuricosuria with or without hyperuricemia</td>
</tr>
<tr>
<td>... May be associated with hypercalcemia, hypercalciuria, or low molecular weight proteinuria</td>
<td>... Predisposing factors: dehydration, hyperuricemia, and a urinary acidic pH</td>
</tr>
<tr>
<td>... Low urine citrate levels can predispose to calcium oxalate nephrolithiasis</td>
<td>... May lead to acute renal failure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cystine stones</th>
<th>Xanthine stones</th>
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</thead>
<tbody>
<tr>
<td>... Observed in Cystinuria</td>
<td>... Occur in xanthinuria</td>
</tr>
<tr>
<td>... Bladder calculi in very young children</td>
<td>... Orange/brown sediment in the urine or staining of the nappy</td>
</tr>
<tr>
<td>... Renal calculi during late childhood</td>
<td></td>
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</table>
Urolithiasis is a consequence of complex physiochemical processes and the major contributory factors are urinary supersaturation, crystallization, calculogenesis, and matrix formation. This randomized, placebo-controlled, double-blind clinical study was aimed to evaluate the efficacy and safety of Cystone in children with urolithiasis, with special reference to urinary excretion of calculogenesis inhibitors.

A total of 87 patients were enrolled in the study, and there was no statistical difference in the gender-wise distribution of patients in the drug and placebo groups. On starting Cystone, symptomatic relief was reported by 70.6% of patients. The disappearance of stones was noted in 11 patients, as confirmed by x-ray KUB and ultrasound examination. In patients with solitary stone, multiple stones, calcium oxalate and magnesium-calcium phosphate stones, and lower tract stones, there was no statistically significant difference in the 24-hour urinary excretion of calcium, phosphorus, citric acid, and magnesium in the pretreatment and posttreatment levels between the drug and placebo groups. In patients with calcium oxalate, triple phosphate stones, and upper tract stones, there was a statistically significant difference in the 24-hour urinary excretion of calcium, magnesium, and phosphorus, respectively, in pretreatment and posttreatment levels between the drug and placebo groups. No recurrences and/or adverse events were noted during the study period.

Results of this study indicated that Cystone is an effective and safe treatment for long-term use in pediatric urolithiasis. Also, it was observed that Cystone has a favorable effect on inhibition of calculogenesis and it prevents recurrence in pediatric urolithiasis.


**Dosage**

**Syrup**
- Children: ½-1 teaspoonful twice a day after meals.
- Recommend adequate water for hydration.
- A higher dosage may be recommended for more severe and chronic conditions, and for older children.

**Tablet**
- Urolithiasis & crystalluria (adult & pediatric):
  - 2 tablets twice daily till the stone passes out, or symptoms subside.
- Preventing recurrence after surgical removal or passage of stone:
  - 1 tablet twice daily for 6 months.
Learning Disorders in Children

Defining normal development and diagnosing a learning disorder is one of the most challenging tasks for a pediatrician. Often abnormalities or difficulties in speech and learning are brought to the pediatrician’s attention by the parents or teachers. Knowledge of the different types of learning disorders helps in recognizing the problem earlier and providing appropriate treatment. Learning disorders may cause emotional problems in the affected children leading to lack of self-confidence, disinterest, and poor performance in academic activities, which may be mistaken as mental retardation. However, the disorder may not affect the lives in all cases.

Children with learning disorders are not necessarily mentally retarded or less intelligent and their intelligence quotient (IQ) is average or above average for their age. Their brains process sensory information differently. These disorders affect the ability to understand or use spoken or written language, do mathematical calculations, coordinate movements, or direct attention.

Several learning disorders have been classified based on the problem observed in children.

- Dyslexia (Reading disability)
- Dysgraphia (Writing disability)
- Dyscalculia (Math disability)
- Nonverbal learning disability

Difficulties processing auditory information include difficulty in comprehending more than one task at a time, retelling a story in order, understanding jokes and sarcasm, and following directions.

Difficulties in visual processing include problems with reading, math, maps, charts, symbols, and pictures.

Dyspraxia includes difficulty in fine motor skills such as problems with hand–eye coordination, balance, and manual dexterity.

