Homeopathy (2014) 103, 224–231
© 2014 The Faculty of Homeopathy
http://dx.doi.org/10.1016/j.homp.2014.08.004, available online at http://www.sciencedirect.com

ORIGINAL PAPER

# Efficacy of homeopathic intervention in subclinical hypothyroidism with or without autoimmune thyroiditis in children: an exploratory randomized control study

Vijay K Chauhan[1], Raj K Manchanda[2,*], Archana Narang[1], Raman K Marwaha[3], Saurav Arora[2], Latika Nagpal[1], Surender K Verma[4] and V Sreenivas[5]

[1]*Dr. B. R. Sur Homoeopathic Medical College, Hospital & Research Centre, New Delhi, India*
[2]*Central Council for Research in Homoeopathy, Department of AYUSH, Ministry of Health & Family Welfare, Government of India, India*
[3]*Institute of Nuclear Medicine and Allied Sciences, New Delhi, India*
[4]*Directorate of Indian System of Medicine & Homeopathy, Government of NCT of Delhi, New Delhi, India*
[5]*All India Institute of Medical Sciences, New Delhi, India*

***Introduction:*** **The decision to treat subclinical hypothyroidism (SCH) with or without autoimmune thyroiditis (AIT) in children, presents a clinical dilemma. This study was undertaken to evaluate the efficacy of individualized homeopathy in these cases.**
***Methods:*** **The study is an exploratory, randomized, placebo controlled, single blind trial. Out of 5059 school children (06–18 years) screened for thyroid disorders, 537 children had SCH/AIT and 194 consented to participate. Based on primary outcome measures (TSH and/or antiTPOab) three major groups were formed: Group A – SCH + AIT ($n = 38$; high TSH with antiTPOab+), Group B – AIT ($n = 47$; normal TSH with antiTPOab+) and Group C – SCH ($n = 109$; only high TSH) and were further randomized to two subgroups-verum and control. Individualized homeopathy or identical placebo was given to respective subgroup. 162 patients completed 18 months of study.**
***Results:*** **Baseline characteristics were similar in all the subgroups. The post treatment serum TSH (Group A and C) returned to normal limits in 85.94% of verum and 64.29% of controls ($p < 0.006$), while serum AntiTPOab titers (Group A and B) returned within normal limits in 70.27%of verum and 27.02%controls ($p < 0.05$). Eight children (10.5%) progressed to overt hypothyroidism (OH) from control group.**
***Conclusion:*** **A statistically significant decline in serum TSH values and antiTPOab titers indicates that the homeopathic intervention has not only the potential to treat SCH with or without antiTPOab but may also prevent progression to OH.** *Homeopathy* (2014) **103**, 224–231.

**Keywords:** Autoimmune thyroiditis; Subclinical hypothyroidism; Overt hypothyroidism; Anti TPO antibody; Individualized homeopathy

*Correspondence: Raj K Manchanda, Central Council for Research in Homoeopathy (CCRH), 61-65, Institutional Area, Opposite D Block, Janakpuri, New Delhi 110059, India.
E-mail: vkchauhan2002@gmail.com, rkmanchanda@gmail.com, shmc.thyroidclinic@gmail.com, drachana72@yahoo.co.in, marwaha_ramank@hotmail.com, dr.saurav.arora@gmail.com, latika.doc@gmail.com, ddhomoeopathy@yahoo.co.in, sreenivas_vishnu@yahoo.com
Received 12 February 2014; revised 14 August 2014; accepted 26 August 2014

## Introduction

Optimal thyroid function is essential for normal growth and development of children. Subclinical hypothyroidism (SCH) and Autoimmune thyroiditis (AIT) are being increasingly identified in children. AIT may manifest as euthyroid, SCH or overt hypothyroidism (OH). An epidemiological survey conducted in school children of Delhi, reported a higher prevalence of AIT (3.6%) and SCH (6.5%),[1] than that reported in other studies (2.5%−4.3%).[2−5] Studies have shown that in natural course, SCH especially in the presence of antiTPOab carries high risk of progression to OH.[6,7] Therefore, it is suggested that thyroid function should be monitored periodically for early detection and treatment of OH. Although several studies on adults have shown SCH to be associated with number of adverse consequences,[8−13] there is lack of such data with respect to children. Benefits of treating SCH are reported as increased growth velocity in prepubertal and pubertal subjects, reduction in the thyroid volume in goitrous children and prevention of subtle proatherogenic changes in children with idiopathic SCH.[14−16] In allopathy replacement therapy is the only available option for OH that may have to be given through out life. There exists a lack of consensus among doctors about such treatment to SCH patients with or without AIT.[17] Hence there is a necessity to explore the possibility of using homeopathic intervention in such cases. This study was undertaken with the objective to evaluate the efficacy of homeopathic intervention in the treatment of such patients suffering from SCH and/or AIT.

## Methods

### Study design

The study is an exploratory randomized, single blind, placebo controlled trial with blind assessment. Ethical approval was accorded by duly constituted ethical committee of Dilli Homoeopathic Anusandhan Parishad (DHAP) vide letter no (687)/NHMC/4443 dated 12/2/2007. The study protocol was in accordance with the Helsinki declaration on human experimentation and Good Clinical Practice in India (http://cdsco.nic.in/html/GCP.htm).

