Paediatric Constipation; Think Beyond Thyroid Causes

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Acknowledgements: None
Funding: Nil
Conflict of Interest: None
Permission from IRB: Yes
Ethical dilemmas faced during study: No

How to cite
Debnath EM, Datta RR, Debnath PR, Jain A. Paediatric Constipation; Think Beyond Thyroid Causes. J Nepal Paediatr Soc 2016;36(2):143-146.

doi: http://dx.doi.org/10.3126/jnps.v36i2.14533

Abstract

Introduction: This study was designed to evaluate the importance of proper detailed history and examination of the patient as well as to determine the prevalence of unrecognized hypothyroidism among the paediatric patients with constipation attending the outpatient paediatric units in our hospital. **Material and Methods:** A retrospective review of medical records of paediatric patients ordered for thyroid function tests between July 2014 and June 2015 was performed. Total of 2210 paediatric patients were included in the study. A complete review of the medical records of these patients were performed which included indications for ordering thyroid tests, medical history, drug history, radiologic evaluation, other laboratory tests and subspeciality consultation.The samples were analyzed in the hormone unit of the Clinical Biochemistry Laboratory by a fully automated analyzer (Cobas e411, Roche). Data analysis was done using SPSS statistical software. Clinical diagnosis was made according to the paediatric reference ranges used in our clinical laboratory. **Results:** Out of all patients, 149 had history of constipation and 11 patients out of 149 had abnormal thyroid function. Repeat measurements after three months showed normal results for nine, while only two patients had results suggestive of hypothyroidism. **Conclusion:** Functional constipation is a condition which is to be diagnosed only by history or clinical examination. Thyroid profile where necessary is to be done after proper examination, to reduce the burden of cost to laboratory and society as well as exposing the pediatric patient to trauma.

Key words: Functional, Hpothyroidism, Paediatric Constipation, Thyroid Function Test, Treatment.

Introduction

Constipation is a paediatric problem commonly encountered by health care workers in primary, secondary and tertiary care with a prevalence ranging from 4-36%[1,2,3]. The commonly associated symptoms of infrequent and/or painful defecation, abdominal pain, fecal incontinence is a cause of severe distress to the child and family and has a significant impact on health care cost[4]. Constipation is of

relevance to the practice of both general paediatricians and paediatric gastroenterologists and accounts for 5% and upto 25% of all visits to the outpatient units respectively[5]. In 17% to40% of children, it starts in the first year of life[6]. Hypothyroidism has been considered in the differential diagnosis of constipation according to the textbooks and the clinical practice guidelines from the North American Society for Paediatric Gastroenterology, Hepatology and Nutrition[5,7]. For this reason, the thyroid function studies are frequently advised as a part of the standard evaluation for children with constipation. Studies comparing bowel function, bowel movement frequency and other bowel symptoms in adults in health and thyroid disease states have yielded mixed results[8,9,10], but data justifying the routine screening of hypothyroidism in constipated but otherwise healthy children is still lacking. But paediatric functional constipation is a disease to be diagnosed by proper history and examination of the patient. In absence of any red flag sign, there is no need of any investigation.

In view of this, the present study was designed to evaluate the importance of proper detailed history and examination of the patient as well as to determine the prevalence of unrecognized hypothyroidism among the paediatric patients with constipation attending the outpatient paediatric units in our hospital. Permission to do the study was taken from the hospital ethical committee.

Material and Methods

This research work is a retrospective review of the medical records of 2210 paediatric patients ordered for free thyroxine (fT4), free tri-iodothyronine or thyroid stimulating hormone (TSH) tests by the paediatric division at Lady Hardinge Medical College and associated hospitals between July 2014 and June 2015. A complete review of these patients was performed which included indications for ordering thyroid tests as included in the consultation note, medical history, drug history, radiologic evaluation, other laboratory tests and subspeciality consultation. As this research work is a retrospective analysis, the decision to order for thyroid function tests was at the discretion of the attending physician. A total of 149 (6.74%) patients with history of constipation were advised thyroid profile tests, while the rest had other indications. Clinical diagnosis was made according to the paediatric reference ranges listed in Table I used in the hormone unit of our clinical laboratory.