**Diagnosis**

Once a learning disorder is suspected based on parental history, poor school performance, or screening in the clinic, the child must be referred to a psychologist or a psychiatrist who will then perform several tests to evaluate the child’s cognitive and reading ability, word recognition, fluency, and comprehension; mathematics, including computation and problem solving; and written expression, including handwriting, spelling, and composition. Often the child’s intelligence and cognitive ability are found to be at par with or superior to the child’s age. Coexisting conditions such as behavioral problems, attention deficit hyperactivity disorder (ADHD), and language problems are also identified.

**Treatment**

Treatment of a child with learning disorder includes special education and focused training, emotional support and teaching the child how to adapt and accept the problem, and family counseling. Due to neuroplasticity in the brain, the child can be taught to correct and compensate for the problems. Existing abilities and strengths of the child are focused on and encouraged. This is a team effort from the child, teacher, and psychiatrist.

* Extract is used in Mentat tablet and syrup

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**Bacopa monnieri***

*Bacopa monnieri*, also known as Brahmi, has been found to decrease the rate of forgetting newly acquired information, maintain cognitive function, and help in memory- and learning-enhancing activities. Bacosides present in *B. monnieri* provide rejuvenating action due to their potent adaptogenic activity.

**Centella asiatica***

*Centella asiatica*, also known as Mandukaparni, improves memory, influences neuronal morphology, and promotes higher brain functions. It also prevents cognitive deficits, which is due to significant decrease in malondialdehyde (MDA) and increase in glutathione and catalase levels.
Parents, family members, and psychologists. Speech and language therapists may also be involved. School academic tests can be given in a different format, or the child can be given more time to complete the test. Guided oral repeated reading helps in improving reading fluency.

Parents must be encouraged to provide constant love and support to the child. This would help in improving and maintaining the child’s self-esteem. The child must be taught to accept the problem and find ways to handle it.

**Prognosis**

The diagnosis of a learning disorder is often very difficult for the family. The disorder often persists lifelong. With appropriate cognitive and academic interventions, the child can be taught to overcome the learning disorder and deal with it.

According to Mishra et al,¹ about 80% of the modern day neurological diseases, such as sciatica, epilepsy, stroke, paralysis, insanity, addictions, multiple sclerosis, and dementia, are described in ancient Ayurvedic text. Now, several studies are being conducted to evaluate the efficacy of herbs in the treatment and management of neurological disorders. Preliminary investigations have suggested that *Withania somnifera* (Ashvagandha) may be useful in the treatment of anxiety and *Mucuna pruriens* (Kapikachhu) in the treatment of Parkinson disease. Several in vivo and clinical studies have shown that herbs such *Bacopa monnieri* (brahmi), *Centella asiatica* (Mandukaparni), and *Evolvulus alsinoides* (Shankhpushpi) have cognitive benefits and possess antiamnesic properties.

**Mentat** (syrup and tablets), a phytopharmaceutical formulation from The Himalaya Drug Company, is beneficial for children with learning disorders. It channelizes the mental energy, improves short- and long-term memory, prevents cognitive deficits, improves attention span, reduces hyperactivity, has beneficial antidepressant action, and helps establish early bladder control. It is beneficial in memory and learning disorders, attention deficit hyperactivity disorder (ADHD), enuresis, and other conditions.

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Difficult Case

A 10-year-old girl is admitted to hospital with burns caused while playing near a bonfire. Dressing was applied to the burns. When she was in hospital, it was observed that her behavior was abnormal. Her concentration was poor; she would suddenly shift her attention from one conversation and shout something to another patient. On one occasion, she had been walking unsteadily and fell for no apparent reason. In another instance, she fell out of the bed. She had three siblings; all were healthy. No significant family history was reported. Decreasing concentration had led to deterioration in performance at the school. In the past, she had tonsillectomy and usual childhood illnesses such as measles, mumps, and more recently, chicken pox.

On examination, CVS and respiratory system was found to be normal. Neurological examination was hampered by patient's lack of concentration. Cranial nerves and Fundi were found to be normal.

She would suddenly grimace and have jerky movements of the limbs or the whole body. The posturing of limbs was observed to be unusual. Gait was jerky and unsteady.

long-term memory, and prevents cognitive defects. It also improves attention span and reduces hyperactivity.

