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IAP-IJPP CME 2013

THE WHO MULTICENTRE GROWTH CHARTS

*Anuradha Bose

Abstract: *Growth charts were already in use and several countries, including India, had local growth charts. In the early 2000s, the WHO undertook the task of creating a multicountry growth reference standard. The aim was to create a set of standards, based on the growth of breast fed babies, as these babies were likely to represent how babies should grow. The WHO Multicentre Growth Reference Study (MGRS) was carried out between 1997 and 2003. A standard defines how children should grow, deviations from the pattern it describes are evidence of abnormal growth. A reference, on the other hand just provides and serves as a tool for comparison. The MGRS data provide a solid foundation for developing a standard because they are based on healthy children living under conditions likely to favour achievement of their full genetic growth potential. A cross-sectional design was adopted for children aged 18 to 71 months, as growth in this age range is more linear than for younger children. The WHO recommends the application of the MGRS charts for all children worldwide, regardless of ethnicity. Several countries have officially adopted the new standards and many others are in the process of doing so. Adopting and applying these standards will enable direct comparisons of the state of nutrition of under-5 children across nations, and provide comparable estimates of the levels of malnutrition. The 5 to 19 year charts can help in building up data on the creeping epidemic of childhood obesity in India.*

Keywords: *MGRS-Growth charts, Standard.*

Points to Remember

- ***Growth standard is a basis for comparison and deviations from the pattern it describes are evidence of abnormal growth.***
- ***To develop a growth chart or standard, children are selected from those living under favourable conditions. Mothers of these children should follow health promoting practices such as breast feeding.***
- ***MGRS chart is developed, based on data collected from cities across six countries, from children brought up in favourable environment.***
- ***New growth charts covering 5-19 year age group have been constructed to detect problems including excess weight.***
- ***For monitoring the growth of a child, weight should be estimated at birth, then every 2 weeks until 2 months of age, thereafter every month till 24 months. After that weight should be checked 6 monthly from 24 to 60 months. Length / height should be measured at birth, repeated at 2 and 6 months and 6 monthly upto 60 months.***

References

1. WHO Multicentre Growth Reference Study Group. WHO Child Growth Standards: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: Methods and development. Geneva: World Health Organization, 2006.
2. de Onis M, Onyango AW, Borghi E, Garza C, Hong Yang, for the WHO Multicentre Growth Reference Study Group .Comparison of the World Health Organization (WHO) Child Growth Standards and the National Center for Health Statistics/WHO international growth reference: implications for child health programmes. Public Health Nutrition: 9(7) 2006, 942–947.
3. de Onis M, Garza C, Victora CG, Bhan MK, Norum KR,. The WHO Multicentre Growth Reference Study (MGRS): Rationale, planning, and implementation The United Nations University Food Nutr Bull, 2004;25:1(suppl 1).
4. de Onis M, Onyango AW, Van den Broeck J, Chumlea WC, Martorell R, for the WHO Multicentre Growth Reference Study Group.Measurement and standardization protocols for anthropometry used in the construction of a new international growth reference . Food Nutr Bull 2004;25(1)(suppl 1):S27–36.
5. WHO Multicentre growth reference study group .WHO Child Growth Standards based on length/height, weight and age Acta Pædiatr 2006;450:(Suppl)76-85.

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Christian Medical College,
Vellore.

6. Bhandari N, Taneja S, Rongsen T, Chetia J, Sharma P, Bahl R, et al. For the WHO Multicentre Growth Reference Study Group.Implementation of the WHO Multicentre Growth Reference Study in India. Food Nutr Bull 2004;25, (suppl 1):566- 571.
7. http://remotehealthatlas.nt.gov.au how_ to_ use_ who_ growth_charts.pdf accessed 03/06/13
8. de Onis M, Onyango AW, Borghi E, Siyam A, Nishida C, Siekmann J .Development of a WHO growth reference for school-aged children and adolescents..http//www.who.int/bulletin/volumes/85/9/07-043497/en/
9. De Onis M. .The use of anthropometry in the prevention of childhood overweight and obesity. Int J Obes Relat Metab Disord 2004; 28: S81-85.

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MANAGEMENT OF LATE PRETERM INFANTS

*Giridhar S

Abstract: *Late preterm infants range in gestational age from 34 0/7 to 36 6/7 weeks and are at greater risk of morbidity, such as respiratory complications, temperature instability, hypoglycemia, jaundice, feeding problems, neonatal intensive care unit admissions, mortality and adverse neurological sequelae when compared with term infants. They represent 75% of preterm birth and are the fastest growing subgroup of preterm infants. There is an urgent need to educate health care providers and parents about the vulnerability of late preterm infants, who are in need of diligent monitoring and care during the initial hospital stay and a comprehensive follow-up plan for post neonatal and long-term evaluations.*

Keywords: *Premature infant, Respiratory distress syndrome, Neonatal jaundice, hypoglycemia, Mortality.*

Points to Remember

- ***Late-preterm infants are immature.***
- ***Infants born at 34 0/7 through 36 6/7 weeks gestation (239–259 days since the first day of the last menstrual period) should be referred to as "late preterm."***
- ***Late-preterm infants are physiologically immature and have limited compensatory responses to the extrauterine environment compared with term infants.***
- ***Late-preterm infants are at a greater risk of morbidity and mortality than are term infants.***
- ***During the birth hospitalization, late-preterm infants are more likely than are term infants to be diagnosed with temperature instability, hypoglycemia, respiratory distress, apnoea, jaundice, infections, feeding difficulties or mortality.***
- ***During the first month after birth, late-preterm infants are more likely than term infants to be rehospitalized for jaundice, feeding difficulties, dehydration, and suspected sepsis.***
- ***Collaborative counseling by both obstetric and neonatal clinicians about the outcomes of late-preterm births is warranted unless precluded by emergent conditions.***
- ***Appropriate discharge criteria and comprehensive follow-up plan needs to be implemented for this special population if infants.***

References

1. Raju TN, Higgins RD, Stark AR, Leveno KJ. Optimizing care and outcome for late-preterm (near-term) gestations and for late-preterm infants: A summary of the workshop sponsored by the National Institutes of Health and Human Development. Pediatrics 2006;118:1207–1214.
2. Davidoff MJ, Dias T, Damus K, Russell R, Bettegowda VR, Dolan S, et al. Changes in the gestational age distribution among U.S. singleton births: impact on rates of late preterm birth, 1992 to 2002. Semin Perinatol. 2006;30:8-15.
3. Wang ML, Dorer DJ, Fleming MP, Catlin EA. Clinical outcomes of near-term infants. Pediatrics 2004;114:372–376.
4. Consortium on Safe Labor. Respiratory morbidity in late preterm births. 2010;304:419-425
5. Escobar GJ, Greene JD, Hulac P, Kincannon E, Bischoff K, Gardner MN, et al. Rehospitalisation after birth hospitalisation: patterns among infants of all gestations. Arch Dis Child 2005;90 :125– 131.
6. Keszler M, Carbone MT, Cox C, Schumacher RE. Severe respiratory failure after elective repeat cesarean delivery: a potentially preventable condition leading to extracorporeal membrane oxygenation. Pediatrics 1992;89:670-672.
7. Ishiguro A, Namai Y, Ito YM. Managing 'healthy' late preterm infants. Pediatr Int 2009;51:720–725.