### Participants

*Inclusion criteria*:

- Children aged 06−18 years.
- Free $T_4$ ($FT_4$) within normal range (11.5−23 pM/L).
- TSH between 5.2 and 10 $\mu$IU/ml and/or
- AntiTPOab values >34 IU/ml. (0−34 IU/ml).

*Exclusion criteria*: The known cases of hypo/hyperthyroid on thyroid specific medications and/or suffering from any chronic systemic diseases were excluded.

*Screening*: The screening was carried out in 08 schools (04 private, 04 government), from different areas of Delhi with prior permission from respective school principals. The students were also informed about the process before enrollment for screening and their verbal assent was obtained. Written consent from the parents was obtained before carrying out clinical and laboratory examination.

A total of 5059 children (1695 boys, 3364 girls) were subjected to general physical examination, anthropometry, thyroid gland palpation,[18] thyroid function tests ($FT_3$, $FT_4$ and TSH) and ultrasonography (USG) of thyroid to assess the echogenicity and nodularity of the thyroid gland, by an endocrinologist (RM) with more than 25 years of experience. The samples were drawn between 8 and 9 am, centrifuged at site and serum was stored at −20°C, until assayed.

$FT_3$ (normal range: 2.5−5.8 pM/L)and $FT_4$ (normal range: 11.5−23 pM/L)were measured by Radioimmuno Assay (RIA) (Immunotech, Beckmen Coulter, Pragni, Czech Republic), TSH (Normal range 0.17−5.2$\mu$IU/ml; range of measurement: 0.025−150 $\mu$IU/ml; intra assay Coefficient of Variation: <3.7%; inter assay Coefficient of Variation: <8.6%) by ImmunoradiometricAssay (IRMA) (Immunotech), and anti TPO ab (Range of measurement is 5−600 IU/ml; TPO values ≥34 IU/ml are considered +ve; intra assay Coefficient of Variation was <4.2%; inter assay Coefficient of Variation <9.2%) were measured by Electro Chemiluminescence Assay (ECL), (Cobas-Roche Elecsys 1010 analyzer). Ultrasound examination of the neck was undertaken using a portable ultrasound machine (Aloka SSD-500, Tokyo, Japan) with a 7·5 MHz transducer with each child lying supine with neck hyper extended.

### Settings

Post screening and inclusion in the study the case taking and follow up was undertaken at Dr. B. R. Sur Homoeopathic Medical College, Hospital & Research Center and Institute of Nuclear Medicine and Allied Sciences (INMAS), under Defense Research Development Organization, Ministry of Defense, Timarpur, Delhi (www.drdo.gov.in). The investigations were performed at INMAS in the coded forms (blind assessment).

### Case analysis and prescribing

Each case (verum and control) was first recorded by qualified homeopathic doctors of 2−3 years of experience (SA, LN), prescribing totality was identified in consultation with senior homeopath (AN) with 10 years of experience and final selection was endorsed by homeopath with 20−30 years of experience (VKC, RKM). The cases were repertorized using RADAR version 10.0. The totality consisted of presenting symptoms (if any) and predominating constitutional symptoms (physical/mental generals, somatic attributes, temperaments, susceptibility, other characteristics etc.), significant past/family history. All the cases (both verum and controls) were evaluated identically on the basis of prescribing totality and serum TSH levels. The verum group was prescribed single active dose (04 pills-40 size) of indicated remedy in 200C and control group was prescribed non-medicated identical

dose, administered orally. All the patients were also prescribed non-medicated globules to be taken thrice daily, during the study period. The study drugs were procured from a GMP certified company.

### Outcomes measures

*Primary outcome measures:* Change in serum TSH and serum antiTPOab levels at baseline, 12 and 18 months.

*Secondary outcome measure*: Change in $FT_4$ (assessed at baseline, 12th and 18th months).

### End points

The primary end point of the study was at 18 months of treatment, whereas the secondary/safety end point was serum TSH >10 $\mu$IU/ml and $FT_4$ below lower limit.

### Groups

Based on primary outcome measures the patients were divided into three groups- Group A-SCH + AIT (high TSH and antiTPOab+), Group B-AIT (only antiTPOab+ with normal TSH) and Group C (only high TSH with normal antiTPOab). All the three groups were followed in the same manner (Table 1).

### Randomization

Each group was further randomized separately with equal allocated patients using computer generated random numbers[19] into verum and control (Figure 1). The case taking and analysis was identical to both groups.

### Periodic evaluation

The patients were evaluated clinically every 3 months and were subjected to investigations as mentioned above. All the patients were instructed to follow up in between, if needed. On follow up assessment, if any patients complained of sign and symptoms pertaining to hypothyroidism, the investigations were immediately performed. Blood samples were collected at study site and sent in a coded form to INMAS for investigations.

Change of remedy or repetition of dose in the verum group was done as per the following criteria:

- In case of improvement in symptoms, if any—no further dose was given.
- If improvement in symptoms, stopped—same dose was repeated.
- In case no further change in symptoms, even after repeating the dose, higher potency of the same medicine was given.
- If no perceptible improvement in symptoms, even after repetition and next potency, medicine was changed after fresh assessment.
- If no decline in the serum TSH and or antiTPOab levels from baseline at 12 months of treatment, change in potency or medicine was done.

In case, during follow up, if $FT_4$ levels declined below normal and TSH raised above 10$\mu$IU/ml, patients (verum and control) were dropped from the study and were treated at INMAS by allopathic replacement therapy.