Mentat improves neurological functions by a modulation of cholinergic and GABAergic neurotransmission. Mentat improves the mental quotient, memory span, concentration ability, and stress threshold by restoring the frontal cortical muscarinic and cholinergic receptor activities. It has cholinesterase-inhibiting, dopaminergic-neuroprotective, adaptogenic, and antioxidant actions. The various effects of Mentat are due to the synergistic activity of various ingredients used in the formulation.

Herbs such as B monnieri, C asiatica, Myristica fragrans, Celastrus paniculatus, Zingiber officinale, W somnifera, Nardostachys jatamansi, Acorus calamus, and Prunus amygdalus help in the enhancement of memory and learning capacity.

N jatamansi, C paniculatus, C asiatica, A calamus, and E alsinoides have been found to possess potent neuroprotective activity. Mentat has been found to be safe and effective for use in children with different types of memory and learning disorders.

Heel-toe walking and Romberg’s tests were impossible. Investigations showed normal skull x-ray and blood.

Questions
1. What is the diagnosis?
2. What two further investigations would you do?
Dyslexia

Reading and spelling disorder (dyslexia) is one of the more common specific developmental disorders, with a prevalence of approximately 5%. It is characterized by severe impairment of learning to read and spell. On the basis of a selective literature review and the guidelines of the German Society of Child and Adolescent Psychiatry, Psychosomatics and Psychotherapy, it was observed that 40% to 60% of dyslexic children have psychological manifestations, including anxiety, depression, and attention deficit. The diagnosis of dyslexia should be established with the aid of the multiaxial classification system. The benefit of specific treatment strategies for dyslexia has not yet been demonstrated empirically. Nonetheless, evaluated prevention programs are available in kindergarten that have been found to promote children's ability to acquire reading and spelling skills in school.

Excerpted from:
Dtsch Arztebl Int. 2010;107(41):718-727.

Picture Quiz No.11

This is the abdomen x-ray of a 1-day-old neonate. The child had mild distension of abdomen and vomiting.

Question

1) What is your finding in the x-ray?
2) What is your diagnosis?

Please send in your answers by September 10, 2011 to:
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Note: Answers and winners of Picture Quiz No. 9 (Vol.3 No. 2) will be declared in the next issue.

Upcoming Events

Event: Adolescon 2011
Date: 17th and 18th September, 2011
Venue: Calicut Tower, Indira Gandhi Road, Calicut, Kerala

Event: 2nd Pediatric Infectious Disease Conference
Date: 2nd October, 2011
Venue: Mumbai, Maharashtra

Event: South Pedicon
Date: 4th to 6th November, 2011
Venue: Angamaly, Kerala

Product Feedback

I started prescribing Bresol syrup (5 mL BID) for an 8-year-old child with bronchial asthma. After taking Bresol for 8 weeks, the patient felt much better and discontinued the use of inhaler.

Dr A Shyam Mohan
Civil Surgeon Specialist (Pediatrics)
Govt. Area Hospital
Nampally, Hyderabad
Andhra Pradesh
There were two people painting a house.
Pat: “Have you got a good hold on the paint brush, Mick?”
Mick: “Yes, I have. Why, Pat?”
Pat: “Well, hold on tight, because I am taking away the ladder!!”

What do you have to say about the man who got a job as a doorman in a big building? He managed very well with the PUSH and PULL signs, but was seen struggling with his fingers under a door marked LIFT.

A man went to a post office to see if there were any letters for him. “I will see sir, what is your name?” The clerk asked. “You will see my name on the envelop, why are you asking me?” said the man.

There were two friends, walking down the street when one turned to the other and said, “Look, there is a dead pigeon.” “Where? Where?” said the other, looking up at the sky!!

John: I was feeling so sleepy this morning that I tossed a coin to decide whether I should attend class or go back to bed.
Friend: So, what did you finally do?
John: I had to toss 10 times before I could finally go back to bed.

“Keep that dog out of my garden, it smells disgusting,” a neighbor said to a small boy. The boy went home to tell everyone to stay away from the neighbor’s garden because of the smell.

Teacher: Can anybody give an example of coincidence?
Ellen: Sir, my mother and father got married on the same day, at the same time.

Teacher asks Peter if he knows his numbers. “Yes,” he says. “My daddy taught me.”
“Can you tell me what comes after three?”
“Four”
“What comes after six?”
“Seven”
“Very good,” says the teacher. “Your father did a very fine job. What comes after 10?”
“A jack,” answers Peter.

