

Reassessment of elicitation of myoedema in evaluation of overt hypothyroidism: A pilot study

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ABSTRACT

Introduction: There is a need to reassess the significance of myoedema in evaluation of overt hypothyroidism in the current day clinical practice. It is commonly checked for by flicking across the biceps belly expecting a transient mound at the points of tactile stimuli with mild pressure. **Aim and Objective:** To assess elicitation of myoedema in overt hypothyroidism (defined arbitrarily as TSH >50 mIU/L in primary hypothyroidism and fT4 <0.6 ng/dl in secondary hypothyroidism). **Results:** The 28 primary overt hypothyroid (OH) patients were divided into three groups as mild, moderate, and severe depending on TSH levels as those with 50-100, 100-150, and >150 mIU/L. Myoedema was elicited in 8 of 13 in the severe OH group, in 2 of 7 in moderate OH group and in 1 of 8 in the mild OH group. In the group of secondary hypothyroidism, myoedema was elicitable in one of two patients. The odds ratio for presence of both myoedema and clinical features of myopathy in a group of overt hypothyroid patients with TSH >150 mIU/L as compared to <150 mIU/L was 17.5. Similarly, the odds ratio for the presence of only myoedema was 6.4 while the odds ratio for presence of only clinical features of myopathy was 3.67. While the odds ratios involving presence of myoedema neared statistical significance, that with the presence of clinical features of myopathy alone did not. **Conclusion:** Examination for eliciting myoedema is useful when evaluating a case of overt hypothyroidism.

Key Words: Myoedema, hypothyroidism, myopathy

INTRODUCTION

The incidence of myopathy in hypothyroidism is between 30% and 80%. Myoedema is one of the classic signs of hypothyroid myopathy. It refers to phenomenon of muscle mounding produced in a voluntary muscle following a tactile stimuli. Myoedema is transient phenomena and its intensity decreases with repeated elicitations. It is misnomer in that it does not denote edema of the muscle tissue, but rather represents sustained muscle contraction caused by delayed calcium reuptake by sarcoplasmic reticulum following local calcium ion release brought out by tactile stimuli. In current

clinical practice, examination for myoedema has gone into oblivion. This is probably due to the lack of good sensitivity and specificity for the sign. It is supposedly elicited in different neurological conditions and is considered a normal physiological phenomenon by some neurologists.^[1] It has also been elicited in conditions of malnutrition,^[2] vitamin deficiencies^[3] and anorexia nervosa.^[4]

AIMS WITH MATERIALS AND METHODS

A pilot study was conducted in Endocrinology OPD of JIPMER, a tertiary care central institute in India to reassess elicitation of myoedema in evaluation of overt hypothyroidism in clinical practice. For the study, overt hypothyroidism was defined as >50 mIU/L (normal range [NR] 0.5-5.0) in primary hypothyroidism and fT4 <0.6 ng/ml (NR 0.8-1.8) in secondary hypothyroidism. Consecutive cases of overt hypothyroidism above age of 12 years who consented constituted the study group. It had 28 primary hypothyroid and 2 secondary hypothyroid

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patients. The male:female ratio was 7:23. The study group age ranged from 17 to 72 years. All the patients of overt hypothyroidism were assessed for historical presence of clinical features of myopathy. Physical examination targeting elicitation of myoedema was done in overt hypothyroid patients. It was checked for by flicking across the biceps belly and a transient mound at the point of tactile stimuli with mild pressure was taken as a positive response.

RESULTS

Myoedema was elicited in 12 (40%) of overt hypothyroid (OH) patients while historical clinical features of myopathy were present in 22 (73%). The 28 OH patients were divided arbitrarily into three groups as mild, moderate, and severe depending on TSH levels (50-100 mIU/L, 100-150 mIU/L, and >150 mIU/L). Myoedema was elicited in 8 of 13 in the group with severe OH group, in 2 of 7 in moderate OH group and in 1 of 8 in the group with mild OH group [Table 1]. In the group of secondary hypothyroidism, myoedema was elicitable in 1 of 2 patients.

DISCUSSION

The pilot analysis throws light on the differential significance of presence of myoedema and other clinical characteristics of myopathy in assessing the severity of overt hypothyroidism. Myoedema was elicitable only in severely overt hypothyroidism. This is evidenced by elicitation of myoedema in 8 of 13 overt hypothyroid patients with TSH >150 mIU/L as compared to that in 1 of 8 in those with TSH 50-100 mIU/L. The odds ratio for presence of both myoedema and clinical features of myopathy in the group of overt hypothyroid patients with TSH >150 mIU/L as compared to <150 mIU/L was 17.5 [Table 2]. Similarly, the odds ratio for the presence of only myoedema without clinical features of myopathy was 6.4 while the odds ratio for presence of only clinical features of myopathy without myoedema was 3.67. While the odds ratios involving the presence of myoedema neared statistical significance, that with presence of clinical features of myopathy alone did not.

The pilot study reestablishes the need to incorporating the examination for myoedema in suspected cases of overt hypothyroidism. The presence of myoedema considerably raises the probability of severely overt hypothyroidism and hence its clinical significance. This pilot study has its limitations. The sample size is small and hence the results

Table 1: The correlation of biochemical thyroid hormone profile with myoedema and myopathy

Group	ft4 (ng/ml)	Myoedema	Myopathy
Severe OH	0.41	8/13	11/13
Moderate OH	0.52	2/7	5/7
Mild OH	0.61	1/8	4/8
Mild+moderate OH	0.57	3/15	9/15
Secondary hypothyroidism	0.45	1/2	2/2
Aggregate	0.49	12/30	22/30

OH: Overt hypothyroid

Table 2: Significance of presence of myoedema and clinical features of myopathy in assessment of severity of overt hypothyroidism

Odds ratio characteristics	Severe	Mild/moderate	Odds ratio (confidence interval)
ME+MP+	7	2	17.5 (1.22-250.3)
ME-MP-	5	8	
ME+MP-	8	3	6.4 (1.18-34.6)
ME-MP-	5	12	
ME-MP+	11	9	3.667 (0.59-22.78)
ME-MP-	2	6	

ME: Myoedema, MP: Myopathy

did not satisfy significance criteria. The delineation of myopathy characteristics beyond historical details and addition of biochemical markers for myopathy could have strengthened the study. Furthermore, comparison with elicitation of myoedema in other clinical states would have thrown more light on this forgotten sign for overt hypothyroidism.

CONCLUSION

Examination for eliciting myoedema is useful when evaluating a case of overt hypothyroidism.

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