Kocher DebreSemelaigne Syndrome: A Rare Case Report

Abhishek Gupta*, Dhananjay Y. Shrikhande**, Rajat Patel*, Abhijeet Shinde*, Abhijit Singh*

Background:

Kocher DebreSemelaigne syndrome is a rare condition of muscular pseudo hypertrophy and long standing moderate to severe hypothyroidism in children .

It was first noted by Kocher in 1892, but the relationship of the muscle pseudohypertrophy and hypothyroidism was emphasised by Debre and Semelaignein 1935.

Clinically,this condition may masquerade as a primary muscle disorder and hence the thyroid supplementation be delayed.

The pathogenesis of the pseudohypertrophyin the disease is not completely clear. The lack of thyroid hormone impairs many metabolic functions of the body including musculoskeletal system. Impaired carbohydrate metabolism leads to glycogen accumulationin muscles; while increased amounts of connective tissue and mucopolysacharide deposits in the muscles also give the appearance of hypertrophy of muscles.

The overall reported incidence of KDSS is less than 10%.Severity of myopathy generally correlates with the duration and the degree of thyroid hormone deficiency.It most commonly occurs in males, and has been reported in children as the products of consanguineous marriage.

Case report :

A 4 year old female child from middle socio- economic status presented with complaints of short stature and hoarseness of voice since early infancy. Child had a poor appetite but no history of any weight loss or fever.

* Junior Resident, ** Professor & Head

Corresponding author :
Dr. Abhishek Gupta
Department of paediatrics,
Rural Medical College, Pravara Institute of Medical Sciences, Loni
Tal. Rahata, Dist. Ahmadnagar,Maharshtra-413736

Further history revealed of her being the first issue ofa non- consanguineous marriagewith full term normal vaginal delivery and uneventful antenatal, natal and postnatal periods. There was no history any similar complaints in the family. Herdevelopmental milestones were expected as per the age and she had started walking by the age of 14 months. There was no history of Lethargy, poor activity, constipation or hyper-somnolence. Contrary to the usual presentation of hypothyroidism, the child was fairly intelligent and playful.

Clinically, the child had short stature

[Height – 79cm(expected 100cm i.e. <3rd percentile) , US : LS ratio – 1:1.3, Arm span 75cm. *Weight* – 10.29 Kg(expected 15.9 Kg i.e. <3rd percentile)]

whereas her weight for height was greater than 50th percentile.

Also, she had coarse and dry skin, umbilical hernia, hoarse voice and calf – thigh – gluteal muscle hypertrophy.All themuscles showed firm enlargement with the muscle tone being normal and noweakness (muscle power being 5/5) and deep tendon reflexes were normal. Gower's sign was negative. In presence of features of hypothyroidism, the pseudo hypertrophy of muscles suggested a diagnosis of Kocher-Debre-Semelaigne syndrome.

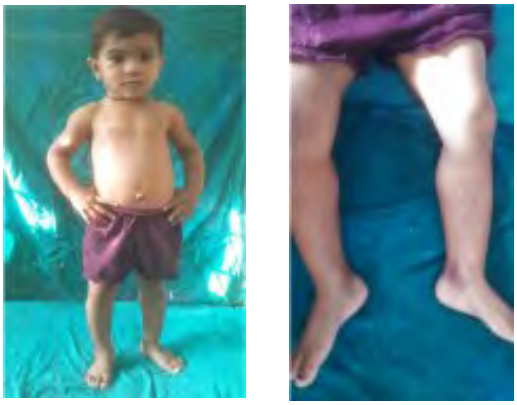

Image : Calf and Thigh Muscle Hypertrophy

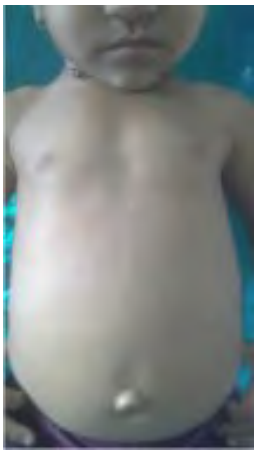

Image : Umbilical hernia

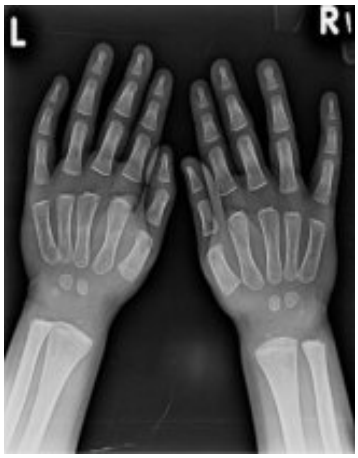

Image : X-ray wrist joint for bone age

Thyroid profile reports revealed of Serum T4 0.634 µg/dL (n = 5.53-11.4µg/dL), serum T3 was 0.525ng/mL (n = 0.970- 1.69 ng/mL), serum TSH 100.0 µIU/mL (n = 0.465-4.68µIU/mL) and hence the diagnosis was confirmed.