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Chettinad Hospital & Research Institute,

8. Laptook A, Jackson GL. Cold stress and hypoglycemia in the late preterm ('near-term') infant: impact on nursery of admission. Semin Perinatol 2006;30:24–27.
9. Sarici SU, Serdar MA, Korkmaz A, Erdem G, Oran O, Tekinalp G, et al. Incidence, course, and prediction of hyperbilirubinemia in near-term and term newborns. Pediatrics 2004;113 :775– 780.
10. Bhutani VK, Johnson L. Kernicterus in late preterm infants cared for as term healthy infants. Semin Perinatol 2006;30:89–97.
11. Adamkin DH. Postnatal glucose homeostasis in late-preterm and term infants. Pediatrics 2011;127:575–579.
12. Neu J. Gastrointestinal maturation and feeding. Semin Perinatol 2006;30:77–80.
13. Benjamin DK Jr, Stoll BJ. Infection in late preterm infants. Clin Perinatol. 2006;33:871–882; abstract x.
14. Tomashek KM, Shapiro-Mendoza CK, Davidoff MJ, et al. Differences in mortality between late-preterm and term singleton infants in the United States, 1995–2002. J Pediatr 2007;151:450–6, 456.e1.
15. Kinney HC. The near-term (late pre-term) human brain and risk for periventricular leukomalacia: a review. Semin Perinatol 2006; 30:81–88.

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FEEDING DISORDERS IN INFANTS: 6 TO 24 MONTHS

Sathiyasekaran M

Abstract: *Pediatric feeding disorders are challenging problems encountered commonly in day to day practice. 25% of normal children present with a mild disorder which increases to 80% in children with developmental delay. The etiology is multifactorial comprising of medical, nutritional, behavioral, psychological and environmental causes. Feeding disorders should be conceptualized as a bio-behavioral problem, a continuum between psycho-social and organic factors. The clinical spectrum includes food selectivity, food refusal, excessive meal duration, dysphagia, choking, vomiting and inappropriate mealtime behaviors. Nutritional and cognitive impairment, growth failure, susceptibility to chronic illness and even death may occur as a result of this disorder. Assessment and treatment are best conducted by an interdisciplinary team including a pediatrician, gastroenterologist, nutritionist, behavioral psychologist and occupational and/or speech therapist.*

Keywords: *Feeding disorder, Bio-behavioral, Interdisciplinary team.*

Points to Remember

- ***Feeding disorders in young infants are common.***
- ***Etiology is multifactorial and may be a combination of medical and behavioral.***
- ***Symptoms range from food selectivity, vomiting to complete food refusal.***
- ***Majority resolve but some may persist resulting in in cognitive impairment, emotional dysfunction, malnutrition and growth retardation.***
- ***Assessment and management of complex disorder is best done by a multi disciplinary team.***

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References

1. Manikam R, Perman JA. Pediatric feeding disorders. J Clin Gastroenterol 2000;30:34–46 .
2. Rudolph CD, Link DT. Feeding Disorders in Infants and Children. Pediatr Clin North Am 2002; 49:97-112.
3. Arvedson JC .Swallowing and feeding in infants and young children PART 1 Oral cavity, pharynx and esophagus. GI Motility online (2006) doi:10.1038/gimo17.
4. Chatoor I. Feeding and eating disorders of infancy and early childhood. In: Weiner JM, Dulcan MK, eds. Textbook of child and adolescent psychiatry. Arlington,Va: American Psychiatric Publishing Inc. 2004; pp 639–652.
5. Lindberg L, Bohlin G, Hagekull B. Early feeding problems in a normal population. Int J Eating Disord 1991; 10: 395-405.
6. Reilley S, Skuse D, Problete X. Prevalence of feeding problems and oral-motor dysfunction in children with cerebral palsy: a community survey. J Pediatr 1996; 129: 877-882.
7. Thommessen M, Heidberg A, Kasse BF, Larson S, Riis G. Feeding problems,height and weight in different groups of disabled children. Acta Paediatr 1991; 80:527-533.
8. Rommel N, De Meyer AM, Feenstra L, Veereman-Wauters G. The complexity of feeding problems in 700 infants and young children presenting to a tertiary care institution. J Pediatr Gastroenterol Nutr 2003; 37:75–84.
9. Bryant-Waugh D, Markham L, Kreipe RE, Walsh BT. Feeding and Eating Disorders in Childhood. Int J Eat Disord 2010;43: 98-111.
10. Burklow KA, Phelps AN, Schultz JR, McConnell K, Rudolph C. Classifying complex pediatric feeding disorders. J Pediatr Gastroenterol Nutr 1998;27:143–147.
11. Dahl M, Sundelin C. Feeding problems in an affluent society. Follow-up at four years of age in children with early refusal to eat. Acta Paediatr 1992;81:575–579.
12. Bernard-Bonnin, AC . Feeding problems of infants and toddlers. Can Fam Phys 2006; 52 : 1247–1251.
13. Arts-Rodas, D, Benoit D. Feeding problems in infancy and early childhood: Identification and management. Pediatr Child Health 1998;3:21–27.
14. Hartnick CJ, Hartley BE, Miller C, Willging JP. Pediatric fiberoptic endoscopic evaluation of swallowing. Ann Otorhinol Laryngol 2000;109:996–999.
15. Greer AJ, Gulotta CS, Masler EA, Laud RB. Caregiver Stress and Outcomes of Children with Pediatric Feeding Disorders Treated in an Intensive Interdisciplinary Program. J Pediatr Psychol 2008;33:612–620.

