

CASE REPORT

Plummer's nails (onycholysis) in an adolescent nigerian girl with hyperthyroidism due to Graves' disease.

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ABSTRACT: This paper reported a case of a 16 years old Nigerian girl with Plummer's nails associated with hyperthyroidism (Graves' disease). The issue of excessive weight gain after therapy for the Graves' disease was also discussed. Following therapy, the patient gained 7 Kg over a period of 5 months. The diagnosis of hyperthyroidism due to Graves' disease was based on increased heart rate at rest, diffuse smooth goiter, mild ophthalmopathy, low TSH (thyroid stimulating hormone) level, elevated T3 (triiodothyronine) and T4 (tetraiodothyronine) levels. The paper emphasized the need for clinicians to be alert to the possibility of nail changes in adolescents with thyroid diseases and watch out for weight gain following successful therapy.

Key Words: Adolescence, Hyperthyroidism, Graves' disease, Plummer's nails, Onycholysis.

INTRODUCTION

In patients with hyperthyroidism, onycholysis (separation of the nail plate from the nail bed) is referred to as "Plummer's nails"^{1,2}. Plummer's nails are unique for Graves' disease.^{1,3} In Plummer's nails, the nails often exhibit a concave shape ("scoop shovel" configuration) and/or a distal onycholysis². Hyperthyroidism makes the nail brittle, leading to the separation of the plate from the nail bed⁴.

In adults, nail changes are present in 5% of cases of hyperthyroidism². Reports of Plummer's nails in children and adolescents with hyperthyroidism are very scarce. A survey of standard textbooks of paediatrics as well as paediatric endocrinology, revealed that there was no mention of nail changes in hyperthyroidism, indicating the need to raise awareness among clinicians of its association with hyperthyroidism in the paediatric age group^{5,6}. Given the assertion that Plummer's nail is unique to Graves' disease³, its presence might be a useful clue to the diagnosis of Graves' disease, particularly in developing countries where availability of laboratory facilities for evaluation of endocrine disorders is grossly inadequate. Ab-

normalities of the nail is known to provide both subtle and obvious clues to common medical problems or severe systemic diseases⁷. Indeed, it has been stated that the complete physician regardless of his field of specialty needs to be alert to the often significant manifestation of abnormal nail as a signal to important pathology⁸. In this context, Nakat Sui and Lin suggested that patients with unexplained onycholysis should be screened for asymptomatic thyroid disease³.

This case report aims at stimulating the interest and raising awareness of the general paediatrician with regard to the association between abnormalities of the nail and hyperthyroidism in adolescence.

CASE REPORT

The patient was a 16 years old girl who was referred from a secondary healthcare facility in a neighbouring state. The presenting complaints were weight loss for 17 months, cessation of menses for 10 months and neck swelling for 8 months. The immediate symptoms that prompted seeking medical help were abdominal pain, vomiting and frequent watery stools all of 4 days duration. A review of the systems revealed a positive history of increased food intake, excessive sweating,

Table 1. Laboratory findings in a 16-year-old girl with hyperthyroidism.

Laboratory parameter	Normal serum values in UBTH	Observed serum values	
		Initial	After 2 months
TSH	0.4-6.2 U/ml	0.6 U/ml	3.4 U/ml
T3	0.7-2.0 ng/ml	6.2 ng/ml	7.6 ng/ml
T4	4.8-10.8 μ g/dl	35.2 μ g/dl	19.8 μ g/dl
Random blood glucose	4.7-6.7 mmol/L	6.2 mmol/L	–
Pelvic scan	Right ovarian cyst measuring 55.1 x 52.9 mm		
Neck scan	Thyroid lobes measure 36 x 17 mm (Right) and 36 x 15 mm (Left) with no focal or cystic mass lesion.		
Abdominal scan	Normal		

TSH = Thyroid Stimulating Hormone; T3 = Triiodothyronine; T4 = Tetraiodothyronine.

