

patients developed symptoms similar to our findings^[11].

In conclusion it is suggested that calcium level be assessed in newborns treated with phototherapy for 48 hrs or more and managed accordingly. It seems that prevalence of phototherapy associated hypocalcemia is not so high and we recommend further and larger studies for estimation of this prevalence rate.

Key words: Hyperbilirubemia; Jaundice; Hypocalcemia; Preterm infant

References

1. Fanaroff A, Wlasko M. Neonatal-Perinatal Medicine, Diseases of the Fetus and Infant, 9th edn, Elsevier Mosby, 2010; Pp: 1443-1481.
2. Xiong T, Qu Y, Cambrier S, et al. The side effects of phototherapy for neonatal jaundice: What do we know? What should we do? *Eur J Pediatr* 2011; 170(10):1247-55.
3. Romagnoli C, Polidore G, Cataldi L, et al. Phototherapy-induced hypocalcemia. *J Pediatr* 1979; 94(5):815-6.
4. Hakanson D, Penny R, Bergstrom WH. Calcemic responses to photic and pharmacologic manipulation of serum melatonin. *Pediatr Res* 1987; 22(4):414-6.
5. Hunter KM. Hypocalcemia. In: Cloherty JP, Eichenwald CE, Stark AR(eds). Manual of Neonatal Care 5th ed. Philadelphia: Lippincott Williams & Wilkins. 2004; Pp: 579-88.
6. Kim SH, Park JH. Effect of phototherapy on bone metabolism in newborn rats. *J Korean Soc Neonatal* 2001;8(2):206-10.
7. Hooman N, Honarpisheh A. The effect of phototherapy on urinary calcium excretion in newborns. *Pediatr Nephrol* 2005; 20(9):1363-4.
8. Yadav RK, Sethi RS, Sethi AS. The evaluation of the effect of phototherapy on serum calcium level. *People's J Sci Res* 2012;5(2):1-4.
9. Jain BK, Singh H, Singh D, et al. Phototherapy-induced hypocalcemia, *Indian Pediatr* 1998; 35(6): 566-7.
10. Ehsanipoor F, Khosravi N, Jalali S. The effect of hat on phototherapy induced hypocalcemia in icteric newborn. *Razi J Med Sci* 2008;15(58):25-29. [In Persian]
11. Karamifar H, Pishva N, Amirhakimi GH. Prevalence of phototherapy-induced hypocalcemia *Iran J Med Sci* 2002;27(4):166-8.
12. Eghbalian F, Monsef A. Phototherapy-induced hypocalcemia in icteric newborn. *Iran J Med Sci* 2002;27(4):169-71.

Accidental Levothyroxine Ingestion in a Child

Kalenahalli Jagadishkumar, MBBS, MD; Vaddambal G. Manjunath, MBBS, DCH, DNB; Nagaraj Rashmi MBBS, DNB ; Sangaraju Mamatha MBBS, DCH

Department of Pediatrics, JSS Medical College, JSS University, Mysore, India

Received: Nov 27, 2012; Accepted: Feb 06, 2013;
First Online Available: Oct 18, 2013

Hypothyroidism is one of the most common endocrine disorders, and many levothyroxine prescriptions are written to replace the hormone deficit. Herewith we report a thyroid hormone overdose in a 6 year old boy.

6 year old Beckwith-Wiedeman syndrome boy with developmental delay presented with accidental ingestion of 2.5 mg of levothyroxine 6 hours prior to admission. He has been receiving levothyroxine for hypothyroidism since neonatal period and currently (weight=17 kgs) he was on 100 µg of levothyroxine once a day. There were no tremors, irritability, convulsions or diarrhea. On examination his temperature was 98.6°F, pulse rate 100/min, RR 20/min and BP was 100/60 mm Hg. Other systems examination was unremarkable. His Thyroid profile is shown in Table 1. Gastric lavage and gastrointestinal decontamination was done. His complete blood count, blood sugar, blood urea, serum creatinine, Aspartate transaminase (SGOT), lactate dehydrogenase (LDH), creatine kinase MB (CK-MB) and electrocardiography were within normal limits. He was monitored for overdose features. After 24 hours he was tachycardic (PR 120/min), febrile (99.6°F) with blood pressure 112/80mm Hg (>95th centile) along with sweating of palms and soles. In view of tachycardia, sweating and hypertension, Propranolol and Dexamethasone was started. After 76 hours features of thyroid toxicity subsided and drugs were tapered. Child was restarted on thyroxine and discharged on 8th day. Child was followed up at 3 and 6 months, there was no feature of hypothyroidism.