### Drop-outs

Out of 194 cases, 162 patients completed the study period of 18 months. Among 32 (16.5%) drop outs, 19 failed to report after the first visit, 04 after the 3rd monthly visit and 09 after 6th monthly visit.

### Statistical analysis

The statistical analysis was done using STATA v 9.0. The primary outcomes were analyzed between the groups using Wilcoxon Ranksum test; the pre-post change in TSH & antiTPOab using signed rank test; differences in proportions between the groups using chi-square/Fisher's exact test and correlations using Pearson correlation test. The $p$ value <0.05 is considered statistically significant.

## Results

Out of 5059 children, 613 (186 boys, 427 girls) were diagnosed with various thyroid disorders. 537 were identified as SCH/AIT patients. Of these parents of 194 children (boys-55, girls-139) consented to participate and 76 children (59 OH, 09 hyperthyroid, 08 Subclinical hyperthyroid) were referred for replacement allopathic therapy.

The participant flow chart is given as Figure 1. Baseline demographic characteristics and biochemical indices were similar and statistically non-significant between two groups (Table 1). At baseline, 127/194 (65%) patients were asymptomatic and other presented with symptoms

**Table 1** Baseline demographic characteristics and biochemical indices

| *Mean ± SD%age* | *SCH + antiTPOab verum (n = 17)* | *SCH + antiTPOab control (n = 21)* | *AIT verum (n = 26)* | *AIT control (n = 21)* | *SCH verum (n = 55)* | *SCH control (n = 54)* |
|---|---|---|---|---|---|---|
| Age (yrs.) | 13.1 ± 2.46 | 13.8 ± 2.13 | 13.2 ± 2.54 | 13.8 ± 2.74 | 11.9 ± 2.58 | 12.8 ± 3.05 |
| $FT_4$ (pM/L) | 14.6 ± 2.21 | 14.6 ± 2.49 | 15.8 ± 2.37 | 15.3 ± 1.98 | 14.9 ± 2.21 | 15.9 ± 2.11 |
| TSH ($\mu$IU/ml) | 6.5 ± 1.13 | 6.9 ± 1.19 | 2.8 ± 0.81 | 2.8 ± 1.24 | 6.6 ± 1.32 | 6.6 ± 1.05 |
| TPO Titres (IU/ml) | 260.1 + 245.21 | 185.8 + 190.45 | 221.3 + 204.2 | 290.6 + 206.95 | 7.5 ± 4.57 | 8.1 ± 3.84 |
| Goiter gland Non-Palpable | 5 (29.41%) | 55 (23.81%) | 9 (34.62%) | 9 (42.86%) | 40 (72.73%) | 38 (70.37%) |
| Goiter gland Grade I | 10 (58.82%) | 14 (66.67%) | 15 (57.69%) | 11 (52.38%) | 14 (25.45%) | 16 (29.63%) |
| Goiter gland Grade II | 2 (11.76%) | 22 (9.52%) | 2 (7.69%) | 1 1 (4.76%) | 1 (1.82%) | 0 (0%) |
| USG- Normal | 6 (35.29%) | 12 (57.14%) | 19 (73.08%) | 11 (52.38%) | 37 (67.27%) | 40 (74.07%) |
| USG- Mild Hypoechoic | 11 (64.71%) | 8 (38.1%) | 7 (26.92%) | 8 (38.1%) | 13 (23.64%) | 13 (24.07%) |
| USG Hypo-echoic | 0 (0%) | 1 (4.76%) | 0 (0%) | 2 (9.52%) | 5 (9.09%) | 1 (1.85%) |

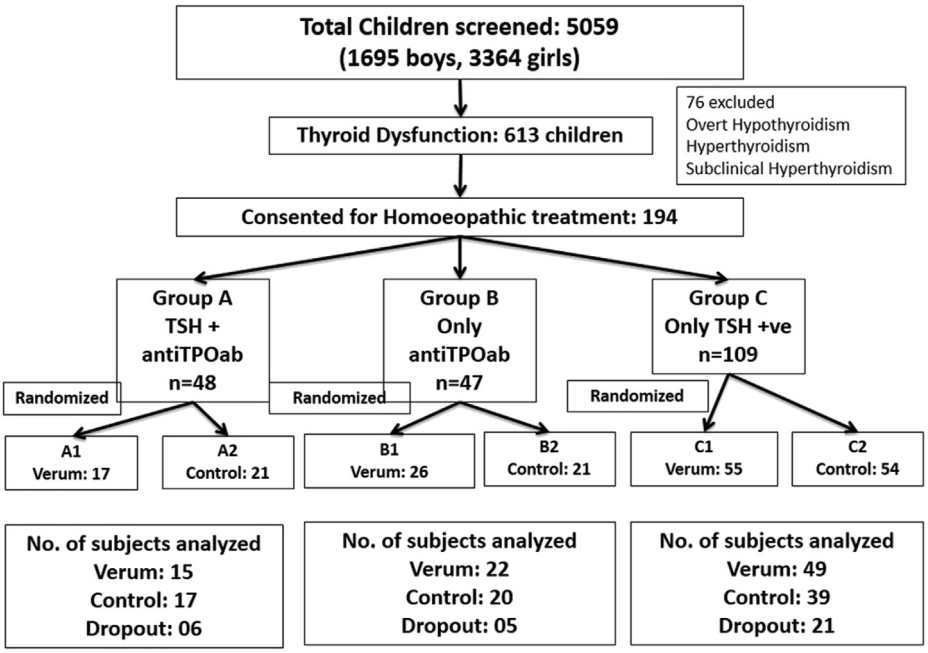


**Figure 1** Participant flow chart.

such as tiredness, lethargy, hair fall and weight gain in varying percentages (Table 2).