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NEPHROTIC SYNDROME IN CHILDREN–AN UPDATE

*Sangeetha G
*Shweta Priyadarshini
**Vijayakumar M

Abstract: *The commonest type of nephrotic syndrome seen in children is idiopathic nephrotic syndrome. Dysregulation of T cells was considered as the cause for proteinuria in earlier days. But better understanding of the molecular mechanisms lead us to think about various emerging new theories about proteinuria. Hypothesis about the mechanism of edema is also changing, with more focus on tubular epithelial sodium channels and others. Evaluation, management and complications are very specific in childhood nephrotic syndrome.*

Keywords: *Nephrotic syndrome, Diuretic resistance, Steroid sparing drugs, Rituximab, Stress therapy.*

Points to Remember

- ***Most common cause of nephrotic syndrome in children is idiopathic nephrotic syndrome.***
- ***Though it is called idiopathic, various pathogenetic mechanisms for proteinuria include dysregulation of T cells, genetic mutations, circulating permeability factors and aberrant cross talk between B and T cells.***
- ***Overfill hypothesis of edema formation is supported by activation of tubular ENaC.***
- ***Nephrotic edema should be treated cautiously with appropriate diuretics either alone or in combination with serial monitoring of electrolytes and other adverse effects.***
- ***Nephrotic syndrome should be treated adequately with corticosteroids both in terms of dosage and duration.***
- ***In case of relapse, adequate treatment of infection may result in spontaneous remission.***
- ***Low dose steroid is always co-administered with steroid sparing drugs in the initial period of treatment of FRNS and SDNS.***
- ***All steroid sparing drugs have their own benefits and adverse effects. Hence serial monitoring to look for adverse effects should be stressed.***
- ***Rituximab, a novel genetically engineered anti CD-20 monoclonal antibody which selectively targets CD20-positive B cells is useful in difficult SDNS and SRNS.***
- ***Parents of nephrotic syndrome children should be counselled regarding the need for vaccination, especially pneumococcal vaccination when the child is in remission.***
- ***In children with risk of suppression of hypothalamo pituitary adrenal axis should get stress dose of steroids during the period of stress if they have received steroids in the past one year.***
- ***Complication due to disease and drugs per se should be addressed as early as possible in children with nephrotic syndrome to prevent the adverse consequences.***

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References

1. Niaudet P, Boyer O. Idiopathic nephrotic syndrome in children: Clinical aspects. In: Avner ED, Harmon WE, Niaudet P, Yoshikawa N (eds), Pediatric Nephrology, 6th edn. Springer, Verlag Berlin Heidelberg, 2009; pp667-702.
2. Indian Pediatric Nephrology Group, Indian Academy of Pediatrics.Management of steroid sensitive nephritic syndrome: Revised guidelines. Indian Pediatric Nephrology Group, Indian Academy of Pediatrics. Indian Pediatr 2008;45:203-214.
3. Saravanan G, Amish Udani, Vijayakumar M. Steroid sensitive nephrotic syndrome. In: Vijayakumar M, Nammalwar BR (eds). Principles and Practice of Pediatric Nephrology, 2nd edn. Jaypee Brothers Medical Publisher Pvt Ltd., New Delhi, 2013; pp 324-343.
4. Ding WY, Saleem MA. Current concepts of the podocyte

in nephrotic syndrome. Kidney Res Clin Pract 2012;31: 87–93.

5. Prajnya R. Genetic Basis of Podocytopathies. In: Vijayakumar M, Nammalwar BR (eds). Principles and Practice of Pediatric Nephrology, 2nd edn. Jaypee Brothers Medical Publisher Pvt Ltd., New Delhi, 2013;pp309-316.
6. Greenbaum LA, Benndorf R, Smoyer WE. Childhood nephrotic syndrome- current and future therapies. Nat Rev Nephrol 2012;8:445–458.
7. Gbadegesin R, Smoyer WE. Nephrotic Syndrome. In: Geary DF, Schaefer F (eds). Comprehensive Pediatric Nephrology, 1st edn. Mosby Elsevier Philadelphia, 2008; pp204-218.
8. Siddall EC, Radhakrishnan J. The pathophysiology of edema formation in the nephrotic syndrome. Kidney Int 2012;82:635-642.
9. Sudha E, Prahlad N. Approach to edema. In: Vijayakumar M, Nammalwar BR (eds). Principles and Practice of Pediatric Nephrology, 2nd edn. Jaypee Brothers Medical Publisher Pvt Ltd., New Delhi, 2013; pp195-201.
10. Doucet A, Favre G, Deschênes G. Molecular mechanism of edema formation in nephrotic syndrome: therapeutic implications. Pediatr Nephrol 2007;22:1983-1990.
11. Vasudevan A, Mantan M, Bagga A. Management of Edema in Nephrotic Syndrome. Indian Pediatr 2004;41:787-795.
12. Floege J, Feehally J. Introduction to Glomerular Disease: Clinical Presentations. In: Floege J, Johnson RJ, Feehally J (Eds). Comprehensive Clinical Nephrology, 4th edn. Missouri: Elsevier Saunders, 2010; pp193-207.
13. Sinha A, Bagga A. Rituximab therapy in nephrotic syndrome: implications for patients' management. Nat Rev Nephrol. 2013;9:154–169.
14. Gulati A, Sinha A, Sreenivas V, Math A, Hari P, Bagga A. Daily corticosteroids reduce infection-associated relapses in frequently relapsing nephrotic syndrome: A randomized controlled trial. Clin J Am Soc Nephrol 2011;6:63-69.

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NOISY BREATHING

*Subramanyam L

Abstract: *Although the clinical utility of the respiratory noises is often assumed, unfortunately, distinguishing these noises from each other can be very difficult. Many children will have multiple noises, as the obstruction to airway is often extensive (eg,inflammation involving both upper and lower airways), the noise may vary from minute to minute, and some noises may not clearly fit into any one of these simple descriptors. This difficulty in categorizing the noise is worse when the noise is intermittent described by the child's parent and not confirmed by the clinician. Another problem is intra-observer reliability i.e whether the clinician will agree with himself when observing the same sign on two separate occasions. Further agreement between clinicians on the terminology of these noises is far from perfect. The purpose of discussion is to analyse the validity and reliability of these noises and emphasize their subsequent clinical relevance and diagnostic significance.*

Keywords: *Noisy Breathing, Stridor, Wheeze, Snore, Rattle.*

Points to Remember

- ***When the parents report about respiratory noises, it is the duty of pediatrician to confirm.***
- ***Many infants with parent reported wheeze, have a "rattle" rather than wheeze.***
- ***A major error is misclassifying stridor as a wheeze and missing significant upper airway obstruction.***
- ***Audio or video recording of respiratory noises is helpful to discuss with parents in day-to-day practice.***
- ***Time spent in eliciting the history is worth than ordering investigations without clinical clues.***

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Bibliography

1. Mellis C. Respiratory noises, Pediatr clin North Am, 2009; 56:1-17.
2. Subramanyam L. Pulmonary dynamics. In: Essentials of Pediatric pulmonology. 3rd edition, Pediatric Pulmonology Foundation of India (PPFI), Chennai. 2008;pp11-15.
3. Ashok P. Sarnaik, Sabrina M.Heidemann; Respiratory pathophysiology and regulation; Nelson textbook of Pediatrics, 19th edn, WB saunders 2011; Reprinted in India 2012: pp1419-1420.