Levothyroxine overdose in children typically follows a benign course^[1]. Children may be asymptomatic or have clinical features like fever, tachycardia, hypertension, tremor, insomnia, irritability and convulsions^[1-3]. Our patient had typical clinical features like tachycardia, sweating

* Corresponding Author; Address: Department of Pediatrics, JSS Medical College and Hospital, Mysore, Karnataka, India
E-mail: jagdishmandya@gmail.com

Table 1: Thyroid profile following accidental consumption of Levothyroxine

Time	Thyroxine (T4)*	Triiodothyronine (T3)	Thyroid Stimulating Hormone (TSH)
3 months prior to overdose	6.6	104	12.7
10 hours after overdose	30	154	0.49
46 hours after overdose	25.4	216	0.05
70 hours after overdose	19.3	158	0.01
118 hours after overdose	11	97	0.10

Normal rang: T4: 6.4-13.3µg/dl; T3: 94-241 ng/dl; TSH: NI=0.7-64.0µu/ml

and hypertension. Annual report of the American Association of Poison Control Centers' National Poison Data System of 2008 revealed that out of 9,006 unique exposures to thyroid preparations only 3 cases had major adverse outcome and there were no deaths^[4]. It has been documented that there is no correlation between the amount of levothyroxine ingested and the onset and severity of the symptoms as well as the serum concentrations of both triiodothyronine (T3) and thyroxine (T4)^[2,5-7]. In study by Golightly et al one child with massive ingestion (13mg) never developed any complications whereas ingestion of 1.8mg developed tachycardia^[5]. Serum T4 levels can help only in verifying the occurrence of the ingestion^[5,6]. In many pediatric levothyroxine ingestion study series either they did not develop symptoms or showed only minimal symptoms^[2,3-6]. In a study by Livotiz et al only four out of 78 children developed symptoms and T4 levels in three of these four children were 32.8, 30 and 26.4 µg/dl, respectively^[2] which were similar to T4 levels in our child. Literature has supported a conservative management based on minimal symptoms^[2,5,6]. T4 values cannot be used to guide treatment, and prompt clinical monitoring and evaluation is necessary^[5]. Propranolol is used in the presence of features of toxicity^[3,5]. Julio Pardo opines thyroxine overdose needs very close monitoring after gastrointestinal decontamination and conservative treatment like propranolol, prednisone, etc should be started as soon as the patient becomes symptomatic to avoid the development of a thyroid storm^[7]. In children with overdosage of levothyroxine, there is production of reverse T3 which is inactive, thereby protecting from the toxicity and this pathway is enhanced by steroids supporting addition of steroids to the treatment regimen^[3,8]. To conclude although pediatric levothyroxine overdose rarely leads to serious toxicity, any symptoms should be managed accordingly as they arise.

Key words: Levothyroxine; Hypertension; Propranolol; Dexamethasone; Tachycardia

References

1. Ho J, Jackson R, Johnson D. Massive levothyroxine ingestion in a pediatric patient: case report and discussion. *CJEM* 2011;13(3):165-8.
2. Litovitz TL, White JD. Levothyroxine ingestion in children: an analysis of 78 cases. *Am J Emerg Med* 1985;3(4):297-300.
3. Lehrner LM, Weir MR. Acute ingestion of thyroid hormones. *Pediatrics* 1984;73(3):313-7.
4. Bronstein AC, Spyker DA, Cantilena LR Jr, et al. 2008 annual report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 26th annual report. *Clin Toxicol (Phila)* 2009;47(10): 911-1084.
5. Golightly LK, Smolinske SC, Kulig KW, et al. Clinical effects of accidental levothyroxine ingestion in children. *Am J Dis Child* 1987;141(9):1025-7.
6. Lewander WJ, Lacouture PG, Silva JE, et al. Acute thyroxine ingestion in pediatric patients. *Pediatrics* 1989;84(2):262-5.
7. Pardo JM. Levothyroxine poisoning. Current understanding. *Pediatrics* Online October 20, 2010.
8. Shilo L, Kovatz S, Hadari R, et al. Massive thyroid hormone overdose: kinetics, clinical manifestations and management. *Isr Med Assoc J* 2002;4(4):298-9.

Gastric Perforation Associated with Congenital Diaphragmatic Hernia in a Neonate

Yuan Jiang, MD; Bai-Ping Sun, MD; Li-Ping Shi*, MD

Children's Hospital, School of Medicine, Zhejiang University, China

Received: Jul 01, 2012; Accepted: Jan 14, 2013;
First Online Available: Feb 22, 2013

Neonatal congenital diaphragmatic hernia (CDH) is a complex anomaly, the clinical course of which depends on the timing and duration of herniation

* Corresponding Author; Address: Department of NICU, The Children's Hospital of Zhejiang University, School of Medicine, China
E-mail: zjushlp@hotmail.com