Teacher: Cindy, why are you doing your math multiplication on the floor?
Cindy: You told me to do it without using tables!
Several studies have been conducted to examine the sun protection practices followed by parents and children worldwide, during summer.

As part of the Second National Sun Survey (NSS2) in Canada, 1437 parents reported on the time spent in the sun, and the frequency of sun protection behaviors and sunburning for one of their children aged between 1 and 12 years. Results of the survey indicated that the majority of children (94%) spent at least 30 minutes in sun on a typical summer day. However, regular sun protection was only commonly reported for young children (1 to 5 years) and involved covering their heads and wearing sunscreen (85%). The frequency of other protective behaviors was much lower, and sun protection decreased with age. Regular sun protection among Canadian children was low, given their sun exposure. Heavy reliance on sunscreen was consistent with previous reports and indicated that other measures, such as seeking shade and wearing protective clothing, need to be promoted. Riskier sun behavior among older children may reflect decreased parental control, as well as changing attitudes and peer pressure.¹

Results of another survey conducted on sun protection methods adopted by parents of 1055 white children aged between 6 months and 11 years showed that children spent a median of 20 hours per week outdoors during the summer, of which 10 hours were at school. Sunscreen and shade were the most frequently reported protection methods. Higher rates of protection were observed in younger children and those who were prone to sunburn. It was suggested that health care providers and educators might encourage the use of all methods of protection, not just sunscreen use, and educate older children to protect themselves from the sun.²

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**Herbs* for Summer Skin Care**

- **Aloe vera** (Kumari; Barbados Aloe)¹
  - Antibacterial
  - Antifungal
  - Anti-inflammatory

- **Prunus amygdalus** (Vatadha; Almond)²
  - Antioxidant
  - Moisturizing
  - Skin softening

- **Vitex negundo** (Nirgundi; Five-leaved Chaste Tree)³
  - Anti-inflammatory
  - Free radical scavenging
  - Analgesic
  - Antibacterial

- **Rubia cordifolia** (Majishtha; Indian Madder)⁴
  - Antioxidant
  - Antibacterial
  - Anti-inflammatory

- **Vetiveria zizanioides** (Ushira; Khus-khus)⁵
  - Antiperspirant
  - Astringent
  - Emollient
  - Moisturizing and soothing

- **Olea europaea** (Jaitun; Common Olive)⁶
  - Antioxidant
  - Antimicrobial
  - Nourishing

*These herbs are used in Himalaya’s diaper rash cream,¹-⁴ baby powder,²,⁵,⁶ and baby soap²,⁶ for their safe and beneficial effects.
A study was conducted to determine if an intensive intervention directed to mothers of newborns would increase levels of sun protection practice and lower rates of sunburning for their children; and to examine changes in sun protection practices and burning rates experienced between the first and second summers of life. Mothers of infants were randomly selected to receive hospital education alone or hospital education plus tailored materials and telephone counseling. The child’s routine use of hats, shirts, and shade dropped substantially from the first to the second summer. Conversely, sunscreen use increased from 34% to 93% for both groups during the same period. During the first summer, 22% of children received a sunburn or tan compared with 54% during the second summer. It was concluded that comprehensive sun protection begins to decline at a much earlier age than previously reported.3

In another study conducted to estimate the time of sun exposure (in hours) of children during summer, examining sun protection measures used and exploring parental knowledge of sun exposure and protection, it was observed that children spent a mean of 40.9 hours per week in sun during summer and 46.1% among them developed sunburn. It was also observed that 57% of the children on weekdays and 82% of the children at weekends were exposed to the sun between 11 am and 3 pm. Sunscreen and hats/caps were the most common protection measures used. A minority used protective clothing, sunglasses, or sought shade. Also, 30.5% children had reapplied sunscreen every 2 hours.4

References
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Bonnispaz® (DROPS) *Changes colic to frolic in minutes*

Bonnisan® (DROPS, LIQUID) *Keeps babies healthy and happy*

Koflet® (SYRUP, LOZENGE) *The cough reliever*

Mentat® (SYRUP, TABLET) *Channelizes mental energy*

Bresol® (SYRUP) *The breathing solution*

HiOra-SG™ *The healing stoma gel*

...that ensures a joyous and healthy childhood.

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