### Outcome measures

*Change in TSH*: A total of 120 patients (Group A and Group C) had elevated TSH (64-verum, 56-control). At the end of 18 months, TSH returned within normal limits in 85.94% (55/64) and 64.29% (36/56) in verum and control groups respectively ($p < 0.006$) In the verum group, there was no significant difference in the number of TPO+ve and TPO-ve patients returning to normal TSH values (86.67% vs 85.71%). However, in the control group, TSH returned to normal limits in higher proportion of TPO-ve patients in contrast of TPO+ve patients (71.79% vs 47.06%, $p < 0.02$) (Figure 2). Significantly greater reduction in the mean TSH values was observed at the end of 18 months follow up in the verum group ($6.56 \pm 1.14$ vs $3.41 \pm 1.97$, $p < 0.0001$) as compared to control group where there was no marked change noted ($6.69 \pm 1.1$ vs $6.43 \pm 9.58$, $p < 0.838$) (Table 3). Change in serum TSH levels on time scale in verum and control groups at 12 and 18 months follow up is shown in Table 4.

A decline in TSH of >40% from the previous value was considered clinically significant.[20] In verum group 75% (48/64) of the patients showed significant decline in TSH levels in comparison to 44.64% (25/56) patients in control group ($p < .001$).

**Table 2** Presentation of symptoms of patients in both groups

| *Symptoms* | *Verum group (n = 98)* | *Control group (n = 96)* | *Total (n = 194)* |
|---|---|---|---|
| Asymptomatic patients: | | | |
| No complaints | 62 (63.26%) | 65 (67.7%) | 127 (65.46%) |
| Patients with thyroid specific symptoms: | | | |
| Tiredness, lethargy | 18 | 20 | 38 |
| Hair fall | 17 | 14 | 31 |
| Weight gain | 15 | 14 | 29 |
| Dry hair | 14 | 11 | 25 |
| Lack of concentration | 09 | 13 | 22 |
| Constipation | 06 | 09 | 15 |
| Dry skin | 10 | 01 | 11 |
| Hoarseness | 07 | 03 | 10 |
| Sleepiness | 02 | 04 | 06 |
| Cold intolerance | 03 | 02 | 05 |
| Irregular menses | 01 | 03 | 04 |
| Poor memory | 00 | 02 | 02 |
| Menorrhagia | 00 | 01 | 01 |

### Change in antiTPOab levels ($n = 74$)

A total of 74 patients (Group A and Group B) at baseline had antiTPOab titers >34 IU/ml with 37 patients each in verum and control groups. In verum group, 70.27% (26/37) patients had normal antiTPOab titers in comparison to 27.02% (10/37) patients in control group ($p < 0.05$). Elevated TSH was observed in 15/37 and 17/37 in verum and control groups respectively. Among the verum group 60% (9/15) of patients became antiTPO-ve as against the 17.64% (3/17) controls became TPO negative (Figure 3, Table 5). The median antiTPOab titers of 108 IU/ml in verum group reduced to 14.9 IU/ml with median difference of 57.2 IU/ml ($p < 0.001$) in contrast to control group with median difference of only 10.92 IU/ml ($p < 0.2359$). Changes in mean antiTPOab titers at 12 and 18 months in verum and control groups are depicted in Table 6.

A subgroup analysis of 42 patients with very high antiTPOab titers (>102 IU ml), revealed that 68.42% (13/19) in verum and 26.08% (06/23) in control group returned to normal levels. ($p < 0.006$). (Table 5). Change in median of serum antiTPOab titers in patients with serum anti TPO ab ≥102 IU/ml ($n = 42$) in verum and control groups after 18 months follow up is given in Table 7.

### Change in $FT_4$ levels

Increase of >15% in $FT_4$[20] from baseline, was considered to be significant. 37.5% (24/64) of patients in verum

