Original Article

Nonspecific symptoms of simple goiter and response to both medical and surgical treatment

Abdul Wahab Basheer Abdul Rahman, Clinical MD, Surgeon, Ahmed Mohammed Ahmed Dirweesh, M.B.,B.S., Mohamed ElMakki Ahmed, MS FRCSI*

Department of Surgery, Faculty of Medicine, University of Khartoum, Sudan*

Abstract

Objective
Simple goiter is a common disease in Sudan. Patients present either because of pressure symptoms or unsightly looking goiter. In addition, several non specific symptoms (NSS) are often complained by patients, those were namely neck pain, shoulder pain, headache, fatigue, chest pain and backache. The objective of this study is report on these symptoms, their significance and evaluate their response to medical and surgical treatment.

Patients and Methods
Seventy-five patients with simple goiter (SG) who had thyroidectomy, 100 patients with SG medically treated and 125 normal controls were studied. All NSS were recorded before and after both medical and surgical treatment. Medical treatment given was L thyroxine 100 mg once/day and surgery entails near total thyroidectomy.

Results
The main indication for thyroidectomy was pressure symptoms (94%). NSS were significantly more in the surgical group than the medical group and similarly more in the medical group compared to normal control subjects. NSS were more present with increased size of goiter as classified by Perez.

Symptoms response to thyroidectomy is significantly better than the medically treated group (85% response vs 9%) (p<0.002).
Conclusion
Non specific symptoms are often the main complaints of patients with simple goiter and are much related to the size of the goiter and to the presence of pressure symptoms. The mechanism of causation of these complaints are difficult to explain in full, but a combination of neural and weight dragging may be the most likely underlying cause. These NSS respond significantly better to thyroidectomy than to medical treatment with L thyroxine.

Keywords: thyroid, thyroxine, goiter, headache, cervical pain

Introduction
Goitre is endemic in various parts of The Sudan. Thyroidectomy for simple goiter is a daily procedure in all general surgical units in Khartoum. The most common indications are pressure symptoms and a large unsightly goiter\(^1\). However, several other NSS are often mentioned by the patient who are usually genuine, but are difficult to explain. In a pilot study including 30 patients with simple goiter interviewed in Khartoum Teaching Hospital, six symptoms were identified. Those symptoms were namely: shoulder pain, backache, neck pain, chest pain, fatigability and headache. Literature search showed no direct address of this problem. This study aimed at identifying the significance of these symptoms and their response to both medical and surgical treatment.

Patients and Methods
Three groups of subjects were studied. The surgical group (SG); those were patients with simple goitre who underwent thyroidectomy due to either cosmeses or pressure symptoms. The latter was defined in this study as one or more of those symptoms: nocturnal choking, dyspnoea on walking a distance or climbing stairs, using more than one pillow to sleep and preference of lying on either side during sleep. Confirmation of pressure effect was on radiological evidence of deviation and/or compression of the trachea or retrosternal extension. The other indication for surgery was an unsightly goitre as stated by the patient or a goître causing discomfort. The second group was the medical group (MG) that included patients treated with L thyroxine by the physicians, because there was no indication for surgery and/or the patient was unwilling to have surgery. The third groups were normal subjects accompanying patients to the out patients department. The size of the goiter was graded according to Peres classification\(^2\). All patients had thyroid function test. Patients with goitre and NSS were investigated for medical causes according to the symptoms. Those with neck, back and shoulder pain and/or headache were investigated to exclude any skeletal or neurological cause. Those with chest pain had cardiac and chest evaluation. Those with fatigue had investigations including blood sugar, renal function and blood chemistry. Response to treatment was assessed as complete response when all symptoms disappear. "Some response" when more than 50% of symptoms disappear.

Statistical analysis
Chi square was used with a level of significance value of \(p = <0.05\)

Results
There were 75 patients in the surgical group (SG), 100 patients in the medical group (MG) and 125 in the controls group (CG). In the SG all patients had multinodular goitre while in the medically treated group (MG) there were 73 with diffuse goiter and 27 with multinodular goitre.

