International Journal of Surgery 21 (2015) 150–155

Contents lists available at ScienceDirect

International Journal of Surgery

journal homepage: www.journal-surgery.net

Original research

Quality of life improvement in patients with Hashimoto thyroiditis and other goiters after surgery: A prospective cohort study

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HIGHLIGHTS

- ThyPRO was used in the QoL assessment of the patients with HT and BG.
- Patients with HT have slightly worse QoL than those with BG.
- HT patients experience improvement of the QoL after surgery comparable to that of BG patients.

ARTICLE INFO

Article history:
Received 19 March 2015
Received in revised form
24 July 2015
Accepted 4 August 2015
Available online 6 August 2015

Keywords:
Hashimoto thyroiditis
Benign goiter
Quality of life
Thyroidectomy

ABSTRACT

Introduction: Hashimoto thyroiditis (HT) and other benign goiters (BG) might influence patients' quality of life (QoL). The objective of this study was to analyze influence of surgery on these patients' QoL.
Methods: A prospective cohort study was conducted. The ThyPRO questionnaire was used in the QoL assessment.
Results: The HT patients experienced significantly worse hypothyroid symptoms and sex life than the BG patients. The improvement in QoL in the BG patients was significant after surgery in all ThyPRO domains. In the HT patients, the improvement was significant in all but two domains, eye symptoms and cognitive impairment. The best improvement in both groups was in overall QoL. None of the patients developed permanent consequences.
Conclusions: The QoL of HT and BG patients is impaired and improves significantly after surgical treatment. Thyroidectomy should be considered as a treatment option in the HT patients more often as in the BG patients.

1. Introduction

Quality of life (QoL) is one of the important outcome measures in evaluating the effects of different treatments in patients with chronic diseases. Hashimoto thyroiditis (HT), one of the most common autoimmune diseases, is characterized by elevated circulating antibodies to thyroid antigens, mainly anti-thyroperoxidase antibodies (anti-TPO) and anti-thyroglobulin antibodies (TG-Ab) [1]. It is the most common cause of hypothyroidism, and patients are most often recognized as having HT when they develop symptoms and signs of hypothyroidism. However, patients can also be euthyroid or hyperthyroid at presentation [2,3]. These patients are most frequently treated with levothyroxine therapy to correct the hypothyroidism as needed. Even if overt hypothyroidism is ruled out soon after initializing medication treatment, it is well known that HT patients still suffer from many symptoms [4,5].

The most common thyroid diseases are non-autoimmune benign goiters (BG). Patients with BG are known to have impaired QoL, even without overt thyroid dysfunction [5,6].

General QoL questionnaires were used in all previously published studies that evaluated QoL in patients with HT [4,7]. In all studies

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http://dx.doi.org/10.1016/j.ijsu.2015.08.001
1743-9191/

that evaluated QoL after surgical treatment for BG, except for one, general QoL questionnaires were used [8–10]. The QoL of HT patients has rarely been compared with the QoL of BG patients, and a disease-specific QoL questionnaire has never been used for this purpose [4,7].

ThyPRO, a recently developed, disease-specific QoL questionnaire for evaluating the QoL of patients with benign thyroid diseases, has well-documented validation and standardization processes. It was developed by T. Watt et al. in Denmark, and translated and validated into several languages. ThyPRO consists of 85 questions, divided into 13 domains (goiter symptoms, hyperthyroid symptoms, hypothyroid symptoms, eye symptoms, tiredness, cognitive impairment, anxiety, depression, emotional susceptibility, impaired social life, impaired daily life, impaired sex life, and cosmetic complaints) and one separate question regarding overall QoL. It covers physical and mental symptoms, well-being, and functioning, as well as impact of the thyroid disease on participation and overall QoL. Each of the 13 ThyPRO scales is scored as a summary score and linearly transformed to a range of 0–100, with higher scores indicating lower QoL [11–15].

Beside levothyroxine therapy, there are some other treatment options for HT patients, such as selenium supplementation, dehydroepiandrosterone, and surgery [16]. Typically, HT patients, who develop nodules in the thyroid gland whose cytology cannot be ascertained as benign, and patients with goiters that cause significant compression of the surrounding cervical structures, become candidates for thyroid surgery [1]. Recently, it was reported that patients who suffer from different thyroid-related symptoms might feel better after thyroidectomy, and that those patients should be considered candidates for surgical treatment as well [2,3].

