Vitamin B_{12} Status of Mothers of Children with Infantile Tremor Syndrome

Retrospective chart review of 15 patients with infantile tremor syndrome in which mothers had their serum vitamin B_{12} measured, showed low (<200 pg/mL) serum vitamin B_{12} in 9 and low-normal (<200-350 pg/mL) in 6. Of the 9 mothers who had undergone complete blood counts, anemia was present in 6 and macrocytosis in 3. Vitamin B_{12} deficiency appears to be common in mothers of infants with infantile tremor syndrome.

Keywords: *Deficiency, Management, Micronutrient*.

Several studies have shown vitamin B_{12} deficiency in infants with ITS [1-6]; but systematic study of maternal vitamin B_{12} status has infrequently been done through appropriate investigations [1,2,4,7]. We herein report on the vitamin B_{12} status of the mothers of children with ITS.

We retrospectively reviewed the laboratory investigations undertaken to determine the vitamin B_{12} status of the mothers of the infants diagnosed with ITS between February 2010 and March 2015. Vitamin B_{12} status of mothers is investigated at our center depending of affordability of the test. All the mothers, coming from poor families, were vegetarian with little or no milk intake. Serum vitamin B_{12} levels in this study were defined as low (< 200 pg/ml), and low normal (200-350 pg/ml) [8]. The deficient mothers are treated with either oral or intramuscular vitamin B_{12}. Supplementation with oral iron and folic acid was also done, as deemed appropriate.

Fifteen mothers had serum vitamin B_{12} estimation and 9 had complete blood counts. Hemoglobin ranged from 9.6 to 13.0 g/dl (mean, 11.5 g/dl). Anemia (hemoglobin <12g /dl) was present in 9 but was only mild. Macrocytosis (MCV > 95 fl) was noted in 3 and another 3 mothers had borderline elevated MCV (91-93 fl). Serum vitamin B_{12} ranged from 49 to 260 pg/ml (mean, 157.3 pg/ml). Overall, serum vitamin B_{12} was low in 9 mothers and low normal in 6.

Jadhav, *et al*. [1] were the first to demonstrate low vitamin B_{12} in the maternal serum as well as in the breast-milk, thus confirming vitamin B_{12} deficiency. The study also proved that vitamin B_{12} deficiency in the infants in ITS was secondary to maternal vitamin B_{12} deficiency. Similar findings were described by Srikantia and Reddy [2]. Kaul, *et al*. [7] reported low serum vitamin B_{12} in all the 7 mothers tested but only in 3 of the 11 infants tested. The authors concluded that vitamin B_{12} deficiency was not causally related to ITS but could not explain low serum vitamin B_{12} in the mothers. Majority of the studies on ITS have not commented on maternal vitamin B_{12} status.

Our study has re-emphasized the presence of vitamin B_{12} deficiency in mothers of infants with ITS. The vitamin B_{12} deficiency in the mother-infant pairs in ITS is not unexpected, given the fact that mothers were strict vegetarian and infants exclusively breast-fed [9]. Finding of normal serum vitamin B_{12} in 6 infants in our study whose mothers had low serum vitamin B_{12} was unusual since breast-milk was the only source of nutrition in these infants. Prior administration of vitamin B_{12} was revealed from medical records. Low serum vitamin B_{12} in the mother provided an indirect evidence of infantile vitamin B_{12} deficiency in these 6 infants with discrepant serum vitamin B_{12}. This finding could also explain apparently normal serum vitamin B_{12} in some infants with ITS reported previously in some studies [**7**]. Additionally, testing of mothers for vitamin B_{12} deficiency also allowed us to treat them appropriately, which might have been missed otherwise. We also found that anemia and macrocytosis were not always present in the presence of low serum vitamin B_{12}, and absence of these hematological parameters therefore cannot reliably exclude the diagnosis of vitamin B_{12} deficiency [8].

Major limitation of our study is its retrospective nature, absence of a control group and a small sample size. Breast milk vitamin B_{12} as well as detailed laboratory assessment of the mothers for other nutritional deficiencies could not done due to financial constraints.

To conclude, majority of the mothers of infants with ITS suffered from nutritional vitamin B_{12} deficiency. Vitamin B_{12} status in the mothers should be assessed by measuring serum vitamin $B_{12,}$ as anemia and macrocytosis may not always be present.

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Language Evaluation Scale Trivandrum (LEST 3-6 years) – Development and Validation

Language Evaluation Scale Trivandrum (LEST:3-6 years) with 31-items, was validated against 'extended REELS' with a community sample-606 children (3-6yrs). One item and two item delay as 'LEST delay' showed a sensitivity of (81%, 47%); specificity (68%, 94%), PPV (12%, 31%); NPV (98%, 97%) and accuracy (68.5%, 92%), respectively. LEST (3-6years) is a simple, valid, community screening tool.

Keywords: *Language development, LEST, Screening tool, Validation*.

Children learn to articulate speech sounds as they develop, with some sounds taking more time than others [1]. Screening is the preliminary step to determine if sensory, behavioral and developmental skills are progressing as expected, or if there are causes for concern for further evaluation. Language Evaluation Scale Trivandrum (LEST 0-3 years) [2] is a simple screening tool developed and validated by Child Development Centre (CDC), Kerala, and was found useful for early intervention [3]. The prevalence of speech and language delay in literature below 6 years old is 3.8% [4]. As majority of children present with speech and language problem in the pre-school years, the present study aimed to develop the scale for children aged 3-6 years [LEST (3-6 yrs)], and validate it using the 'available' reference standard, extended Receptive Expressive Emergent Language Scale (extended REELS) [5].

LEST (3-6) with 31 test items, was developed at CDC Kerala and validated in a community sample of children. The detailed methodology was reported in a previous article on LEST (0-3) [2].The additional test items and the ranges were selected from different existing developmental/speech and language assessment scales, tools or guidelines like, Hearing check list by American Speech-Language-Hearing Association [6], Speech and language development in babies by Abby Deliz [7], Gilman and Gorman's Speech Language Development Chart [8], Speech Sound Development Chart by Sander's [9], and Ages and stages milestones for receptive and expressive language acquisition by Caroline Bowen [10].

Children between 3-6 years belonging to 11 *Anganwadis* from an urban ward, 20 *Anganwadis* from a rural *Panchayat* and 3 *Anganwadis* from tribal area, participated in this study. LEST (3-6), was applied by two trained persons having similar educational qualification as that of an ICDS Supervisor, and "extended REELS" by two Speech and Language therapists. For LEST [3-6], a vertical line was assumed by keeping a scale vertically, at the chronological age in months given horizontally in the 'X' axis (***Web Fig*. 1**). All items falling short on the left side of the age line was expected to be done by the child. If not done, it was taken as that item delay. First preference was given for observation of the child and testing of the items; if it was not possible, for some of the items, parental reporting was considered valid.

The test re-test reliability (intra-class correlation of 0.61; 95% CI 0.41-0.76) and inter-rater reliability (intra-class correlation of 0.96; 95% CI 0.93-0.97) were acceptable in valid samples of 50 children.

Test results for both LEST (3–6) and the reference standard were available for a sample of 606 children (292 boys); 247 (3-4 years), 221 (4-5 years), 138 (5-6 years). ***Table* I** shows the results with one-item delay and two-item delay as test positive, against extended REELS. One-item