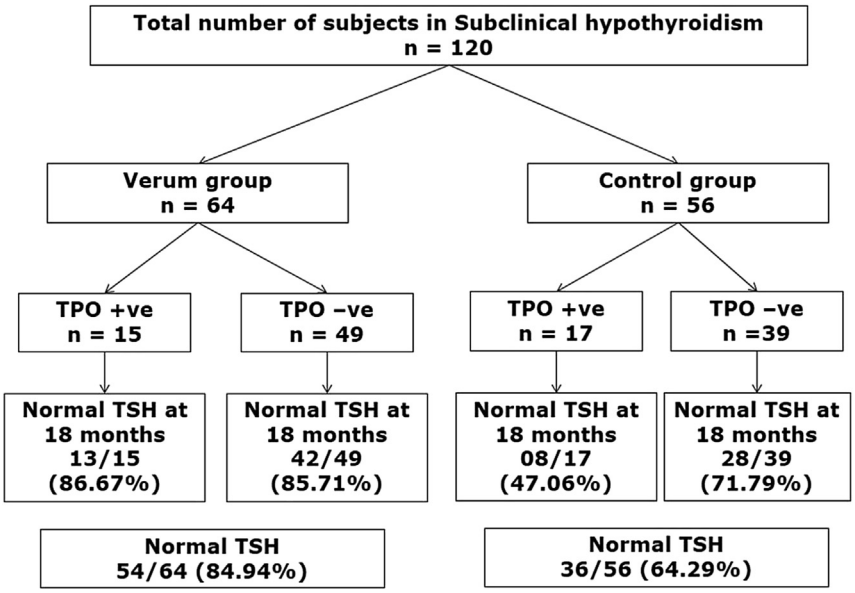


**Figure 2** Change in serum TSH levels.

group showed >15% increase in $FT_4$[20] when compared to 16.07% (9/56) patients in the control group ($p < .009$).

### Progression to OH

In the verum group none of the patients progressed to OH whereas 08 patients progressed to OH in control group (Table 8). In control group, 01 patient progressed to OH after 3months, 01 after 6 months, 03 after 12 months and 03 after 18 months of follow up. Out of 08 controls, 29.4% (05/17) patients were from Group A, 10% (02/20) from Group B and 2.5% (01/39) patient from Group C, progressed into OH. Out of 08 patients, 07 had high antiTPOab titers, 06 patients had goiter and 05 patients had family history of thyroid disorders.

### Homeopathic intervention

15 homeopathic remedies were prescribed to the 86 patients of the verum group. 45 patients required repetition of doses, 12 required higher potency and 24 patients required change of medicine. At the end of 18 months a total of 72 out of 86 patients responded to homeopathic intervention. Commonly prescribed medicines as first prescription were *Calcarea carbnica* (16), *Calcarea sulph* (05), *Natrum mur* (20), *Phosphorus* (16), Pulsatilla (08) and Sulfur (04). Details of normalization of primary outcome measures; TSH and antiTPOab titers after first prescription are given in Table 9.

**Table 3** Change in serum TSH levels in subclinical thyroid subjects with or without antibody positivity

| *Subclinical subjects (n = 120)* | *Mean TSH levels (baseline)* | *Mean TSH levels (18 months) ± SD* | p *value* | p *value* |
|---|---|---|---|---|
| Verum group ($n = 64$) | 6.56 ± 1.14 | 3.41 ± 1.97 | <0.0001 | 0.008 |
| Control group ($n = 56$) | 6.69 ± 1.1 | 6.43 ± 9.58 | <0.838 | |

## Discussion

In the present study, we report the efficacy of homoeopathic treatment in children with SCH and/or AIT. The majority of patients in the study were asymptomatic and clinical symptomatology of tiredness, lethargy, increased hair fall and weight gain was seen only in 35% of patients which is consistent with literature.[21–27] The family history of thyroid disease in 76 (39%) patient is similar to that reported by Giorgio Radetti et al.[28]

A significant percentage of patients with SCH in verum group reverted back to normal serum TSH levels when compared to controls (85.94% vs 64.29%, $p = <0.006$) in the present study. Similarly, significant reduction was observed in the mean serum TSH levels in the verum group in comparison to controls. Furthermore, serum TSH levels in 86.67% patients with high antiTPOab titers in verum group, reverted back to normal in comparison to controls where TSH reverted back to within normal limits in 47.06% and 29.41% progressed to OH. These observations indicate the impact of homeopathic intervention in normalizing thyroid functions in children with SCH.

**Table 4** Change in TSH on time scale

| *TSH (μIU/ml)* | *Verum group (n = 86)* | | *Control group (n = 76)* | |
|---|---|---|---|---|
| | *Mean change from baseline* | P *Value from baseline* | *Mean change from baseline* | P *Value from baseline* |
| TSH at 12 months | −1.6085 | <0.001 | −0.2546 | 0.7 |
| TSH at 18 months | −2.3967 | <0.001 | +0.5181 | 0.63 |

(− Represents decrease and + increase in the TSHvalue).