The samples were analyzed in the hormone unit of the Clinical Biochemistry Laboratory, LHMC and associated hospitals by a fully automated analyzer (Cobas e411, Roche) based on the technique electro-chemiluminescence immunoassay “ECLIA”. Analysis of the data was done using SPSS statistical software. The results were analyzed and numerical data presented as mean ± SD.

Result

Free T3, Free T4 and TSH, or a combination of these tests was ordered in 2210 number of paediatric patients from July 2014 to June 2015. A total of 6.74% of children had constipation alone, while 93.2% of children had other indications for the thyroid profile tests. The mean age of the patients was 3.97±3.90 years, 63.7% were males, while 36.2% were females. Amongst the 149 children with constipation tested for thyroid function, 138 had a normal profile, while only 11 had an abnormal profile. Of the eleven patients with abnormal thyroid function, nine showed normal results when repeat measurements were performed after three months. Only two children with history of constipation had results suggestive of hypothyroidism.

Table 1: Paediatric reference ranges of fT3, fT4 and TSH in different age groups.

Age Group	fT3 (pg/ml)	fT4 (ng/dl)	TSH (µlU/ml)
Newborns	1.73--6.3	0.86--2.49	0.7—15.2
6 days—3 months	1.95—6.04	0.89—2.20	0.7—11.0
4 months—12 months	2.15—5.83	0.92—1.99	0.73—8.35
1 year –6 years	2.41—5.50	0.96—1.77	0.70—5.97
7 years—11 years	2.53—5.22	0.97—1.67	0.60—4.84
12 years—20 years	2.56—5.01	0.98—1.63	0.51—4.30