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TROPICAL INFECTIONS IN THE PICU

** Prabhudesai S*
*** Ramachandran B*

Abstract: *Tropical infections often cause life threatening illness requiring PICU admission. Diagnosis may be difficult in critically ill children. Severe dengue presents with third-spacing, shock, hemorrhage and organ impairment requiring fluid resuscitation and sometimes, blood transfusion. Malaria often causes complications (cerebral malaria, hypoglycemia, anemia, hyperparasitemia) having a high mortality if not treated promptly. Scrub typhus may cause shock, ARDS and renal failure and can mimic dengue. Outcome is good with specific therapy. Icteric leptospirosis causes jaundice, renal failure and hemorrhage, and residual renal and visual impairment may result. Multi-organ dysfunction is common in these infections needing ventilation, hemodynamic support and dialysis.*

Keywords: *Tropical infections, Dengue, Malaria, PICU*

Points to Remember

- ***The specific diagnosis of tropical infections can be challenging especially in the PICU***
- ***Severe dengue is a potentially fatal illness but can be treated effectively with early fluid resuscitation. Early recognition of warning signs, shock, hemorrhage and fluid overload are important.***
- ***Severe malaria may be difficult to differentiate from dengue, scrub typhus, bacterial sepsis, pneumonia and meningitis. Repeated microscopy and rapid antigen testing may aid diagnosis. Prompt antimalarial therapy is essential to prevent mortality.***
- ***Scrub typhus may clinically resemble severe dengue. Absence of hemoconcentration, prolonged prothrombin time (compared to partial thromboplastin time) and the presence of an eschar demarcating the chigger bite are distinguishing features.***
- ***The icteric form of leptospirosis (Weil's disease) can cause jaundice, renal failure and pulmonary hemorrhage. Hemodialysis and mechanical ventilation are often necessary.***

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References

1. Ranjit S, Kissoon N. Dengue hemorrhagic fever and shock syndromes. Pediatr Crit Care Med 2011; 12 : 90-100.
2. Handbook for Clinical Management of Dengue. World Health Organization, Geneva 2012.
3. Guidelines for the Diagnosis and Treatment of Malaria in India 2011. National Institute of Malaria Research, New Delhi 2011.
4. Guidelines for the treatment of malaria. Second edition. World Health Organization, Geneva 2010.
5. Shann F, Argent AC, Ranjit S. Pediatric Intensive Care in Developing Countries. In: Pediatric Critical Care Fuhrman BP, Zimmerman JJ, Carcillo JA, Clark RSB, Relvas M, Rotta AT , eds. 4th edn. Philadelphia, Elsevier Saunders, 2011; pp 164-178.
6. Singhi PD, Singhi SC, Campbell JD. Central Nervous System Infections. In: Rogers' Textbook of Pediatric Intensive Care. Nichols DG, Ackerman AD, Argent AC, Biagas K, Carcillo JA, Dalton HJ et al, eds. 4th edn. Philadelphia, Lippincott Williams & Wilkins, 2008;pp 1353-1399.
7. Reller ME, Dumler JS. Scrub typhus. In: Nelson Textbook of Pediatrics Kliegman RM, Stanton BF, St. Geme III JW, Schor NF, Behrman RE, eds. 19th edn. Philadelphia, Elsevier Saunders; 2011; pp1045-1056.
8. Davies HD, Rosenberg MB. Leptospira. In: Kliegman RM, Stanton BF, St. Geme III JW, Schor NF, Behrman RE, eds. Nelson Textbook of Pediatrics. 19th edn. Philadelphia, Elsevier Saunders, 2011; pp 1023-1025.
9. Dominguez TE, Ravishankar C, Laufer MK. International and Emerging Infections. In: Rogers' Textbook of Pediatric Intensive Care. Nichols DG, Ackerman AD, Argent AC, Biagas K, Carcillo JA, Dalton HJ et al, eds. 4th edn. Philadelphia, Lippincott Williams & Wilkins, 2008; pp 1419-1441.
10. Melby PC. Leishmaniasis (Leishmania). In: Nelson Textbook of Pediatrics. Kliegman RM, Stanton BF, St. Geme III JW, Schor NF, Behrman RE, editors. 19th edn. Philadelphia, Elsevier Saunders, 2011; pp1186-1190.

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ABDOMINAL PAIN – MEDICAL OR SURGICAL?

*Senthilnathan R

Abstract: *The first step in evaluation of abdominal pain in children is to differentiate surgical and medical conditions. Prompt identification of the etiology is important in the successful management of the case. An insight into the approach to the child with abdominal pain is discussed here.*

Keywords: *Acute abdomen, Surgical causes.*

Points to Remember

- ***Bilious emesis ,focal tenderness, guarding and X ray revealing small bowel dilatation indicate surgical cause of abdominal pain.***
- ***Change of pattern and persistence of symptoms warrant further evaluation for surgical causes.***
- ***Laparoscopy has an important role in the evaluation and management of abdominal pain.***

References

1. Guyton AC. Hall JE. Somatic Sensations. In: Text book of Medical Physiology. Elsevier Saunders Pennsylvania, 11th edn, 2006;48:pp598-605.
2. Faull C, Nicol AR.Abdominal pain in six year olds; an epidemiological study in a new town. J Child Psychol Psychiatr 1986; 27:251-260.
3. Walker LS, Lipani TA, Greene JW, Caines K, Stutts J, Polk DB, et al. Recurrent abdominalpain: Symptom subtypes based on the RomeII Criteria for pediatric functional disorders.J Pediatr Gastroenterol Nutr 2004; 38:187-191.
4. Peter Mattei. Chronic Abdominal Pain. In: Fundamentals of Paediatric Surgery. Springer New York, 1st edn, 2011;55:pp425-436.
5. FlahertyMJ, LieJT Haggit RC.Mesenteric inflammatory venom occlusive disease: seldom recognised cause of intestinal ischemia. Am J Surg Pathol 1994; 18:779.