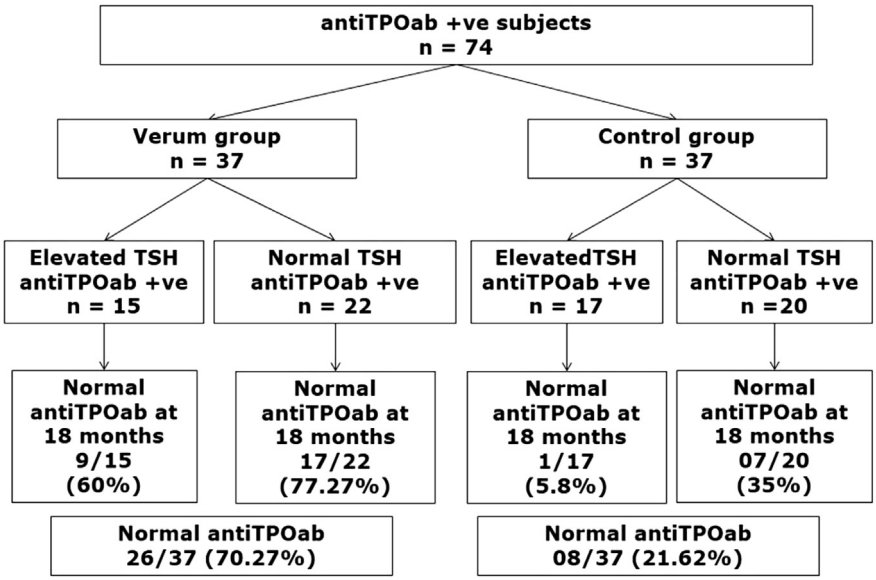


**Figure 3** Change in antiTPOab titres.

**Table 5** Overall change in serum antiTPOab titres

| *Verum group* (n = *86)* | | | *Control group* (n = *76)* | | | p *value* |
|---|---|---|---|---|---|---|
| *antiTPOab titres (IU/ml)* | *Baseline* | *18 months* | *antiTPOab titres (IU/ml)* | *Baseline* | *18 months* | |
| <34 | 49 (57%) | 73 (84.9%) | <34 | 39 (51.3%) | 40 (52.6%) | 0.001 |
| 34−102 | 18 (21%) | 06 (7%) | 34−102 | 14 (18.4%) | 10 (13.2%) | |
| >102 | 19 (22%) | 07(8.1%) | >102 | 23 (30.3%) | 26 (34.2%) | |

Although the results of the present study are not directly comparable, homeopathic intervention was observed to be more efficacious when compared with two earlier studies where the intervention with thyroxine replacement was of longer duration (3−6years) and then stopped. In the first study,[29] only 14/23 children diagnosed as AIT with SCH were treated with thyroxine for a median period of 6.4 years, and then medication was withdrawn for one year. Three (21%) patients had normal TSH, 10 (71%) had TSH very close to initial levels and 01 (8%) had worsening of thyroid functioning. In the second small study by Moore et al,[30] of 07 patients who had undergone replacement therapy and then followed up for mean period of 3 years, after discontinuation of therapy, showed that TSH normalized in 42.8% (03/07), remained mild to moderately elevated in 42.8% (03/07) and progressed to OH in 14.2% (01/07).

The results of the present study noted significant reduction in the median antiTPOab titers in verum group (from 108 IU/ml to 14.9 IU/ml, $p < 0.001$), when compared with controls (from 194.5 IU/ml to 153.5 IU/ml, $p < 0.2359$). In addition, there was also significant reduction in percentage of patients with positive serum antiTPOab becoming antibody negative in verum group than controls (70.27% vs 27.02%, $p < 0.05$). This observation was further reiterated by the fact that 68.42% patients with significantly high levels of antiTPOab (≥102 IU/ml), in verum group became antiTPOab negative in contrast to 26.08% in control group, ($p < 0.006$). These observations suggest that the individualized homeopathic remedies do play an important role in immunomodulation of AIT.

Spontaneous recovery of serum TSH levels to within normal limits in children is well described and has been reported in studies from 29 to 73.6% of patients followed over a period of 2−5 years with variable sample size,[29−33] the recovery observed in the present study in 75.1% of patients with AIT/SCH after 18 months of homeopathic intervention was an important observation.

**Table 6** Change in serum antiTPOab titres on time scale

| *Time scale* | *Verum group* (n = *86)* | | *Control group* (n = *76)* | |
|---|---|---|---|---|
| | *Mean change from baseline (IU/ml)* | p *value* | *Mean change from baseline (IU/ml)* | p *value* |
| 12 months | −44.294 | 0.013 | 26.633 | 0.663 |
| 18 months | −56.916 | 0.002 | 15.821 | 0.604 |

**Table 7** Change serum antiTPOab titres in subjects with titres ≥102 IU/ml ($n = 42$)

| *TPO +ve subjects with antiTPOab ≥102 IU/ml* | *Median antiTPOab titres (baseline) IU/ml* | *Median antiTPOab titres (18 months) IU/ml* | *Median of difference IU/ml* | P *Value* |
|---|---|---|---|---|
| Verum group ($n = 19$) | 496.4 (range 108–600) | 18.8 IU (range 5–600) | 291.5 | 0.0035 |
| Control group ($n = 23$) | 372.5 (range 143–600) | 320 (range 5–600) | 31.7 | 0.1277 |

**Table 8** Progression to overt hypothyroidism in verum and control groups at the end of 18 months

| *Group* | *OH in verum group* | *OH in control group* |
|---|---|---|
| A | 0 | 05/17 (29.4%) |
| B | 0 | 02/20 (10%) |
| C | 0 | 01/39 (2.5%) |
| **Total** | **0/86** | **8/76 (10.5%)** |

**Table 9** Improvement indices (normalization of primary outcome measures; TSH and antiTPOab titers) after first prescription in verum group

| *S.No.* | *Name of remedy* | *Total patients* | *Patients improved* |
|---|---|---|---|
| 1 | Calcarea carbonica | 16 | 11 |
| 2 | Calcarea sulph | 05 | 02 |
| 3 | Carcinosinum | 01 | 01 |
| 4 | Causticum | 01 | 01 |
| 5 | Lachesis | 01 | 00 |
| 6 | Lycopodium | 02 | 02 |
| 7 | Medorrhinum | 04 | 02 |
| 8 | Natrum muriaticum | 20 | 12 |
| 9 | Phosphorus | 16 | 13 |
| 10 | Pulsatilla | 08 | 04 |
| 11 | Sepia | 01 | 00 |
| 12 | Silicea | 03 | 03 |
| 13 | Staphysagria | 01 | 01 |
| 14 | Sulfur | 04 | 03 |
| 15 | Tuberculinum | 03 | 02 |
| | **Total patients** | **86** | **57** |