Discussion

Thyroid hormone deficiency, a cause of 5% cases of acquired myopathies, is a treatable disorder. The usual age of presentation is between 18 months and 10 years[1-3]. There are several mechanisms whereby thyroid hormone deficiency may interfere with the normal structure and function of skeletal muscles leading to myopathy. The lack of thyroid hormone results in slowed or reduced metabolic function such as decreased proteinturnover and impaired carbohydrate metabolism. These metabolic changes occur in many organ systems, including muscles. Glycogen accumulation and decreased activity of enzymes involved in energy production have been described inhypothyroid myopathy. Thyroid hormone is also necessary for the expression of fast myofibrillar proteins in muscles. In hypothyroidism, where the expression of these proteins is deficient there is an increased accumulation of slow myofibrillar proteins. Hypertrophy of muscle occurs due to increased amounts of connective tissue and mucopolysaccharide deposits[4-6]. All these factors may contribute to muscle weakness, showed muscle contraction, and diminished deep tendon reflexes, fatigue and exertional pain. Myopathy is a known complication of hypothyroidism with an incidence of musculoskeletal symptoms varying from 30-80% in different series. Although muscular symptoms may occur in many patients with hypothyroidism, muscularhypertrophy is reported in less than 10% of the patients[5 - 7]. The muscular hypertrophy (gastrocnemius, quadriceps) and muscles weakness were observed on physical examination in our patients. Both our patients showed an elevation in creatine kinase. The elevation of serum creatine kinase was reported in 80% of thehypothyroidism even with the absence of muscle involvement[8].The mechanism of the release of these enzymes is attributed to the changes in cell membrane permeability[9]. Electromyogram is usually normal or may show myopathic MUAPs with reduced duration and amplitude[10]. This myopathy is responsive to replacement therapy. But if the symptoms go undiagnosed for a long time, it may lead to short stature and intellectual delay which may not respond completely to thyroid replacement. Both our patients were diagnosed at a late age in spite of allclinical features of hypothyroidism. Rare cases have been reported in the past with Kocher-Debre-Semelaignesyndrome. Usual age of presentation is between 18 months and 10 years, but the reports of the condition being diagnosed in neonatal age are also available.11 A rare case report of KDS presenting with pericardial effusionhas also been described[12]. To conclude , Kocher –Debre-Semelaigne syndrome is a specific, rare form of hypothyroid myopathy, which causes hypertrophy of muscles which is easily treatable with thyroid replacement therapy.

TAKE HOME MESSAGE

1. Hypothyroidism may present with musculosketal symptoms and myopathy.
2. If picked up early, one can limit the loss of IQ points and improve the height and reverse the height gained.

References

1. Virmani A, Gambhir A, Iyer PU. Kocher DebreSemelaigne syndrome mimicking primarymuscle disease , *Indian Pediatr,* 1990;27:88-89.
2. Luiz N. Kocher DebreSemelaigne syndrome , *Indian Pediatr,* 1998;35: 1115-1116.
3. Khatua SP, Gangwal A, Khatua S. Kocher , Debre Semelaigne syndrome , *Indian Pediatr,* 1984;21:337-339.

4. Thasko V, Davachi F, Baboci R, Drishti G, HoxhaP: Kocher-DebreSemelaigne syndrome. *Clinical Pediatr*. 1999; 38:113-115.
5. Siciliano G, Monzani F, Manca ML, Tessa A,Caraccio N, Tozzi G et al , Human mitochondrialtransciption factor A reduction andmitochondrial dysfunction in Hashimoto'shypothyroid myopathy, *Mol Med 8*: 326-333,2002.
6. Siciloano G, Manca L, Murri L, Ferrannini E.Clinical and biochemical features of muscledysfunction in subclinical hypothyroidism , *JClinEndocrinolMetab*. , 1997; 82: 3315-3318.
7. Ghilardi G, Gonvers JJ, So A: Hypothyroidmyopathy as a complication of interferon alphatherapy for chronic hepatitis C virus infection , *Br J Rheumatol* , 1998; 37:1349-1351.
8. Mehrotra P, Chandra M, Mitra MK: KocherDebreSemelaigne syndrome: regression ofpseudohypertrophy of muscles on thyroxine , *Arch Dis Child*. , 86: 224,2002.
9. Scott Kr, Simmons Z, Boyer P. Hypothyroidmyopathy with a strikingly elevated serumcreatine kinase levels , *Muscle and Nerve,* 2002;26:141-144.
10. Ruurd FD, Bosch J, Laman DM: Neuromuscularfindings in thyroid dysfunction a prospectiveclinical and electrodiagnostic study. , *J Neurology Neurosurg Psychiatry*., 2000;68:750-755.
11. Tullu MS, Udgikar VS, Muranjan MN, Sathe SA,Kamat JR. Kocher , DebreSemelaigne syndrome:hypothyroidism with musclepseudohypertrophy. *Indian J paediatrics,* 2003;70:671-3.
12. Praveen dharaskar, milind S tullu, keya R lahiri,santoshkondekar, rajwanti k. vaswani. KocherDebreSemelaigne syndrome with pericardialeffusion, *Indian J Med sci,* vol. 61, sept2007;527-530.