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IAP-IJPP CME 2013

ANTIBIOTIC RESISTANCE – PREVENTIVE STRATEGIES

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Abstract: *Antimicrobial resistance is recognized as one of the great threats to human health worldwide. The discovery of antibiotics seven decades earlier fundamentally transformed the way physicians care for patients, shifting their approach from a focus on diagnoses without treatment to a treatment-focused approach that saves lives. Seven decades of medical advances achieved by antibiotics are now seriously threatened by the convergence of relentlessly rising antibiotic resistance and the alarming and ongoing withdrawal of pharmaceutical companies from the antibiotic market with dry antibiotic pipeline. Without antibiotics, diverse fields of medicine will be severely hampered, including surgery, the care of premature infants, cancer chemotherapy, care of the critically ill and transplantation medicine, all of which are feasible only in the context of effective antibiotic therapy. The optimum solution to tackle the problem of antibiotic resistance remains investment in the infrastructure required to reduce the burden of infectious diseases. However, in the short term the best approaches rely on increasing awareness about antibiotic misuse, developing standard treatment guidelines for practitioners in different settings, restricting the choice of antibiotics, and providing feedback to practitioners on local patterns of resistance. In this article we are exploring how to tackle this global crisis locally.*

Keywords: *Antibiotic resistance, Problem tackling.*

Points to Remember

- ***Educate pediatricians, students and public regarding antibiotics and antibiotic resistance.***
- ***Establish national and regional surveillance system to monitor antibiotic resistance patterns.***
- ***Before writing antibiotic, write diagnosis and if you want to use antibiotic use maximum dose for minimum period.***
- ***Involve specialists in the management of difficult to treat/multidrug resistant infections.***

References

1. Black RE, Morris SS, Bryce J. Where and why are 10 million children dying every year? Lancet 2003;361: 2226-2234.
2. Lopez AD. Causes of death in industrial and developing countries: estimates for 1985-1990. In: Disease control priorities in developing countries. Jamison DT, Mosley WH, Measham AR, Bobadilla JL, eds. Washington, DC: World Bank and Oxford University Press, 1993;pp 35-50.
3. Sureshkumar D, Hemalatha J, Ghafur A. Ignorance: a blessing or a curse-awareness among Indian physicians on NDM-1 and its impact on antibiotic selection. Abstract 56.086 15th International Congress of Infectious Diseases Bangkok, 2012.
4. Hall BG, Salipante SJ, Barlow M. Independent origins of subgroup Bl + B2 and subgroup B3 metallo-b-lactamases. J Mol Evol 2004; 59: 133–141.
5. Culliton BJ. Emerging viruses, emerging threats. Science 1990;247:279-280 .

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IAP-IJPP CME 2013

NEUROIMAGING OF THE PEDIATRIC BRAIN – A PICTORIAL REVIEW OF MR IMAGING STRATEGIES

***Gopinathan K**

Abstract: *Magnetic resonance imaging of pediatric brain is nowadays routinely used as imaging method of choice for the detection of morphological and functional changes of the brain . The advent of fast sequences, which allow high signal-to-noise, high-resolution datasets has facilitated standardized and reliable protocols for MRI to be acknowledged as a valuable tool in many paediatric centers. This review covers technical requisites, sequence details, and provides a practical approach for routine diagnosis of normal myelination and its imaging pitfalls. The characteristic imaging findings of various pediatric brain disorders which includes congenital malformations,arteriovenous malformations, paediatric stroke , tumours and tumour related issues and neuro infections are briefly discussed. Finally a brief note of MR spectroscopy in normal pediatric brain and its pivotal role in various clinical challenges is discussed.*

Keywords: *MRI, Spectroscopy, MR Angiography, MR Venography, Pediatric brain.*

Points to Remember

MRI plays vital role in

- ***Charecterisation of congenital anomalies accurately.***
- ***Prognostication of hypoxic ischemic encephalopathy using DWI & Spectroscopy***
- ***Prompt diagnosis of pediatric stroke and exclusion of stroke like lesions with the help of DWI.***
- ***Differentiation of various infections so that targeted therapy could be instituted.***
- ***Make evaluation of various pediatric leucodystrophies simple.***

For further reading

1. Pediatric Neuroimaging. Barkovich AJ. 3rd edn, Philadelphia, Pa: Lippincott Williams & Wilkins, 2012.
2. MRI of the Neonatal Brain, Mary A Rutherford. (ed).
3. Heinz ER, Provenzale JM. Imaging Findings in Neonatal Hypoxia: A Practical Review Am J Roentgenol 2009; 192: 41-47.
4. MR Imaging for Diagnostic Evaluation of Encephalopathy in the Newborn**.** Radio Graphics 2010; 30:763-780.

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IAP-IJPP CME 2013

LITERATURE SEARCH USING PUBMED

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Abstract: *Literature search is an essential tool for evidence-based practice. It is difficult to get the right answer unless the right question is asked. While performing literature search unless the right question is asked, the search will not bring out appropriate articles. This article deals with basic methods involved in performing literature search using PubMed.*

Keywords: *PubMed, MEDLINE, MeSH*

Points to Remember

- ***Unless right question is asked, web search will only yield incomplete search results.***
- ***Need to understand Boolean logic operators and use them appropriately during literature search.***
- ***While writing paper/ thesis it is essential to quote exactly how the search was performed so that it could be reproduced by a different operator.***

For further reading

1. http://www.ncbi.nlm.nih.gov/pubmed.

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GENERAL ARTICLES

MEDICO LEGAL APPROACH TOWARDS VICTIMS OF SEXUAL OFFENCE

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Abstract: *Sexual offences against children are increasing enormously in recent years. A pediatrician/ medical practitioner would often come across such cases. It may be cumbersome for the practitioner to deal with such cases, as there may be confusions regarding medico-legal management, right from informing the police and testifying as expert witness in the Court of Law. For this, basic knowledge about the sexual offences and its approach is essential. A simple approach is given when one encounters a child victim of sexual offence.*

Keywords: *Sexual offences, Medical approach.*

Points to Remember

- ***Medical examination should be carried out as per the laid down procedure, necessary evidence has to be preserved and important details should be documented.***
- ***The doctor coming across such a case, has to report to the special juvenile police unit or local police.***
- ***Necessary treatment and counselling has to be provided taking the help of other specialists.***

References

1. http://indiagovernance.gov.in/files/protection-of-children-against-sexual-offences-bill-2012.pdf.
2. Code of Criminal Procedure, 1973. Universal's Criminal Manual. Universal Law Publishing Co Pvt Ltd. Delhi. 2012;pp115-116.
3. http://wcd.nic.in/childact/protection_of_children2012.pdf.
4. Code of Criminal Procedure, 1973. Universal's Criminal Manual. Universal Law Publishing Co Pvt Ltd. Delhi. 2012;pp220-221.

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GENERAL ARTICLES

HOW TO CARE FOR LOW BIRTH WEIGHT BABY AT HOME?