palpitation, sweaty palms and a slight change in hand writing. She had emotional lability. No family history suggestive of thyroid disorder. There was no positive history of acute iodine exposure or ingestion of thyroid hormone. The patient does not do pedicure. She attained menarche at the age of 12 years and her menstrual cycle had been fairly regular until the present illness. The patient was a secondary school graduate who has just secured admission into one of the Nigerian universities. The patient was the youngest of four children. Her mother was 53 years old. Her father died (from “Stroke”) three years ago before the onset of her illness. Physical examination revealed an anxious-looking adolescent girl with fine finger tremor and mild ophthalmopathy. She weighed 44 Kg with a height of 162 cm (BMI=16.8 Kg/m²). She had a diffuse, smooth, non-tender thyroid swelling measuring 4x6 cm. The goiter had no nodule, bruit or differential warmth. The Sexual Maturity Rating (SMR) was Tanner stage IV. The Plummer’s nails (Onycholysis) and goiter are shown in Figures 1 and 2 respectively. She had tachycardia with bounding pulse (pulse rate 124/minute at rest). The blood pressure was 110/60 mmHg with the apex beat in the 5th left intercostals space mid-clavicular line. There was no cardiac murmur or finger clubbing. The abdomen was flat, soft with tenderness in the lower half. Bowel sound was normal. The urea and electrolyte profile were normal. Her haematocrit value was 34%. The laboratory findings are displayed in Table 1 and show a low normal serum TSH and elevated T3 and T4 values. A diagnosis of Hyperthyroidism due to Graves’ disease was

considered. The gastroenteritis was also kept in view. She was rehydrated with intravenous fluid because of the gastroenteritis. Oral carbimazole and propranolol were commenced. The clinical condition improved as evidenced by the resting pulse rate which dropped to an average of 84/minute and she was less nervous. The patient was discharged from the hospital after 4 weeks and followed up in the Consultant outpatient clinic. Her menses was restored and it was regular. She has since resumed her study in the University. Her weight rose to 51 Kg (BMI=19.4 Kg/m²) 5 month after discharge. However, she was lost to follow up.

DISCUSSION

In this patient, the diagnosis of Hyperthyroidism due to Graves’ disease was based on increased heart rate at rest, presence of diffuse goiter, low normal serum TSH (Thyroid stimulating hormone) and elevated serum T3 (Triiodothyronine) and T4 (Tetraiodothyronine) values. This is in keeping with the criteria used for diagnosis of Graves’ disease in a previous study⁹. The finger tremor, mild ophthalmopathy and low Body Mass Index (BMI) of 16.8 Kg/m² were all consistent with the diagnosis of Graves’ disease. Other causes of hyperthyroidism in childhood and adolescence include subacute thyroiditis, thyroid neoplasms, McCune-Albright syndrome, TSH hypersecretion, iodine or thyroid hormone ingestion. Epidemiologically, Graves’ disease is by far the commonest cause of hyperthyroidism in the paediatric age group^{5,6}. The goiter in this patient was not tender as would be expected in thyroiditis. Thyroid cancer is rare in childhood^{5,6}.



Figure 1. Smooth, diffuse thyroid swelling.



Figure 2. Onycholysis (Plummer's nails).

The child with thyroid cancer usually presents a thyroid nodule or an asymptomatic asymmetrical neck mass^{5,6}. The goiter in the index patient was symmetrical, diffuse, smooth and non-tender, thereby making these other differentials less likely. In our patient, there was no history of acute exposure to iodine or ingestion of thyroid hormone. Hypermetabolic states such as severe anaemia, chronic infections, pheochromocytoma, and muscle-wasting disease may mimic hyperthyroidism clinically but the results of the thyroid function tests are normal⁵. In the index patient, the thyroid function tests were deranged.

The toe nails of the index patient was concave shaped, "scoop shovel" configuration, in keeping with the typical description of Plummer's nails in Graves disease². Most reports of Plummer's nails are in adults^{3,4}. Reports of its occurrence in children and adolescents with Graves' disease are scarce. In this context, the present report, hopefully, will contribute to raising the awareness of clinicians of the association of Plummer's nails with Graves' disease in the paediatric age group. This is even more relevant in developing countries where laboratory facilities for adequate investigation of endocrine disorders are often lacking. As proposed by Nakat Sui and Lin any patient (children and adolescents inclusive) with unexplained onycholysis should be screened for asymptomatic thyroid disease³.

Following treatment and subsequent discharge, our patient gained weight with improvement in her BMI. This is not surprising as previous studies have reported a similar finding among patients treated for

Graves' disease⁹⁻¹¹. The index patient gained 7 Kg five months after therapy and discharge from hospital. The mean weight gain six months after therapy was 5 Kg in the study by Brunova et al¹¹. In one of the studies it was concluded that excessive weight gain within six months of treatment is seen in children with Graves disease and the gain in weight could persist⁹. The risk of persistence of the weight gain makes it a challenge for the clinician, given the known adverse effects of overweight and obesity¹². The weight gain is believed to be due to disappearance of hypermetabolism, linked to the hyperthyroid state¹⁰.

In conclusion, it is my hope that the present report will contribute in raising the awareness of the general paediatrician concerning the association between nail changes (Plummer's nail) and Graves' disease. The issue of excessive weight gain following treatment for Graves' disease in adolescent patients is emphasized.

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