The mean age and SD of the SG was 44.1±11.1 years, for the MG was 43.8 ± 9.1 years and for the CG was 41.1 + 11.1. The male female ratio was 1:7 in the SG, 1:8 in the MG and 1: 9 in the CG. Thyroid
function tests were within normal range in all patients (TSH, T4,T3).

Table 1 shows that most of the SG had pressure symptoms (94.7%) and had significantly more of the NSS than the medical group, apart from shoulder pain and chest pain. The medical group also had significantly more of NSS than the controls. It is to be noted that patients with backache has as well neck pain. The symptom of chest pain is rather similar in both SG and MG and not significantly different from the controls.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Surgical patients</th>
<th>Medical patient</th>
<th>Control</th>
<th>P* value</th>
<th>P** value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure symptoms</td>
<td>95%</td>
<td>19%</td>
<td>0.00</td>
<td>0.00</td>
<td>0.001</td>
</tr>
<tr>
<td>Shoulder pain</td>
<td>72%</td>
<td>67%</td>
<td>15.2%</td>
<td>0.06</td>
<td>0.006</td>
</tr>
<tr>
<td>Backache</td>
<td>36%</td>
<td>15%</td>
<td>19.2%</td>
<td>0.002</td>
<td>0.1</td>
</tr>
<tr>
<td>Neck pain</td>
<td>60%</td>
<td>47%</td>
<td>7.2%</td>
<td>0.001</td>
<td>0.006</td>
</tr>
<tr>
<td>Chest pain</td>
<td>37.3%</td>
<td>34%</td>
<td>24.8%</td>
<td>0.06</td>
<td>0.05</td>
</tr>
<tr>
<td>Fatigue</td>
<td>54.7%</td>
<td>50%</td>
<td>31.2%</td>
<td>0.01</td>
<td>0.06</td>
</tr>
<tr>
<td>Headache</td>
<td>36%</td>
<td>22%</td>
<td>19.2%</td>
<td>0.001</td>
<td>0.002</td>
</tr>
</tbody>
</table>

P* value compares the SG versus MG
P** value compares MG versus Controls

The presence of these NSS is more related to size of the goiter as classified according to Perez (Table 2).

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Perez Ia</th>
<th>Perez Ib</th>
<th>Perez II</th>
<th>Perez III</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder pain</td>
<td>9 (6)</td>
<td>18 (11)</td>
<td>33 (18)</td>
<td>7 (19)</td>
<td>67</td>
</tr>
<tr>
<td>Back pain</td>
<td>11(2)</td>
<td>15 (7)</td>
<td>19 (6)</td>
<td>6 (12)</td>
<td>51</td>
</tr>
<tr>
<td>Neck pain</td>
<td>8 (3)</td>
<td>9 (9)</td>
<td>24 (18)</td>
<td>6 (15)</td>
<td>47</td>
</tr>
<tr>
<td>Chest pain</td>
<td>7 (2)</td>
<td>11 (6)</td>
<td>15 (9)</td>
<td>1 (11)</td>
<td>34</td>
</tr>
<tr>
<td>Fatigability</td>
<td>4 (3)</td>
<td>21 (10)</td>
<td>21 (15)</td>
<td>4 (13)</td>
<td>50</td>
</tr>
<tr>
<td>Headache</td>
<td>1 (2)</td>
<td>10 (13)</td>
<td>9 (9)</td>
<td>2 (12)</td>
<td>22</td>
</tr>
</tbody>
</table>

Thyroidectomy was associated with good response of NSS in 86% versus 9% response in those medically treated patients (p<0.002). None of the surgically treated group had persistence of all NSS compared to 67% in the medically treated group. (Table 3).