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Abstract: *Care of the low birth weight baby at home is a challenge. With proper training and supervision, low birth weight newborn care can be done well in home settings leading to improvement in survival and health seeking behavior. Fundamentals of such a care include early recognition, prevention and treatment of common neonatal problems. The components of home based care are health education, provision of essential newborn care - breast-feeding, thermal care, hygiene, monitoring for any infection, early recognition of illness, provision of emergency care and early referral. Home based care is complementary to facility based care, a must in "chain of survival" and a continuum of care from home to hospital .*

Keywords: *Low birth weight, Home based care, Essential newborn care*

Points to Remember

- ***Nearly all essential newborn care can be provided safely, effectively and at low cost at household level.***
- ***Fundamentals of LBW care include recognition, prevention and treatment of common problems.***
- ***The basic components of LBW care at home are a) Increased attention to keeping the newborn warm, including skin-to-skin contact with the mother; b) assistance with initiation of breastfeeding, expressing breast milk if the baby is not strong enough to suckle, c) extra attention to hygiene, especially hand washing; d) extra attention to danger signs and the need for early care seeking and referral; and e) periodic home visits for wellbeing surveillance and monitoring growth.***
- ***Providing basic care to LBW newborn at home has been identified as a critical intervention that helps in preventing newborn deaths.***

References

1. World Health Organization. Newborns: Reducing Mortality, Fact Sheet 333. Geneva: WHO, 2012; http://www.who.int/mediacentre/factsheets/fs333/en/ (Accessed on 30 March 2013)
2. Bang AT, Bang RA, Reddy HM. Home-based neonatal care: summary and applications of the field trial in rural Gadchiroli, India (1993 to 2003). J Perinatol 2005;25 S108-122.
3. Caring for the Newborn at Home: A Training Course For Community Health Workers Community Health Worker Manual & counseling cards. WHO, 2012.
4. Bhutta ZA, Darmstadt GL, Hasan BS, Haws RA. Community-based interventions for improving perinatal and neonatal health outcomes in developing countries: A review of the evidence. Pediatrics 2005;115:519–617.
5. Home based newborn care. Operational guidelines. Ministry of Health and family Welfare, Govt of India, 2011.
6. Gogia S, Ramji S, Gupta P, Gera T, ShahD et al. Community Based Newborn Care: A Systematic Review and Meta-analysis of Evidence: UNICEF-PHFI Series on Newborn and Child Health, India. Indian Pediatr 2011,48:537-546.
7. WHO, UNICEF Joint Statement. Home visits for the newborn child: a strategy to improve survival, WHO 2009.

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DRUG PROFILE

USE OF ANTI-INFLAMMATORY DRUGS

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Abstract: *Nonsteroidal anti-inflammatory drugs (NSAIDs) possess antipyretic, analgesic and anti-inflammatory effects. They are frequently used in children and have numerous therapeutic indications, the most common ones being fever, postoperative pain and inflammatory disorders, such as juvenile idiopathic arthritis (JIA) and Kawasaki disease. This article deliberates on the development of NSAIDs over the years, their indications in children, adverse effects and guidelines for choosing one NSAID over another.*

Key words:*Anti inflammatory drugs,NSAIDS,COX-1 inhibitor, COX-2 inhibitor*

Points to Remember

- ***There is very little difference in the anti-inflammatory effect of various NSAIDs.***
- ***Anti-inflammatory effect may not manifest/ not be clinically demonstrable even after 3 weeks.***
- ***Ibuprofen combines anti-inflammatory, analgesic, and antipyretic properties. It has fewer side-effects than other NSAIDs but its anti-inflammatory properties are weak.***
- ***Naproxen combines good efficacy with a low incidence of side-effects.***
- ***Diclofenac is similar in efficacy to naproxen.***
- ***Indomethacin has an action equal to or superior to that of naproxen, but with a high incidence of side-effects.***
- ***Meloxicam and Etoricoxib are the only 2 selective inhibitors of cyclo-oxygenase-2 that have been licensed for use in adolescents.***

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References

1. An aspirin a day keeps the doctor at bay. The world's first blockbuster drug is a hundred years old this week http://www.nobelprizes.com/nobel/medicine/aspirin.html Accessed on 25/9/13
2. Salicinum. Salicin. Willow. "Materia Medica Pharmacy, Pharmacology And Therapeutics", by W. Hale White. http://chestofbooks.com/health/materia-medica-drugs/Pharmacy-Pharmacology-And-Therapeutics/Salicinum-Salicin-Willow.html#.UkJvB9JHJOI#ixzz2fsUvkpB0 Accessed on 25/9/13
3. Ringold S, Weiss PF, Beukelman T, Dewitt EM, Ilowite NT, Kimura Y, Laxer RM, Lovell DJ, Nigrovic PA, Robinson AB, Vehe RK. Update of the 2011 American College of Rheumatology Recommendations for the Treatment of Juvenile Idiopathic Arthritis: Recommendations for the Medical Therapy of Children With Systemic Juvenile Idiopathic Arthritis and Tuberculosis Screening Among Children Receiving Biologic Medications. Arthritis Rheum 2013; Oct 2013; 65 (10): 2499–2512.
4. Williams PL, Ansell BM, Bell A, Cain AR, Chamberlain MA, Clarke AK, et al.. Multicentre study of piroxicam versus naproxen in juvenile chronic arthritis, with special reference to problem areas in clinical trials of nonsteroidal anti-inflammatory drugs in childhood. Br J Rheumatol 1986; 25(1): 67-71.
5. Leak AM, Richter MR, Clemens LE, Hall MA, Ansell BM. A crossover study of naproxen, diclofenac and tolmetin in seronegative juvenile chronic arthritis. Clin Exp Rheumatol 1988; 6(2): 157-160.
6. IAP Drug Formulary. Eds Jeeson C Unni, Menon PSN, Nair MKC, Bansal CP. Web Update 2013 (3). http://www.iapdrugformulary.com/view_item.php?k=148&t=2.
7. IAP Drug Formulary. Eds Jeeson C Unni, Menon PSN, Nair MKC, Bansal CP. Web Update 2013 (3). http://www.iapdrugformulary.com/view_item.php?k=407&t=2.
8. Hilário MO, Terreri MT, Len CA. Nonsteroidal anti-inflammatory drugs: cyclooxygenase 2 inhibitors. J Pediatr (Rio J) 2006; 82(5 Suppl): S206-212.
9. Scharf RE. Drugs that affect platelet function. Semin Thromb Hemost 2012; 38(8):865-883. doi: 10.1055/s-0032-1328881.

10. Holstein K, Klamroth R, Richards M, Carvalho M, Pérez-Garrido R, Gringeri A; European Haemophilia Therapy Standardization Board. Pain management in patients with haemophilia: a European survey. Haemophilia 2012; 18(5): 743-752. doi: 10.1111/j.1365-2516.2012.02808.x.

11. Moon JY, Kim SH, Kim TB, Kim SH, Chang YS, Lee JH, Cho YS, Park JW, Jang AS, Park CS, Nahm DH, Cho YJ, Cho SH, Choi BW, Moon HB, Yoon HJ; COREA study group. Aspirin-intolerant asthma in the Korean population: prevalence and characteristics based on a questionnaire survey. Respir Med 2013; 107(2): 202-208. doi: 10.1016/j.rmed.2012.10.020.

12. Thomsen SF, Kyvik KO, Skadhauge LR, Steffensen I, Backer V. Regular use of non-steroidal anti-inflammatory drugs increases the risk of adult-onset asthma: a population-based follow-up study. Clin Respir J 2009: 82 4. doi: 10.1111/j.1752-699X.2008.00113.x.