Various studies report progression of SCH to OH in 5%–18% of patients per year.[29,34–37] In our study, we report an overt rate of 10.5% (average 7% per year), which occurred in patients from control group only. The progression rate of SCH to OH was more in cases who had high antiTPOab titers. In several studies on adults, it has been observed that individuals most likely to undergo progression are those with higher initial serum TSH levels and positive anti-thyroid antibodies.[36–40]

The medicines most frequently used and found effective include: *Phosphorus, Calcarea carb., Natrum mur., Silicea, Sulfur* and *Lycopodium, Pulsatilla*. All the cases were treated with 200C potency considering young aged population, subclinical condition and past unpublished experience of the investigators.

## Conclusion

Significant decline in TSH and antiTPOab titers indicates that the homeopathic intervention has potential to treat AIT and SCH and may delay the progression of SCH to the overt stage. Further study with more rigorous study designs is warranted.

## Conflict of interest

None declared.

## Acknowledgment

The financial assistance provided by the Department of AYUSH, Ministry of Health and Family Welfare, Government of India is thankfully acknowledged.

We also express profound gratitude to Dr. V K Khanna, former Principal, Nehru Homoeopathic Medical College and Hospital, New Delhi; Prof. C Nayak, former Director General; Dr. Anil Khurana, Deputy Director (H) Central Council for Research in Homeopathy for their support, guidance and co-operation. We are thankful for the administrative support provided by Dilli Homeopathic Anusandhan Parishad (www.delhihomeo.com). We are also grateful to the parents and their children who participated in the study.

## References

1 Marwaha RK, Tandon N, Garg MK, *et al*. Thyroid status two decades after salt iodisation: country-wide data in school children from India. *Clin Endocrinol (Oxf)*. 2012 Jun; **76**(6): 905–910.
2 Dabbaghmanesh MH, Sadegholvaad A, Ejtehadi F, Omrani GR. Persistence of goitre in children post-salt iodization in Islamic Republic of Iran: autoimmune status. *East Mediterr Health J* 2009; **15**(3): 584–590.
3 Hashemipour M, Amini M, Aminorroaya A, *et al*. High prevalence of goiter in an iodine replete area: do thyroid auto-antibodies play a role? *Asia Pac J Clin Nutr* 2007; **16**(3): 403–410.
4 Kabelitz M, Liesenkotter KP, Stach B, *et al*. The prevalence of antithyroid peroxidase antibodies and autoimmune thyroiditis in children and adolescents in an iodine replete area. *Eur J Endocrinol* 2003; **148**(3): 301–307.
5 Zois C, Stavrou I, Kalogera C, *et al*. High prevalence of autoimmune thyroiditis in schoolchildren after elimination of iodine deficiency in northwestern Greece. *Thyroid* 2003; **13**(5): 485–489.
6 Gopalakrishnan S, Chugh PK, Chhillar M, *et al*. Goitrous AIT in a pediatric population: a longitudinal study. *Pediatrics* 2008 sep; **122**(3): 670–674.
7 Jaruratana sirikul S, Leethanaporn K, Khuntigij P, Sriplung H. The clinical course of Hashimoto's Thyroiditis in children and adolescents: 6 years longitudinal follow up. *J Pediatr Endocrinol Meta* 2001 feb; **14**(2): 177–184.
8 Hak AE, Pols HA, Visser TJ, *et al*. Subclinical hypothyroidism is an independent risk factor for atherosclerosis and myocardial infarction in elderly women: the Rotterdam study. *Ann Intern Med* 2000; **132**: 270–278.

