

Thyroid Hormone Status in Malnourished Children

This study sought to find out the correlation between serum concentration of thyroid hormones and grade of malnutrition among 60 children between 1-5 year having PEM. With increasing severity of malnutrition, the serum concentration of T3 and T4 progressively decreased and that of serum TSH increased.

Keywords: Goiter, Malnutrition, Thyroid hormones.

Protein energy malnutrition (PEM) results in various alterations of thyroid gland structure and functions. The deleterious effects of PEM on the thyroid function were first demonstrated in animal experiments. There are few reports where thyroid function has been studied according to grades of malnutrition(1).

In this cross-sectional hospital based study, we evaluated thyroid functions in various grades of malnutrition. Sixty children having PEM between 1-5 years were selected by simple randomization and classified by weight for age according to Gomez classification. Each of Gomez group had 20 children. Cases admitted for serious illness or having other systemic diseases were excluded from the study. Serum levels of total T4, T3 and TSH were done by Chemiluminescence technique. Serum total proteins and albumin levels were estimated by standard Bromocrisol green.

Maximum cases were in age group of 12-36 months ($n=47$, 78.3%) with almost equal male: female ratio. There was a significant association between the severity of malnutrition with other basic anthropometric measurements (One way ANOVA test, $P=0.02$). The mean serum total protein and albumin levels were significantly lower in grade II and III cases. With progressive increase of severity of malnutrition, the T3 level decreased significantly ($P=0.04$). The mean serum T4 level also showed a significant fall in grade III PEM ($P=0.08$). Serum TSH level progressively increased with increasing severity of malnutrition (one-way ANOVA; $P=0.015$). Few other studies also document similar hormonal changes in PEM (2-4). Low plasma T3 concentration may be brought about by decreased peripheral conversion of T4 to T3. The reduction in

T3 has also been attributed to impaired thyroid binding proteins like TBG, TBPA and Albumin(5). Fasting and caloric content of the diets are important factors in metabolic conversion of T4. However, when the malnutrition becomes more severe, the reserves are exhausted and there is decreased thyroidal secretion rate as well, leading to lowered T4 in kwashiorkor and marasmic kwashiorkor.

In our study, there was significant increase in the mean level of TSH with increasing severity of malnutrition. Orbak, *et al.*(4) also found TSH level elevated in PEM. In short term and mild forms of PEM, the observed changes are limited to the thyroid hormonal transport system, and appropriate feedback mechanisms allow the maintenance of euthyroid state. Whereas, in chronic, more severe forms of PEM, the reserves are depleted causing a fall in thyroidal secretion rate and the thyroid adaptation may fail.

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Feasibility and Efficacy of Intraarticular Steroids (IAS) in Juvenile Idiopathic Arthritis (JIA)

Thirteen children with juvenile idiopathic arthritis (JIA) were treated with intraarticular steroid injection of triamcilonone acetonide as a day care procedure. More than half (53.4%) the children were free of pain, limp and NSAID's use, with improvement in functional score at 12 weeks. No side effects were reported during the period of the study.

Key words: *Intraarticular Steroids (IAS), Juvenile Idiopathic Arthritis (JIA), Pain, Functional score, Resource poor setting,*

Intraarticular steroid (IAS) administration is a well-established mode of therapy for children with chronic arthritis(1,2). This study was undertaken to determine the feasibility, safety, efficacy and outcome of IAS in children with Juvenile Idiopathic Arthritis (JIA) on ambulatory basis with conscious sedation, in a restricted resource setting.

Children diagnosed with oligoarticular/polyarticular JIA, unresponsive (determined by joint swelling or effusion, or the limitation of range of motions, tenderness or pain on motion, or warmth) to 12 weeks of daily oral naproxen (15-20mg/kg/day) and/or weekly oral methotrexate (10 mg/m²/week) were enrolled in the study after obtaining informed written consent.

Children <6 years of age were given sedation with midazolam (0.1mg/kg/dose) and ketamine (1mg/kg/dose) prior to the procedure. Continuous pulse oximetry, heart rate, respiratory rate and non-invasive blood pressure monitoring was done during the procedure, and then every 15 minutes till

the child was awake and fully conscious. Older children were given IAS under local anesthesia.

The joints were injected with triamcinolone acetonide (0.5-1mL, 20-40mg) using standard technique(3). The parent and child were instructed to keep the movement in the particular joint to the least possible for next 24 hours. Children enrolled in the study were evaluated for 6 outcome measures at 0, 6, and 12 weeks: pain scale (0-10)(4); functional score (0-3) questionnaire, with the score for the desired task given as follows: without any difficulty 0, with some difficulty 1, with much difficulty 2 and unable to do 3(5); limp; limb length, mid-thigh and mid-leg circumference (affected lower limbs) at baseline and repeated at 12 weeks, and NSAID use.

Thirteen children with JIA (12, oligoarticular and 1 polyarticular) were included. The mean age of the study population was 8±3.38 years (range 2-12 years). Boys (*n*=6, mean age 10.16±0.89 years) and girls (*n*=7, mean age 6.28±3.42 years) with the mean age of onset of JIA was 6.67±3.19 years (range 1-11 years) were enrolled. Eighteen joints were injected in these patients (13 knee, 3 ankle and 2 elbow joints). Two patients had uncontrolled arthritis and were termed failure of IAS trial at 6 week visit, and subsequently taken off the study. Four children were lost to follow-up at the end of 12 weeks study period.

All the patients who responded to treatment showed significant improvement in pain and functional scores (**Table I**). NSAID use at the