13. Feenstra J, Grobbee DE, Mosterd A, Stricker BH. Adverse cardiovascular effects of NSAIDs in patients with congestive heart failure. Drug Saf 1997; 17(3): 166-180.

14. Brooks P, Kubler P. Etoricoxib for arthritis and pain management. Ther Clin Risk Manag 2006; 2(1): 45–57.

15. Ananthakrishnan AN. Environmental triggers for inflammatory bowel disease. Curr Gastroenterol Rep 2013; 15(1): 302. doi: 10.1007/s11894-012-0302-4.

16. Tolman KG. Hepatotoxicity of non-narcotic analgesics. Am J Med 1998;105(1B): 13S-19S.

17. Riley TR 3rd, Smith JP. Ibuprofen-induced hepatotoxicity in patients with chronic hepatitis C: a case series. Am J Gastroenterol. 1998; 93(9): 1563-1565.

18. Huerta C, Castellsague J, Varas-Lorenzo C, García Rodríguez LA. Nonsteroidal anti-inflammatory drugs and risk of ARF in the general population. Am J Kidney Dis 2005; 45(3): 531-539.

19. John CM, Shukla R, Jones CA. Using NSAID in volume depleted children can precipitate acute renal failure. Arch Dis Child 2007; 92(6): 524–526.

20. O'Callaghan CA, Andrews PA, Ogg CS. *Renal disease* and *use* of *topical* non-steroidal anti-inflammatory drugs. BMJ 1994 Jan 8; 308(6921): 110–111.

21. Antonucci R, Zaffanello M, Puxeddu E, Porcella A, Cuzzolin L, Pilloni MD, Fanos V. Use of non-steroidal anti-inflammatory drugs in pregnancy: impact on the fetus and newborn. Curr Drug Metab 2012; 13(4): 474-490.

22. Bloor M, Paech M. Nonsteroidal anti-inflammatory drugs during pregnancy and the initiation of lactation. Anesth Analg 2013; 116(5): 1063-1075. doi: 10.1213/ANE.0b013e31828a4b54.

23. Nezvalová-Henriksen K, Spigset O, Nordeng H. Effects of ibuprofen, diclofenac, naproxen, and piroxicam on the course of pregnancy and pregnancy outcome: a prospective cohort study. BJOG 2013; 120(8): 948-959. doi: 10.1111/1471-0528.12192.

24. Van Marter LJ, Hernandez-Diaz S, Werler MM, Louik C, Mitchell AA. Nonsteroidal antiinflammatory drugs in late pregnancy and persistent pulmonary hypertension of the newborn. Pediatrics 2013; 131(1): 79-87. doi: 10.1542/peds.2012-0496.

DERMATOLOGY

TOPICAL STEROIDS

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Abstract: *Topical steroid is the most commonly prescribed medicine in dermatological conditions by virtue of its anti inflammatory and anti proliferative properties. Sometimes topical steroids are abused by practitioners and patients but most often they are underutilized. Potent steroids should not be used in children as the larger surface area results in increased absorption. Appropriate potency of steroids in appropriate concentration should be used in the appropriate areas of the body to enhance the efficacy and to minimize the adverse effects. Quantity of steroids that is to be applied is measured by finger tip units. Frequency of use and duration of application of topical steroids play a major role in determination of the adverse effects. FDA guidelines should be followed in using the topical steroids so that maximum benefit could be achieved.*

Key words: *Topical steroids, Potency, Finger tip unit.*

Points to Remember

- ***Always choose mid potent to low potent steroid to control the steroid responsive dermatoses in children.***
- ***Use the least potent steroids to control the disease.***
- ***Use a particular steroid for 2 weeks and if necessary for a period not exceeding 4 weeks.***
- ***Select a steroid which is approved for that age group.***
- ***As far as possible try to calculate the dose of topical steroid in finger tip units and explain to the parents the equivalent of it in their understandable language.***
- ***Educate the parents about good effects of topical steroids if used properly. If a steroid responsive dermatosis is infected, first control the infection with topical/ oral antibiotics and start on topical steroids.***

References

1. Warner MR, Camisa C. Topical corticosteroids. In: Wolverton SE,eds 3rd edn.Elsevier Saunders; 2013. pp.487-504.
2. Ference JD, Last AR. Choosing Topical Corticosteroids. Am Fam Physician 2009:79:135-40.
3. Long CC, Mills CM, Finlay AY. A practical guide to topical therapy in children. Br J Dermatol 1998:138:293-296.
4. Rathi SK, D"Souza P. Rational and ethical use of topical corticosteroids based on safety and efficacy. Indian J Dermatol 2012;57:251-9.
5. Topicql steroids:Myths & facts. Available from http://www.nationaleczema.org/eczema-treatments/topical-corticosteroids.
6. Topical corticosteroids. In: Clinical Dermatology, Habif TP,eds 5th edn.Philadelphia:Elsevier Saunders, 2010;pp90.
7. Contact Dermatitis and drug eruption. In: Andrews Disease of skin, James WD, Berger TG, Elston DM,eds 10th edn. Canada: Saunders, 2006; pp137.
8. Seigfried E, Bree A,. Topical treatment. In: Schachner LA, Hansen RC,eds 3rd edn. Elsevier, Mosby, 2003; pp112.

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CASE STUDY

RIGHT VENTRICULAR OUTFLOW TRACT ECTOPICS IN COUPLETS IN A 6-YEAR-OLD CHILD

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Abstract: *Ventricular arrhythmias can occur in children with normal heart. Idiopathic monomorphic ventricular arrhythmias commonly arise from the right ventricular outflow tract. One form of such arrhythmias is the frequent ventricular premature complexes. The prognosis of outflow tract arrhythmias is generally favourable, but there is a potential to develop tachycardia induced cardiomyopathy.*

Keywords: *Cardiac arrhythmias, Ventricular premature complexes, Right ventricular outflow tract.*