9 Imaizumi M, Akahoshi M, Ichimaru S, *et al*. Risk of ischaemic heart disease and all-cause mortality in subclinical hypothyroidism. *J Clin Endocrinol Metab* 2004; **89**: 3365−3370.
10 Walsh JP, Bremner AP, Bulsara ME, *et al*. Subclinical thyroid dysfunction as a risk factor for cardiovascular disease. *Arch Intern Med* 2005; **165**: 2467−2472.
11 Stangnaro Green A, Chen X, Bogelen JD, *et al*. The thyroid and pregnancy: a novel risk factor for very preterm delivery. *Thyroid* 2005; **15**(4): 3−357.
12 Prumel MF, Wiersinga WM. Thyroid autoimmunity and miscarriages. *Eur J Endocrinol* 2004; **150**(6): 7−755.
13 Pratt D, Novotny M, Kaberlein G, *et al*. Antithyroid antibodies and the association with non-organ specific antibodies in recurrent pregnancy loss. *Am J Obstet Gynecol* 1993; **168**: 837−841.
14 Cetinkaya E, Aslan A, Vindinlisan S, Ocal G. Height improvement by L-thyroxine treatment in Subclinical hypothyroidism. *Pediatr Int Off J Jpn Pediatric Soc* 2003 Oct; **45**(5): 534−537.
15 Svensson J, Erricsson UB, Nilsson P, Olsson C, Jonsson B, Ivarsson SA. Levothyroxine treatment reduces thyroid size in children and adolescents with chronic autoimmune thyroiditis. *J Clin Endocrinol Metabolism* 2006 May; **91**(5): 1729−1734.
16 Cerbone M, Capalbo D, Wasniewska M, *et al*. Cardiovascular risk factors in children with long standing untreated idiopathic subclinical hypothyroidism. *J Clin Endocrinol Metabolism* 2014 Aug; **99**(8): 2697−2703.
17 Brenta G, Vaisman M, Sgarbi JA, *et al*., Task Force on Hypothyroidism of the Latin American Thyroid Society. Clinical practice guidelines for the management of hypothyroidism. *Arq Bras Endocrinol Metabol* 2013 Jun; **57**(4): 265−291.
18 *WHO/UNICEF/ICCIDD Assessment of iodine deficiency disorders and monitoring their elimination*. WHO/NHD/01.1, 2001.
19 Random Allocation Software, Version 1.0.0 (developed and distributed for Institutional, educational and research purposes by University of Isfahan).
20 Karmisholt Jesper, Anderson S, Laurberg P. Variation in thyroid function tests in patients with stable untreated subclinical hypothyroidism. *Thyroid* 2008; **18**(3): 303−308.
21 Meier C, Staub JJ, Roth CB, *et al*. TSH controlled L-thyroxine therapy reduces cholesterol levels and clinical symptoms in subclinical hypothyroidism: A dobule blind, placebo controlled trial (Basel thyroid study). *J Clin Endocrinol Metab* 2001; **86**: 4860−4866.
22 Cooper DS. Subclinical hypothyroidism. *N Engl J Med* 2001; **345**: 260−265.
23 Cooper DS, Halpern R, Wood LC, *et al*. Supression of cell mediated immunity in hypothyroidism. *South Med J* 1995; **88**: 347−349.
24 Bianchi GP, Zaccheroni V, Solaroli E, *et al*. Health related quality of life in patients with thyroid disorders. *Qual Life Res* 2004; **13**: 45.
25 Carani C, Isoidori AM, Granata A, *et al*. Multicenter study on the prevalence of sexual symptoms in male hypo- and hyperthyroid patients. *J Clin Endocrinol Metab* 2005; **90**: 6472−6479.
26 Samuels MH, Schuff KG, Carlson NE, *et al*. Health status, mood and cognition in experimentally induced subclinical hypothyroidism. *J Clin Endocrinol Metab* 2007; **92**. 25−25.
27 Biondi B, Cooper DS. The clinical significance of subclinical thyroid dysfunction. *Endocr Rev* 2008; **29**: 76−131.
28 Radetti Giorgio. The natural history of the normal/mild elevated TSH serum levels in children and adolescents with Hashimoto's thyroiditis and isolated hyperthyrotropinaemia: a three year follow-up. *Clin Endocrinol (Oxf)*. 2011 Oct 10; http://dx.doi.org/10.1111/j.1365-2265.2011.042.
29 Fava A, Oliverio R, Giuliano S, *et al*. Clinical evolution of autoimmune thyroiditis in children and adolescence. *Thyroid* 2009; **19**(4): 361−367.
30 Moore DC. Natural course of subclinical hypothyroidism in childhood and adolescence. *Archives Pediatrics Adolesc Med* 1996; **150**(3): 293−297.
31 Lazar L, Frumkin RBD, Battat E, Lebenthal Y, Phillip M, Meyerovitch J. Natural history of thyroid function tests over five years in large pediatric cohort. *J Clin Endocrinol Metab* 2009; **94**(5): 1678−1682.
32 Radetti Giorgio, Gottardi E, Bona G, Corrias A, Salardi S, Loche S. The natural history of euthyroid hashimoto thyroiditis in children. *J Pediatrics* 2006; **149**(6): 827−832.
33 Wasniewska M, Salerno M, Cassio A, *et al*. Prospective evaluation of the natural course of idiopathic subclinical hypothyroidism in childhood and adolescence. *Eup J Endocrinol* 2009; **160**(3): 417−421.
34 Vanderpump MP, Tunbridge WM, French JM, *et al*. The incidence of thyroid disorders in the community: A 20 year follow up of the Whickham survey. *Clin Endocrinol (Oxf)* 1995; **43**: 55−68.
35 Ross DS. Subclinical hypothyroidism. In: Braverman LE, Utiger RD (eds). *Werner and Ingbar's the thyroid*. 7th ed. Philadelphia, PA: Lippencott-Raven, 1996, pp 1010−1015.
36 Tunbridge F, Brewis M, French JM, *et al*. Natural history of autoimmune thyroiditis. *Br Med J* 1981; **282**: 258−262.
37 Kabadi UM. Subclinical hypothyroidism. Natural course of the syndrome during a prolonged follow up study. *Arch Intern Med* 1993; **153**: 957−961.
38 Huber G, Staub JJ, Meier C, *et al*. Prospective study of the spontaneous course of SCH: prognostic value of thyrotropin, thyroid reserve and thyroid antibodies. *J Clin Endocrinol Metab* 2002; **87**: 3221−3226.
39 Diez JJ, Iglesias P. Spontaneous subclinical hypothyroidism in patients older than 55 years: An analysis of natural course of and risk factors for the development of overt thyroid failure. *J Clin Endocrinol Metab* 2004; **89**: 4890−4897.
40 Bagachi N, Brown TR, Parish RF. Thyroid dysfunction in adults over age 55 years. A study in an urban US community. *Arch Intern Med* 1990; **150**: 785−787.