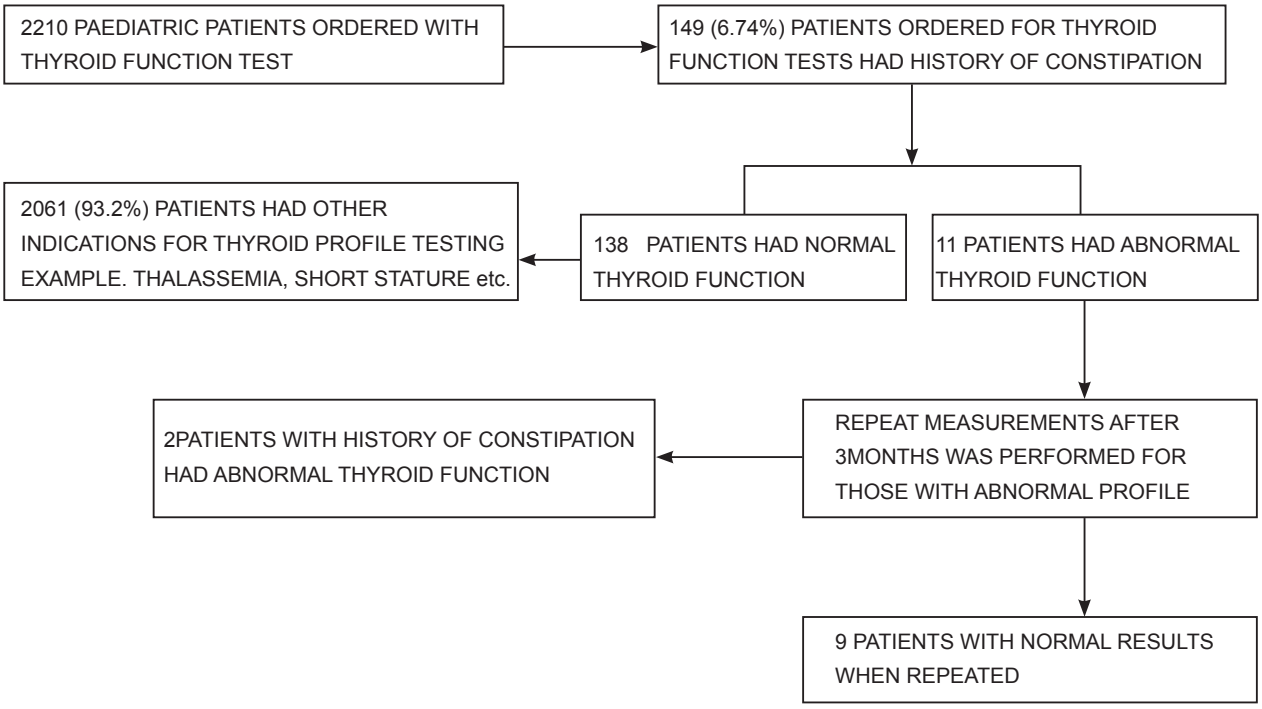

Fig 1: All Thyroid Function Tests performed in July 2014—June 2015 in the authors' Hormone unit, Clinical Biochemistry Laboratory.

Discussion

Constipation is a very common symptom in paediatric population which accounts for 3% of visits to general paediatric clinics or 30% of visits to paediatric gastroenterologists in developed countries. Constipation is defined as a delay or difficulty in defecation, persists for ≥2weeks and sufficient to cause significant distress to the patient[11]. The worldwide prevalence of functional constipation in children rates from 0.7% to 29.6% [12,13]. As per Indian population, the data is lacking to project the exact problem of constipation, the majority about 95% of cases are functional constipation and 5% or less have organic cause to treat in children[12,14].

The various causes of constipation are functional, anal lesions, neurologic problems, endocrinal problems like hypothyroidism, diabetes mellitus, drugs and common congenital causes of constipation are Hirschprung's disease, anorectal malformations and neurological. If the symptom started early in life, it is more of congenital in nature[15].

As constipation is a symptom, not a disease, it needs a proper evaluation to diagnose the case. A detailed history and proper clinical examination is must to pinpoint the cause. It is the proper history which clinches the diagnosis for appropriate curative treatment. In absence of any red flag signs in history and examinations, the cause may be functional.

The different red flag signs are i) delayed passage of meconium, ii) failure to thrive, iii) bladder dysfunction, iv) empty rectum and v) abnormal neurological signs. A classical functional constipation doesn't need any investigation in absence of any red flag sign[15,16]. Patient needs thyroid profile if any feature of hypothyroidism is there. Thyroid profile is must in an infant presenting with constipation and delayed milestones or prolonged unconjugated hyperbilirubinemia[15].

In our series all cases came to paediatric surgical clinic of a tertiary care centre as refractory constipation though most of them were functional constipation. Each and every case had their thyroid profile done and all were normal. On repeated enquiry and examination it was found that proper history taking or clinical examination were lacking. As functional constipation needs several steps for treatment like counseling, behavioral therapy, diet, dissipation and pharmacological therapy, so proper history and rapport with the patient or parents is must. [15] Functional constipation requires long term therapy like six months to one year in majority of cases with proper patient compliance. Same has happened for the present

study that nearly all the patients showed improvement with time. This present study clearly showed unnecessary laboratory investigations in absence of any red flag sign does not help at al. In a resource strained country like us, unnecessary biochemical investigations lead us nowhere except overburdening the present set-up and depriving genuine patient to get it as well as unnecessary intervention to pediatric patient.

Conclusion

Functional constipation is a condition which is to be diagnosed by history and clinical examination. In absence of any red flag signs unnecessary investigations are not required. Thyroid profile where necessary is to be done after proper examination, to reduce the burden of cost to laboratory and society as well as exposing the paediatric patient to trauma.

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