References

1. Eric N. Prystowsky, Benzy J. Padanilam, Sandeep J, Richard I. Fogel. Ventricular arrhythmias in the absence of structural heart disease. J Am Coll Cardiol 2012; 59:1733-1744.
2. Janaka Y, Tada H, Ito S, Naito S, Hiquachi K, Kumaqai K, et al. Gender and age differences in candidates for radio frequency catheter ablation of idiopathic ventricular arrhythmias. Circ J.2011;75:1585-1591.
3. Naiara C, Bloed MJ, Katia Z. Radio frequency catheter ablation of idiopathic right ventricular outflow tract arrhythmias. Indian Pacing Electrophysiol J 2013;13:14-33.
4. Kakavand B, Ballard HO, Disessa TG. Frequent ventricular premature beats in children with a structurally normal heart: a cause for reversible left ventricular dysfunction. Pediatr Cardiol 2010;31:986-990.
5. Stephanic J. Doniger, Ghazala Q. Sharieff. Pediatric dysrrhythmias. Pediatr clin N Am 2006;53:85-105.
6. Kim RJ, Iwai S, Markonitz SM, Shah BK, Stein KM, Lerman BB. Clinical and electro physiological spectrum of idiopathic ventricular outflow tract arrhythmias. J Am Coll Cardiol 2007;49:2035-2043.
7. Srivathsan K, Lesser SJ, Appleton CP, Scott LRP, Munger TM. Ventricular tachycardia in the absence of structural heart disease. Indian pacing Electrophysiol J 2005;5:106-121.
8. Peng J, Ruan FH, Yang RH, Yi SD, Cui YK, Huang XB, et al. Clinical features of idiopathic ventricular tachycardia of various types and their radiofrequency ablation therapy. Nan Fang Yi Ke Da Xue Xue Bao 2006;26:1152-1162.
9. Fauchier JP, Fauchier L, Babuty D, Senor CD, Benne JL, Cosnay P. Idiopathic monomorphic ventricular tachycardia. Arch Mal Coeur Vaiss 1996;89:897-906.
10. Gertie CM, Xrol B, Sebastiaan SP, Dijkstra, Margreet T, Boelkens EB. Natural history of ventricular premature contractions in children with a structurally normal heart: does origin matter? Europace 2008;10: 998-1003.
11. Gard JJ, Asirvatham SJ. Outflow tract ventricular tachycardia. Tex Heart Inst J 2012;39: 526-528.

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CASE STUDY

SPONTANEOUS PERFORATION OF THE BILE DUCT IN AN ADOLESCENT - AN UNUSUAL COMPLICATION OF CHRONIC CALCIFIC PANCREATITIS

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Abstract: *Spontaneous perforation of common bile duct (SPBD),an unusual cause of acute abdomen presenting as biliary ascites is very rare. The aetiology of SPBD is multifactorial and include congenital mural weakness of the common bile duct, ischemia, distal biliary obstruction, pancreaticobiliary malunion, infection, trauma and rarely acute or chronic pancreatitis. Diagnostic ascitic tap helps in diagnosis. We report an adolescent with chronic calcific pancreatitis who had spontaneous perforation of bile duct and was managed by therapeutic endoscopic retrograde cholangio pancreaticography (ERCP).*

Key words: *CCP, Adolescent, SPBD, Biliary ascites.*

References

1. Kathryn E, Nick M, Ashish D. Spontaneous Perforation of the Bile Duct in Infancy and Childhood: A Systematic Rev.J Pediatr Gastroenterol Nutr 2010 ;50: 677–681.doi: 10.1097/MPG.0b013e3181d5e .
2. Yaºar NF, Yaºar, B Kebapç M .Spontaneous common bile duct perforation due to chronic pancreatitis, presenting as a huge cystic retroperitoneal mass: A case report.Cases J 2009; 2: 6273. Published online 2009 September 8. doi: 10.4076/1757-1626-2-6273 .
3. Barnes BH, Narkewicz R, Sokol RJ. Spontaneous perforation of the bile duct in a toddler: the role of endoscopic retrograde cholangiopancreatography in diagnosis and therapy. J Pediatr Gastroenterol Nutr 2006; 43:695–697.
4. Banani S, Bahador A, Nezakatgoo N. Idiopathic perforation of the extrahepatic bile duct in infancy: pathogenesis, diagnosis, and management. J Pediatr Surg 1993; 28:950-952.
5. Bingol-Kologu M, Karnak I, Ocal T, Tanyel F. Idiopathic perforation of the bile duct in an infant. J Pediatr Gastroenterol Nutr 2000; 31:83-85.
6. Johnston J. Spontaneous perforation of the common bile-duct in infancy. Br J Surg 1961; 48:532-533.
7. Goenka MK, Sethy PK, Goenka U. Spontaneous rupture of the bile duct associated with pancreatitis - A rare presentation. *JOP*. 2011;12(2):149–151.
8. Shenoy VG,Jawale SA,Kulkarni BK. Anomalous pancreaticobiliary union and chronic pancreatitis: rare presentation with biliary peritonitis. Pediatr surg int 2001;17:549-551.
9. Arvind Kumar, R. Kataria,. Chattopadhyay TK,. Karak PK. Tandon RK. Biliary peritonitis secondary to perforation of common bile duct: an unusual presentation of chronic calcific pancreatitis.Postgrad Med J 1992; 68: 837 – 839.
10. Kanojia RP, Sinha SK, Rawat J, Wakhlu A, Kureel S, Tandon R. Spontaneous biliary perforation in infancy and childhood: clues to diagnosis. Indian J Pediatr 2007; 74: 509–510.
11. Stringel G, Mercer S. Idiopathic perforation of the biliary tract in infancy. J Pediatr Surg1983; 18:546–550.
12. Dijkstra CH. Graluistorting in de buikholte bij een zuigeling, Maandschr. Kindergeneeskd 1932; 1:409–414.
13. Satish J,Monica J, Dalbir K, Lovesh S. Management of Spontaneous Perforation of the Bile Duct in an Infant in a Semi-Urban Setup: A Case Report.Malasia J Med Sci 2012;19: 73–75.
14. Kumar R, Sriram M, Bhatnagar V, Padhy AK, Malhotra A. Spontaneous perforation of the common bile duct in infancy: role of Tc-99m mebrofenin hepatobiliary imaging. Clin Nucl Med 1999; 24:847–848.
15. Sugiyama M, Baba M, Atomi Y, Hanaoka H, Mizutani Y, Hachiya J. Diagnosis of anomalous pancreaticobiliary

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junction: value of magnetic Resonance cholangiopancreatography. Surgery 1998;123:391-397.

16. Makin E, Davenport M. Idiopathic biliary perforation in a 10 year old boy. Pediatr Surg Int 2006; 22:465–467.
17. Prabakaran S, Kumaran N, Regunanthan SR, Prasad N, Sridharan S. Spontaneous biliary perforation in a child with features of Ivemark syndrome. Pediatr Surg Int 2000; 16: 109 –110.
18. Ng WT, Cheung CH, Chan S. Is spontaneous perforation of the bile duct in children due solely to pancreatico-biliary maljunction? Pediatr Surg Int 2002; 18:565–566.
19. Eckhauser FE, Knol JA, Strodel WE, Achem S, Nostrant T. Common bile duct strictures associated with chronic pancreatitis. Am Surg 1983; 49:350–358.
20. Livesey E, Davenport M. Spontaneous perforation of the biliary tract and portal vein thrombosis in infancy. Pediatr Surg Int 2008; 24:357–359.