

# Case Report

## A young lady with swelling and stiffness of calf muscles

H. S. Kiran, K. A. Sudharshana Murthy, A. N. Aparna

Department of Medicine, JSS Medical College and Hospital, JSS University, Mysore, Karnataka, India

### ABSTRACT

Hypothyroidism causes a variety of changes in the body. Though uncommon, hypothyroidism can present as myopathy. Hoffman's syndrome is a specific, rare form of hypothyroid myopathy, which causes proximal weakness and pseudohypertrophy of muscles.

**Key words:** Hoffman's syndrome, hypothyroidism, myopathy

### INTRODUCTION

Hypothyroidism is a "Pandora's Box"! It can present in a myriad of ways – with classical signs in some, subtle signs in some and unusually in some patients. It causes metabolic changes in several systems of the body including the muscles as well. We report a case of Hoffman's syndrome, a rare form of hypothyroid myopathy, which causes proximal weakness and pseudohypertrophy of muscles.

### CASE REPORT

A 20-year-old lady came to OPD with complaints of swelling and stiffness of both calf muscles which started 15 days back. She complained of cramping in both calf muscles and difficulty in getting up from squatting position and climbing stairs. She did not complain of cold intolerance, weight gain, increased sleep, lethargy, constipation, hoarseness of voice or menstrual disturbance. On examination, her pulse rate was 62/min and BP was 120/90 mm of Hg. There was an apparent hypertrophy of bilateral calf muscles (gastrocnemius) [Figure 1], dry coarse



Figure 1: Pseudohypertrophy of calf muscles

skin and mild diffuse goiter. She had proximal muscle weakness in both lower limbs with delayed relaxation of ankle jerk. There was no calf muscle tenderness. Other systems were unremarkable.

Investigations revealed T3 0.25 ng/ml (normal range: 0.60–1.81 ng/ml), T4 1.12 µg/dl (normal range: 4.5–12 µg/dl), TSH 150.2 µIU/ml (normal range: 0.3–5.5 µIU/ml) suggestive of primary hypothyroidism. Creatine kinase was elevated (742 U/l) (normal <140 U/l). Complete hemogram, random blood sugar (RBS), urea, creatinine, serum electrolytes, liver function tests (LFT) and fasting lipid profile were unremarkable. ECG and chest X-ray did not reveal any abnormality.

#### Access this article online

##### Quick Response Code:



Website:  
www.ijem.in

DOI:  
10.4103/2230-8210.81946

**Corresponding Author:** Dr. H. S. Kiran, Department of Medicine, JSS Medical College and Hospital, Ramanuja Road, Mysore – 570 004, Karnataka, India. E-mail: drkiranhs@rediffmail.com

The patient was diagnosed to have primary hypothyroidism complicated by hypothyroid myopathy – Hoffman's syndrome.

She was started on Thyroxine 50 µg od that was increased to 100 µg od after 2 weeks. The patient had significant improvement in terms of biochemical parameters and clinically as well after 3 months of treatment.

## DISCUSSION

Hypothyroidism causes a variety of changes in the body. Deficiency of thyroid hormone interferes with metabolic function by slowing it down or decreasing it. These metabolic changes occur in the muscles also.<sup>[1,2]</sup> Pain on muscle exertion is due to defective carbohydrate metabolism. Delayed muscle contraction and relaxation may be due to a change in the distribution from fast-twitch fibers to slow-twitch fibers.<sup>[1,2]</sup> A reduction in muscle mitochondrial oxidative capacity and beta-adrenergic receptors, as well as the induction of an insulin-resistant state, may result in these changes.<sup>[1,2]</sup> Neuromuscular symptoms are present in 30–80% of patients with hypothyroidism. Patients may have muscle cramping, proximal symmetrical muscle weakness, muscle stiffness, and exercise intolerance.<sup>[1,2]</sup> Slowness of muscle relaxation and of muscle contraction is noted in hypothyroid myopathy. Delayed relaxation of deep tendon reflexes is due to impaired calcium sequestration by sarcoplasmic reticulum, which prolongs twitch duration.<sup>[3]</sup> Deep tendon reflexes are delayed in approximately 85% of patients with hypothyroidism. Mounding of the muscle after light percussion (i.e., myoedema) occurs in one-third of patients with hypothyroidism. Calf muscle hypertrophy with weakness is seen in Duchenne and Becker muscle dystrophy, focal myositis, sarcoid granulomas and amyloid deposits in muscles. Although muscular symptoms are common in hypothyroid patients (varying from myalgia, weakness, stiffness, cramps and easy fatigability in 30–80% of the patients), muscular hypertrophy with muscle stiffness is reported in less than 10% of the patients.<sup>[4,5]</sup> Pseudohypertrophy of the muscles results from accumulation of glycosaminoglycans.<sup>[5]</sup> Gastrocnemius

is almost always involved as it was in our case. Muscle enlargement, stiffness and cramping, proximal muscle weakness are a constellation of findings seen in these patients.

Hoffman's syndrome is a specific, rare form of hypothyroid myopathy, which causes proximal weakness and pseudohypertrophy of muscles. In adults with hypothyroidism, these findings are known as Hoffman's syndrome. In children with cretinism, they are called Kocher-Debré-Sémélaigne syndrome.<sup>[6]</sup>

We are reporting this case of Hoffman's syndrome for rarity of this clinical entity.

## ACKNOWLEDGMENTS

We express our sincere thanks to Dr. Basavana Gowdappa, our respected Principal, and Dr. Veerabhadrappe K., respected Medical Superintendent, for their encouragement. We express our sincere thanks to the lab departments for the reports provided in the work-up of the case.

## REFERENCES

1. Horak HA, Pourmand R. Endocrine myopathies. *Neurol Clin* 2000;18:203-13.
2. Pourmand R. Metabolic myopathies. A diagnostic evaluation. *Neurol Clin* 2000;18:1-13.
3. Wise M, Blunt S, Lane R. Neurological presentations of hypothyroidism: The importance of slow relaxing reflexes. *J R Soc Med* 1995;88:272-4.
4. Deepak S, Harikrishnan, Jayakumar B. Hypothyroidism presenting as Hoffman's syndrome. *J Indian Med Assoc* 2004;102:41-2.
5. Udayakumar N, Rameshkumar AC, Srinivasan AV. Hoffmann syndrome: Presentation in hypothyroidism. *J Postgrad Med* 2005;51:332-3.
6. Werner SC, Ingbar SH, Braverman LE, Utiger RD. Werner and Ingbar's *The thyroid: A fundamental and clinical text*. 9th ed. Philadelphia: Lippincott Williams and Wilkins; 2005. p. 894-5.

**Cite this article as:** Kiran HS, Murthy KAS, Aparna AN. A young lady with swelling and stiffness of calf muscles. *Indian J Endocr Metab* 2011;15:130-1.

**Source of Support:** Nil, **Conflict of Interest:** None declared.