The aims of our study were to assess the QoL of HT and BG patients before and after surgical treatment; to compare the QoL of HT patients with the QoL of BG patients; to determine whether thyroid surgery improves the health of patients with HT even if they achieve satisfying hormonal status with levothyroxine therapy; and to determine whether it is possible that thyroid surgery performed by qualified endocrine surgeons, although a radical approach, might become an important form of treatment in HT patients as it is in BG patients.

2. Patients and methods

This is a prospective cohort study conducted at the Center for Endocrine Surgery, Clinical Center of Serbia, in Belgrade, Serbia, between April 2012 and December 2013. Patients were included in the study if they met the appropriate inclusion/exclusion criteria. Inclusion criteria included patients admitted for planned thyroid surgery and age 18–75 years. Exclusion criteria included Graves' disease; psychiatric conditions; consumption of antidepressant or antianxiety medication; other location malignancies; history of brain injury. Patients who were diagnosed with thyroid cancer on final histology were excluded retrospectively. Initially, 204 patients who completed the baseline assessment agreed to participate, and they were enrolled in the study. Forty patients were found to have thyroid malignancies, 20 patients did not wish to continue participating in the study, and one patient died, resulting in a final study sample of 143 patients. Written informed consent was obtained from all patients prior to their inclusion in the study.

We divided the subjects into two groups, retrospectively, according to histological findings. The HT group was comprised of patients with histologically confirmed Hashimoto thyroiditis, and the BG group was comprised of patients with colloid cystic goiters.

2.1. Questionnaire

All of the patients were asked to answer the ThyPRO questionnaire one day prior to surgery and six months after the surgery. They completed the questionnaire with the help of a physician who deals with endocrine surgery and QoL research. The physician was blind to the preoperative ThyPRO scores at the moment of completing the postoperative questionnaire. In collaboration with the author, T. Watt, we translated and validated ThyPRO into Serbian. According to the internationally accepted methodology for translation and cultural adaptation of a QoL questionnaire, we followed the guidelines set up by the European Organisation for Research and Treatment of Cancer to produce the Serbian version of ThyPRO [17].

2.2. Surgical treatment

According to local standards protocol, patients with toxic adenoma and nodular goiter with unsuspicious FNA finding and calcitonin level within normal range underwent hemithyroidectomy. Patients with multinodular goiter (both, euthyroid and toxic), Hashimoto thyroiditis and suspicious malignancy underwent total thyroidectomy.

All patients admitted for thyroid surgery, brought with themselves laboratory results not older than one month. Serum levels of the following were obligatory: thyrotropin (TSH), total thyroxine (T4) or free thyroxine (fT4), total triiodothyronine (T3) or free triiodothyronine (fT3), and anti-TPO. TG-Ab results were available in 78 (54.5%) patients. The reference interval of serum anti-TPO was 0–63 IU/ml. The pathologists who histologically examined the removed thyroid specimens were blind to the patients' anti-TPO levels.

Other necessary data, including age, duration of disease, medication treatment, weight of surgically removed specimen, and smoking habits were collected from the medical records.

This study was conducted with the approval of the Ethics Committee of the Faculty of Medicine, University of Belgrade, Serbia.

Study results were reported following The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines [18].

2.3. Statistical analysis

Continuous variables are described as mean ± standard deviation and median. Categorical data are described as frequencies. The one-sample Kolmogorov–Smirnov test was used to test whether a continuous variable was normally distributed. Statistical analyses were performed as follows: Student's t-test was used for continuous data with confirmed normal distribution; the Mann–Whitney U test was used to compare two independent variables if the variables were continuous without normal distribution or if the data were categorical; and the Wilcoxon signed ranks test was used for comparing two related continuous variables with not normal distribution. The optimal cutoff point of anti-TPO levels for predicting HT was calculated automatically based on the receiver-operator characteristics (ROC) curve, with the highest specificity and sensitivity. Spearman's rho (ρ) test was used for analyzing correlations between patient characteristics and ThyPRO domain scores. All of the analyses were conducted using SPSS 16.0 for Windows. Differences were considered statistically significant if $p < 0.05$.

3. Results

Patient characteristics are presented in Table 1. