ASSESSMENT OF SUB-CLINICAL HYPOTHYROIDISM AND HYPERTHYROIDISM STATUS IN ADULT PATIENTS

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ABSTRACT:
Generally sub-clinical hypothyroidism and hyperthyroidism are diagnosed on the basis of laboratory evaluation and mostly such patients’ manifest with mild or devoid of any clinical signs or symptoms. It is known to be a common disorder, also refer to as sub-clinical thyroid disease particularly in middle-aged and elderly individuals. Moreover, it is reported that most patients who were found to have sub-clinical hyperthyroidism depicts TSH values between 0.1 to 0.45 µIU/L and those with sub clinical hypothyroidism between 4.5 to 10 µIU/L. In this respect, studies were carried out during January 2006-Dec 2007 in 230 adult patients (98 males, 132 females) for evaluation of sub-clinical thyroid disease. TSH and thyroid hormones (T3 T4, FT3 and FT4) levels of all patients were determined by standard methods to assess the extent of the sub-clinical status. In female group which comprised of 132 patients, a total of n = 28 (21.20%) exhibited sub-clinical thyroid disorders [n = 18; 13.63% Sub-clinical hypothyroidism, n = 10; 7.57% sub-clinical hyperthyroidism], whereas 59 (44.69%) exhibited true-thyroid disorder. Subsequent assessment in males shows that out of 98 patients; n = 15 patients (15.30%) showed sub-clinical thyroid disorders [n = 9; 9.18% sub-clinical hypothyroidism; n = 6; 6.12% sub-clinical hyperthyroidism], whereas 20 (20.40%) exhibited true thyroid disorder. In both gender groups, 45 and 63 individuals were without any sub-clinical or true thyroid disease, respectively and thus presented as normal. It is concluded that sub-clinical thyroid dysfunction prevails in females with 12.17% occurrence whereas 6.52% in males. Furthermore, the evaluation and subsequent presence of sub-clinical conditions predicts future progression to overt disease. Through review of existing literature and reports, it is also advisable that routine screening for thyroid disease through clinical investigations aided with lab findings be promoted, especially in pregnant women.

Keywords: SHypo, SHyper, Sub-Clinical.

INTRODUCTION
Subclinical hypothyroidism (SHypo) and hyperthyroidism (SHyper) represent the earliest stages of thyroid dysfunction and commonly known as sub-clinical thyroid disorders. Sub-clinical hypothyroidism is defined as an elevation in serum thyroid stimulating hormone (TSH) above upper limit of the reference range with normal serum free tetra-iodo-thyronine (free thyroxine, FT4) concentration; whereas sub-clinical hyperthyroidism is defined as a decrease in serum TSH below the reference range with normal serum free tri-iodo-thyronine (FT3) and tri-iodo thyronine (T3) concentration (Col et al., 2004; Wilson and Curry, 2005; Stockli, 2007). Most patients with SHypo and SHyper have mild or even devoid of any signs and symptoms of thyroid dysfunction; therefore its
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diagnosis is based on laboratory evaluation (Col et al., 2004; Gaby, 2004; Krysiak et al., 2006). Since the risk of sub-clinical thyroid dysfunction increases with age, particularly sub-clinical hypothryoidism, it is suspected that the number of cases may increase as the population ages (Vanderpump et al., 1995; Canaris et al., 2000; Paul et al., 2006). It is a known fact that sub-clinical hypothryoidism is much more common than hyperthyroidism (Canaris et al., 2000; Wilson and Curry, 2005). Nonetheless, early detection and treatment of subclinical thyroid dysfunction is potentially beneficial, especially in children and pregnant women (Lerch et al., 1999; Sheth et al., 1999; Schlienger et al., 2003; Krysiak et al., 2006). In addition, routine screening of TSH and thyroid hormones level (FT3, T3, FT4, T4) for suspected or diagnosed patients is recommended. It is also agreeable to process a strong case finding approach towards patients presented with signs and symptoms that suggests the possibility of thyroid dysfunction (Col et al., 2004), which then facilitates the clinical management of such cases (Gagnon et al 2008). Since the significance of this particular clinical condition is imperative regarding patients’ care and treatments, thus we evaluated sub-clinical thyroid dysfunction status of several male and female patients in our setting. The study will provide a base-line data in our setup and assist in future investigation, analysis and strategic planning of treatment and management of sub-clinical thyroid dysfunctions.

MATERIALS AND METHODS

Patients:
Two hundred and thirty patients (98 males, 132 females) were selected from Endocrinology OPDs and wards of Liaquat National Hospital and Govt Lyari general Hospital, Karachi, and their clinical status and related lab investigations were obtained. The study period was from January 2006 to December 2007. Inclusion criteria: Adult patients who were suspected of or diagnosed with sub-clinical thyroid disease between the age group of 19 to 66 years. Exclusion criteria; were patients with ischemic heart disease, cerebrovascular and neurological diseases, diabetes mellitus, chronic renal impairment, known psychological illnesses, previous history of thyroid disease or previous thyroxine therapy, asthma and pregnancy. The patients were grouped in each gender according to age. Age groups for females were = 19-30 yrs, 31-45 yrs, 46-59 yrs and 60-66 yrs. In Males, age groups were = 19-30 yrs, 31-45 yrs and 45-58 yrs. The patients were further classified according to the presence of sub-clinical dysfunction or true thyroid disorders. The subgroups were also abbreviated as, male sub-clinical thyroid disease (MSCTD) and female sub-clinical thyroid disease (FSCTD). Patients’ subgroups and their respective patients were, for females = 19-30 yrs (n = 26), 31-45 yrs (n = 28), 46-59 yrs (n = 46) and 60-66 yrs (n = 32) and for males, 19-30 yrs (n = 30), 31-45 yrs (n = 36) and 45-58 yrs (n = 23).

Hormone Analysis:
Six ml blood samples were collected from each patients, serum was separated and stored at -20°C until analyzed. Thyroid stimulating hormone (TSH) and thyroid hormones (T3 T4, FT3 and FT4) levels were measured on automated immunoassay analyzers (Elecsys 2010, Roche Diagnostics, Basel) using Electro-chemiluminescence technology according to manufacturer’s instructions. Reference ranges are provided in result tables.

Data presentations:
The results are presented in tabulated as well percent occurrence forms for clarity. Where necessary comparable thyroid hormone and TSH data are presented in groups for conclusion. Statistical calculation was performed using Microsoft SPSS ver 13 (USA).

RESULTS

Results are summarized in Figs. 1-7 and Tables 1-4. Briefly, 230 patients, Male n = 98,
females n = 132 were included in the study, presented with suspicion and/or confirmed diagnosis of thyroid dysfunction (Fig. 1). The subgroups were also abbreviated as male sub-clinical thyroid disease (MSCTD) and female sub-clinical thyroid disease (FSCTD). Results and Table 1 (Fig. 2) shows FSCTD patients and are expressed in each column as total number in that group and relative percentage w.r.t. main or preceding group. A total of 28 female patients (21.20%) [n = 18; 13.63% Sub-clinical hypothyroidism, n = 10; 7.57% sub-clinical hyperthyroidism] out of 132 showed sub-clinical thyroid disorders (SCTD), whereas 59 (44.69%) exhibited true-hypothyroidism (T-Hypo) and Hyperthyroidism (T-Hyper). Moreover, 45 (34.09%) subjects out of 132 exhibited normal thyroid hormone and TSH levels and devoid of any sub-clinical or true thyroid disorders (True-TD). N-TD represent the group which was found be devoid of any altered thyroid state.

### Table 1
Female subjects (n = 132) tested for sub-clinical and true thyroid disorders (Hyperthyroidism; Hypothyroidism).

<table>
<thead>
<tr>
<th>Groups w.r.t. age ranges 19 to 66 yrs</th>
<th>Number of subjects screened</th>
<th>SCTD N, (%)</th>
<th>S-Hypo</th>
<th>S-Hyper</th>
<th>True-TD</th>
<th>T-Hypo</th>
<th>T-Hyper</th>
<th>N-TD</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 to 30 yrs</td>
<td>26</td>
<td>4 (15.38%)</td>
<td>2</td>
<td>2</td>
<td>14 (53.84%)</td>
<td>9</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>31 to 45 yrs</td>
<td>28</td>
<td>6 (21.42%)</td>
<td>4</td>
<td>2</td>
<td>15 (53.57%)</td>
<td>10</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>46 to 59 yrs</td>
<td>46</td>
<td>7 (15.21%)</td>
<td>4</td>
<td>3</td>
<td>21 (45.65%)</td>
<td>15</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>60 to 66 yrs</td>
<td>32</td>
<td>11 (34.37%)</td>
<td>8</td>
<td>3</td>
<td>9 (28.12%)</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>28 (21.21%)</td>
<td>18</td>
<td>10</td>
<td>59 (44.69%)</td>
<td>39</td>
<td>20</td>
<td>45</td>
</tr>
</tbody>
</table>

Results are expressed in each column as total number in that group and relative percentage w.r.t. main or preceding group. 28 (21.21%) [n = 18; 13.63% Sub-clinical hypothyroidism (S-Hypo), n = 10; 7.57% sub-clinical hyperthyroidism-S-Hyper] out of 132 showed sub-clinical thyroid disorders (SCTD), whereas 59 (44.69%) exhibited true-hypothyroidism (T-Hypo) and Hyperthyroidism (T-Hyper). Moreover, 45 (34.09%) subjects out of 132 exhibited normal thyroid hormone and TSH levels and devoid of any sub-clinical or true thyroid disorders (True-TD). N-TD represent the group which was found be devoid of any altered thyroid state.

### Table 2
Male subjects (n = 98) tested for sub-clinical and true thyroid disorders (Hyperthyroidism; Hypothyroidism).

<table>
<thead>
<tr>
<th>Groups w.r.t. age ranges 19 to 58 yrs</th>
<th>Number of subjects screened</th>
<th>SCTD N, (%)</th>
<th>S-Hypo</th>
<th>S-Hyper</th>
<th>True-TD</th>
<th>T-Hypo</th>
<th>T-Hyper</th>
<th>N-TD</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 to 30 yrs</td>
<td>30</td>
<td>5 (16.6%)</td>
<td>3</td>
<td>2</td>
<td>8 (26.66%)</td>
<td>7</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>31 to 45 yrs</td>
<td>36</td>
<td>7 (19.40%)</td>
<td>4</td>
<td>3</td>
<td>5 (13.88%)</td>
<td>4</td>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td>45 to 58 yrs</td>
<td>23</td>
<td>3 (13.04%)</td>
<td>2</td>
<td>1</td>
<td>7 (30.43%)</td>
<td>4</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>98</td>
<td>15 (15.30%)</td>
<td>9</td>
<td>6</td>
<td>20 (20.40%)</td>
<td>15</td>
<td>5</td>
<td>63</td>
</tr>
</tbody>
</table>

Results are expressed in each column as total number in that group and relative percentage w.r.t. main or preceding group. 15 (15.30%) %) [n = 9; 9.18% sub-clinical hypothyroidism (S-Hypo); n = 6; 6.12% sub-clinical hyperthyroidism (S-Hyper)] out of 98 showed sub-clinical thyroid disorders (SCTD), whereas 20 (20.40%) exhibited true hypothyroidism (T-Hypo) and Hyperthyroidism (T-Hyper). Moreover, 63 (64.28%) subjects out of 98 exhibited normal thyroid hormone and TSH levels and devoid of any sub-clinical or true thyroid disorders (True-TD). N-TD represent the group which was found be devoid of any altered thyroid state.
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In Males; results are expressed in each column as total number in that group and relative percentage w.r.t. main or preceding group. Therefore, a total of 15 male patients (15.30%) [n = 9; 9.18% sub-clinical hypothyroidism; n = 6; 6.12% sub-clinical hyperthyroidism] out of 98 showed sub-clinical thyroid disorders, whereas 20 (20.40%) exhibited true-thyroid disorders (Table 2, Figs. 5, 6). Age-wise distribution of male patients is expressed as, n = 5 (19-30 yrs), n = 7 (31-45 yrs) and n = 3 (45-58 yrs) were diagnosed with SCTD (Table 2) (Fig. 3).

Moreover, 63 (64.28%) subjects out of 98 exhibited normal thyroid hormone and TSH levels and devoid of any sub-clinical or true thyroid disorders (Fig. 4).

In Males; results are expressed in each column as total number in that group and relative percentage w.r.t. main or preceding group. Therefore, a total of 15 male patients (15.30%) [n = 9; 9.18% sub-clinical hypothyroidism; n = 6; 6.12% sub-clinical hyperthyroidism] out of 98 showed sub-clinical thyroid disorders, whereas 20 (20.40%) exhibited true-thyroid disorders (Table 2, Figs. 5, 6). Age-wise distribution of male patients is expressed as, n = 5 (19-30 yrs), n = 7 (31-45 yrs) and n = 3 (45-58 yrs) were diagnosed with SCTD (Table 2) (Fig. 3).

The patients diagnosed with true thyroid disorders were 59 females [(Table 1, Fig. 4); n = 14 (19-30 yrs), n = 15 (31-45 yrs), n = 21 (46-59 yrs) and n = 9 (60-66 yrs)] and 20 males [(Table 2, Fig. 7); n = 8 (19-30 yrs), n = 5 (31-45 yrs) and n = 7 (45-58 yrs)]. Percent occurrence of sub-clinical thyroid dysfunction with respect to age-subgroups were found to be in females; n = 4; 15.38% (19-30 yrs), n = 6; 21.42% (31-45 yrs), n = 7; 15.21% (46-59 yrs) and n = 11; 34.37% (60-66 yrs) and in Males the occurrence were; n = 5; 16.60% (19-

### Table 3

<table>
<thead>
<tr>
<th>Groups w.r.t. age ranges</th>
<th>Sub-clinical Hypothyroid</th>
<th>Sub-clinical Hyperthyroid</th>
<th>True Hypothyroid</th>
<th>True Hyperthyroid</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 to 66 yrs</td>
<td>aTSH; bFT4</td>
<td>aTSH; bFT3; cT3</td>
<td>a,cTSH; bFT4</td>
<td>a,cTSH; bFT3; cT3</td>
</tr>
<tr>
<td>19 to 30 yrs</td>
<td>7.98; 1.2</td>
<td>0.28; 3.8; 1.3</td>
<td>19.05; 0.40</td>
<td>0.03; 6.91; 3.91</td>
</tr>
<tr>
<td>31 to 45 yrs</td>
<td>8.00; 1.5</td>
<td>0.21; 3.4; 1.4</td>
<td>20.43; 0.30</td>
<td>0.02; 6.21; 3.45</td>
</tr>
<tr>
<td>46 to 59 yrs</td>
<td>9.08; 1.8</td>
<td>0.30; 3.21; 1.8</td>
<td>20.01; 0.61</td>
<td>0.18; 5.98; 3.89</td>
</tr>
<tr>
<td>60 to 66 yrs</td>
<td>11.09; 1.7</td>
<td>0.10; 3.99; 1.5</td>
<td>25.55; 0.31</td>
<td>0.01; 7.45; 4.01</td>
</tr>
</tbody>
</table>

Results are expressed as mean of values of each samples tested for required parameter. **Units:** TSH = 0.45 to 4.5 µIU/L; FT4 = 0.9 to 1.9 µg/dl; FT3 = 2.6 to 5.1 pg/ml; T3 = 0.8 to 2.0 ng/ml; T4 = 5.1 to 14.10 µg/dl. *Significant difference at *P* < 0.01, **Significant difference at *P* < 0.05, ***Significant difference at *P* < 0.001.

### Table 4

<table>
<thead>
<tr>
<th>Groups w.r.t. age ranges</th>
<th>Sub-clinical Hypothyroid</th>
<th>Sub-clinical Hyperthyroid</th>
<th>True Hypothyroid</th>
<th>True Hyperthyroid</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 to 58 yrs</td>
<td>aTSH; bFT4</td>
<td>aTSH; bFT3; cT3</td>
<td>a,cTSH; bFT4</td>
<td>a,cTSH; bFT3; cT3</td>
</tr>
<tr>
<td>19 to 30 yrs</td>
<td>8.15; 1.6</td>
<td>0.31; 3.4; 1.8</td>
<td>18.19; 0.56</td>
<td>0.09; 7.33; 3.01</td>
</tr>
<tr>
<td>31 to 45 yrs</td>
<td>6.75; 1.5</td>
<td>0.32; 3.6; 1.7</td>
<td>19.66; 0.47</td>
<td>0.06; 7.90; 3.12</td>
</tr>
<tr>
<td>45 to 58 yrs</td>
<td>7.76; 1.2</td>
<td>0.21; 2.9; 1.6</td>
<td>20.22; 0.51</td>
<td>0.07; 6.01; 4.22</td>
</tr>
</tbody>
</table>

Results are expressed as mean of values of each samples tested for required parameter. **Units:** TSH = 0.45 to 4.5 µIU/L; FT4 = 0.9 to 1.9 µg/dl; FT3 = 2.6 to 5.1 pg/ml; T3 = 0.8 to 2.0 ng/ml; T4 = 5.1 to 14.10 µg/dl. *Significant difference at *P* < 0.01, **Significant difference at *P* < 0.05, ***Significant difference at *P* < 0.001.
occurrence of SCTD was 12.17% in females and 6.52% in males.

Thyroid hormone levels analyzed in female patient groups and subgroups are presented in Table 3. Significant variation was noted for FT4 levels (P < 0.01) in subclinical hypothyroid patients when compared with true hypothyroid and in FT3 and T3 levels (P<0.01) in subclinical hyperthyroidism when compared with true hyperthyroid patient group. However, FT4 level showed no alteration in subclinical hypothyroid when compared with normal referral range, although showing moderately significant low levels (P<0.05) in true hypothyroid group when subjected to same comparison. In groups of true hypothyroidism, TSH levels were analyzed to be significantly high (P<0.01) as compared to subclinical hypothyroid (Table 3). Furthermore patients in subgroups of true hyperthyroidism exhibited significantly (P<0.01) altered TSH levels as compared to subclinical hyperthyroid patients as well as normal referral ranges.

Analysis of thyroid hormones in groups and subgroups of male patients are summarized in Table 4. TSH level evaluated in the subgroup of subclinical hypothyroidism
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exhibited moderately significantly elevated levels (P< 0.05) whereas highly significant elevation was noted in true hypothyroidism (P<0.001). Moreover, significantly declined levels of TSH (P< 0.001) were noted in true hyperthyroidism patients as compared to reference values (Table 4). However in sub group of sub-clinical hyperthyroidism, only TSH levels were shown to be altered at a moderately significant levels (P<0.05) whereas FT3 and T3 were within the normal reference range.

**DISCUSSION**

It is documented that the etiology of sub-clinical hypothyroidism (SHypo) is the same as the etiology of overt hypothyroidism.
It is most often caused by chronic lymphocytic thyroiditis (goitrous Hashimoto's thyroiditis and atrophic thyroiditis), an autoimmune disorder of the thyroid gland that is the most common cause of decreased thyroid hormone production in patients with acquired mild, sub-clinical, or overt hypothyroidism (Surks and Ocampo, 1996; Roberts and Ladenson, 2004; Ross, 2005; Krysiak et al., 2007). Other causes of primary hypothyroidism may result from therapies that destroy thyroid tissue such as radioactive iodine treatment or external radiation therapy. Mild and overt hypothyroidism is common after external

Fig. 5. Distribution of male patients (n=98) according to sub-clinical and thyroid disease.

Fig. 6. Distribution of male patients (n=15) with sub-clinical hypo and hyperthyroidism according to age group.
radiotherapy of the head and neck area and develops gradually within the first year with a risk that appears to be dose-dependent (Singer, 2005; Biondi and Cooper, 2008).

The most common cause of sub-clinical hyperthyroidism (SHyper) is reported to be exogenous such as due to unintentional excessive replacement therapy in hypothyroid patients or to intentional TSH suppressive therapy for benign or malignant thyroid disease (Anker et al., 1998; Ross, 2000; Toft, 2001; Cooper, 2003; Biondi et al., 2005; Papi et al., 2005; Cooper et al., 2006; Biondi and Cooper, 2008). Endogenous sub–clinical hyperthyroidism (SHyper) is commonly associated with autonomous thyroid function as occurs in Graves’ disease, multinodular goiter, and solitary autonomously functioning thyroid nodules (AFTN) (Papi et al., 2005; Pearce and Himsworth, 1984; Roos, 2005). In Graves’ disease, SHyper may resolve spontaneously without treatment. Alternatively, it may be transitory during treatment with antithyroid drugs or after radioiodine therapy (because of delayed recovery of the suppressed pituitary thyrotrophic cells) (Cooper, 2003), or it may be persistent because of the continued thyroidal autonomy. Long-standing SHyper with a progressive increase in thyroid hormone levels, sometimes preceding the onset of overt hyperthyroidism, is frequent in patients with multinodular goiter and autonomously functioning thyroid adenoma (Ross, 2005; Pearce and Himsworth, 1984).

In present study, as stated earlier, 230 patients, both females and males, were included in the study who visited laboratory or the OPD-clinics for evaluation of their suspected or well-diagnosed altered thyroid status. The assessment depicts that 28 female patients (21.21%) out of 132 showed sub-clinical thyroid disorders, whereas 59 (44.69%) exhibited true thyroid disease. Moreover, the remaining 45 (34.09%) female subjects suspected of an altered thyroid status exhibited normal thyroid hormone and TSH levels and devoid of any sub-clinical or true thyroid disease disorders. Similarly, in male group of patients, 15 (15.30%) showed sub-clinical thyroid disorders from a total of 98, whereas 20 (20.40%) exhibited true thyroid disease. In case of male group of patients also, a considerable percentage of 64.28% (n = 63) exhibited normal thyroid hormone and TSH levels, although included because of suspicion.
of altered thyroid state, however were found to be devoid of any sub-clinical or true thyroid disorders.

It is reported that sub-clinical hypothyroidism occurs in 4% to 10% of the general population, and is especially prevalent in elderly women (Vanderpump et al., 1995; Canaris et al., 2000; Paul et al., 2006). The definition of sub-clinical thyroid dysfunction is based on serum TSH determination. There is substantial uncertainty concerning the consequences of untreated sub-clinical hypothyroidism and hyperthyroidism, as well as the benefit of initiating treatment. Potential risks of sub-clinical hypothyroidism include progression to overt hypothyroidism, dyslipidemia, cardiovascular complications, and neurological and neuropsychiatric effects (Krysiak et al., 2006; Adrees et al., 2008). In turn, sub-clinical hyperthyroidism represents a considerable risk factor for atrial fibrillation in the elderly patients and for postmenopausal osteoporosis (Krysiak et al., 2006).

A study evaluating the prevalence of thyroid diseases and their relationship to autoimmunity in a population of Khulna district (Bangladesh) where goitre is not endemic, exhibited that female outnumbered male, the ratio being 2.5:1 with preponderance of female subjects in all disease groups (Paul et al., 2006). In an earlier study, it was argued that sub-clinical thyroid state, especially hypothyroidism, is predominant among 6% of general population in Netherlands, of which females are more affected (Wiersinga, 1995). These studies are good agreement with our report where sub-clinical thyroid disease/disorder was noted to be more profound in female (12.52%) than in males (6.52%).

Regardless of all the advancements in clinical practices and treatments, it remains a dilemma, whether to treat sub-clinical hypothyroidism (SHypo) or not? (Cooper, 2004; Ringel and Mazzaferrri, 2005; Biondi and Cooper, 2008). It was observed that most clinicians treat SHypo patients who have a serum TSH concentration above 10 µIU/L, whereas opinions differ about the management of mild disease in which TSH ranges between 4.5 and 10 µIU/L, especially in elderly asymptomatic patients. Although treatment may be beneficial in individuals with serum TSH lower than 0.1 µIU/L or higher than 10 µIU/L, most persons found to have sub-clinical thyroid dysfunction have values between 4.5 and 10 µIU/L, for which the benefits of treatment are not clearly established (Col et al., 2004). It was suggested that until clear therapeutic benefits were established for treating sub-clinical thyroid dysfunction, general population screening for these conditions is not recommended. International evaluation studies reports that, some endocrinologists support the idea that treatment is indicated in patients with SHypo, even those with a mild TSH increase, in the presence of risk factors (Biondi et al., 2004; Wilson and Curry 2005; Roos et al., 2007), whereas others believe that treatment is seldom necessary (Cooper, 2003; Helfand, 2004; Rossi et al., 2006). According to the American College of Physicians’ guidelines, the potential benefits of treating patients with SHyper are only theoretical, and the management of patients without clinical findings is not clear (Clinical Guideline, 1998). Recommendation by a panel of experts suggested against routine treatment for those patients whose TSH is mildly decreased; treatment was recommended only for those with serum TSH levels <0.1 mIU/L who were older than 60 years and for those with or at increased risk of heart disease, osteopenia or osteoporosis, or those with symptoms of hyperthyroidism (Rossi et al., 2006). Similar recommendations were made by American Association of Clinical Endocrinologists, ATA and the Endocrine Society (Bonnema et al., 2002). A case-based mail survey of ATA members on the management of patients with SHyper showed that most recommended observation alone for young patients with a low but detectable serum TSH (84%) or an undetectable TSH (58%) (McDermott et al., 2003). Furthermore, the options for definitive therapy are based on the considerations...
It is concluded that sub-clinical thyroid dysfunction predicts future progression to overt disease and suggested that individuals with serum TSH levels lower than 0.1 µIU/L or higher than 10 µIU/L are more likely to be prone to the disease and thus benefit from treatment. Therefore, it is cautiously recommended that, if evidence backed the diagnoses that the patients do have SCTD, initiating treatment for sub-clinical hypothyroidism may prevent symptoms and signs of overt disease. It is also advisable that routine screening for thyroid disease through clinical status aided with lab findings be promoted, especially in pregnant women. The study is in progress to evaluate the extent of sub-clinical thyroid dysfunction in larger groups including children and pregnant women.

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