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Surgical group</th>
<th>Medical group</th>
</tr>
</thead>
<tbody>
<tr>
<td>All symptoms relief</td>
<td>86%</td>
<td>9%</td>
</tr>
<tr>
<td>Some symptoms relief</td>
<td>14%</td>
<td>24%</td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>67%</td>
</tr>
</tbody>
</table>

Discussion
Symptoms of thyroid disease are usually classified as those due to hyper or hypo function, pressure on nearby structures. Infiltration due to malignancy or symptoms due to inflammation. However, other symptoms that do not fit into these areas are not often critically evaluated by the treating doctor. Symptoms like neck pain, shoulder pain, headache and chest pain may be linked via neural supply and weight traction. Fatigue in absence of frank hypothyroidism is difficult to explain, however an
underlying metabolic basis should be considered. Increased d-lactic acid intestinal bacteria was noted in patients with chronic fatigue syndrome (CFS) and neurological impairment (3). Chronic fatigue syndrome (CFS) is characterized by severe and prolonged fatigue, sore throat, muscle pain, headache and memory disturbance but is mostly linked with personality character (4). The syndrome (CFS) is also associated with major depression (5) and more closely linked with cancer (Cancer-related fatigue) (6). Abundant evidence suggests that immune-mediated endocrine disease occurs during IFN-alpha therapy, which may contribute to the etiology of fatigue.

Autoimmune thyroid disease is a well-recognized consequence of IFN-alpha therapy and may be mediated by the induction of IFN-gamma production by lymphocytes (7).

The association of these NSS with large goiters, may be attributed to local pressure in nearby structures, airway, blood vessels, muscles, increased tension in the surrounding fascia. Pain in the vicinity of the shoulder, being the most common complain could be due referred pain. The nerve supply to the shoulder joint is from C5 C6 C7 through the axillary, musculocutaneous and suprascapular nerves (8). The middle cervical ganglion supplies the thyroid gland and is formed by the fusion of 5th and 6th cervical ganglia and may lie in front or behind the artery (9). It gives Grey rami to C5 and C6 and gives a plexus to the inferior thyroid artery (10). Neck pain is the second most common symptom occurring in 45 patients. Neck pain is a common complain in population at large and is estimated to affect 10 – 17% of adults at any one time (11). It has been reported that goitres >100 gms seem to alter the posture of the cervical spine, possibly resulting in more frequent headache than neck pain (12). However, large goitres could affect the alignment of the cervical spine by pulling it forward and stretching the ligaments. A large gland also jeopardize the free movement of the head and cervical spine leading to static position and stiffening of the ligaments. The association of backache with neck pain points to a common underlying aetiology.

Headache in thyroid disorders was reported in association with hypothyroidism (13). Patients with high TSH have less tendency to develop headache. The explanation could be either due to vascular compression or low β-adrenergic activity (14). There is more evidence that TSH is not the only factor but one of many other growth factors causing thyroid enlargement (15,16,17,18,19). Further proof of this is the inverse relationship between the size of the goiter and serum concentration of TSH (20-21). This finding was not observed in our study. The interaction between the nervous system and vascular system in the production of headache has been suggested (22). The association with hyperthyroidism has also been established in patients with chronic headache where doing thyroid function test is indicated (23). Fatigue is a very vague symptom and many controls in our study had it (34% compared to 50% and 54% in patients with goitre). There is always a question of hypothyroidism. As there is a wide normal range of T3, T4 and TSH and patients on the extreme range may have symptoms of hyper or hypothyroidism or perhaps the NSS may be due to chronic inflammatory basis of the underlying thyroid disease (24). As the mean age of our study group is in early forties, and are mostly females, the effect of menopause in general health could not be ignored, however the mean age of menopause in Sudanese women is higher and the commonest symptoms were usually depression, anxiety and hot flushes (25). In conclusion, NSS of patients with simple goitre play a significant role in presentation and are more in those in patients scheduled for thyroidectomy due to large goitre and/or pressure symptoms with satisfactory resolution of these NSS to thyroidectomy. The exact underlying pathophysiology of these symptoms will need more clarification.
References


