

## REFERENCES

1. Horton WA, Hecht JT. Disorders for which defects are poorly understood or unknown. *In: Nelson Textbook of Pediatrics*, 20th edn. Eds. Kliegman RM, Stanton BF, St. Gema JW, Schor NF, Behrman RE. Philadelphia: WB

Saunders Co, 2011. p.3379.

2. Krishnamurthy S, Srinivasan S. Severe thrombocytosis as initial manifestation of Caffey disease in a 4 month old infant. *Pediatr Blood Cancer*. 2012;59:345-6.
3. Holtzman D. Infantile cortical hyperostosis of scapula presenting as Erb's palsy. *J Pediatr*. 1972;81:785-8.

## The Conundrum of Optimal Drug Dosing in Obese Children

In 2013, WHO estimated that 42 million children under 5 years of age were overweight, with 75% of them living in developing countries; and the prevalence has increased from 4.2% in 1990 to 6.7% in 2010 [1]. More obese children are being encountered in clinical practice, including those requiring chronic drug therapy. These patients are at risk for iatrogenic drug dose related complications as dosages are based on body weight. We report a case of early onset hypertension following systemic steroid therapy in a 10-year-old obese child with rheumatic carditis.

A 10-year-old boy presented with fever, migratory joint pain, headache and generalized severe myalgia for a week. On examination, he had fever and signs suggestive of congestive cardiac failure. Body mass index (BMI) was 23.63 (>97<sup>th</sup> percentile). ESR was elevated (90 mm/hr) with a positive CRP and ASLO. Cardiac ultrasound showed rheumatic carditis with left ventricular dysfunction. He was treated with oral prednisolone (60 mg/day as 2 mg/kg crossed the adult maximum dose) [2]. He developed hypertension (BP >95<sup>th</sup> centile) within 3 days which required intravenous furosemide for 3 days followed by oral nifedipine. Steroids were stopped and aspirin started. His blood pressure decreased progressively to the normal range within 14 days following which nifedipine was discontinued.

Adverse effects of prednisone usually, develops after prolonged use of doses in excess of the normal physiological requirement, often after a week of usage [3]. As our patient presented with early-onset drug-induced hypertension, it probably was iatrogenic due to inappropriate dosage. A thorough literature search revealed the lack of evidence for ideal drug dosing in obese children and no stipulated guidelines [4,5].

Excess body weight alters the pharmacokinetics in overweight and obese children leading to higher risk of toxicity or reduced therapeutic efficacy [4]. There is limited data about the pharmacokinetics and drug dosing in obese children as compared to adults. All children with weight above adult maximum dosage would receive the same dose of drug which, logically cannot be right (For example, three 10-year-olds weighing 35 kg, 45 kg and 55 kg respectively, would receive same adult maximum dosage). The pharmacokinetics of adult maximum doses will certainly vary based on the weight, and can lead to both toxicity and sub-therapeutic doses.

In view of continuing childhood obesity epidemic, there is a need for further research regarding drug dosages in these children. In spite of limited evidence, it is essential to have a practice guideline on drug dosages for obese children.

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## REFERENCES

1. World Health Organization. Childhood Overweight and Obesity, 2013. Available From: <http://www.who.int/dietphysicalactivity/childhood/en>. Accessed July 12, 2015.
2. Kumar RK, Tandon R. Rheumatic fever and rheumatic heart disease: The last 50 years. *Indian J Med Res*. 2013;137:643-58.
3. Liu D, Ahmet A, Ward L, Krishnamoorthy P, Mandelcorn ED, Leigh R, *et al*. A practical guide to the monitoring and management of the complications of systemic corticosteroid therapy. *Allergy Asthma Clin Immunol*. 2013;9:30.
4. Kendrick JG, Carr RR, Ensom MH. Pediatric obesity: Pharmacokinetics and implications for drug dosing. *Clin Ther*. 2015;37:1897-923.
5. Mulla H, Johnson TN. Dosing dilemmas in obese children. *Arch Dis Child Educ Pract Ed*. 2010;95:112-7.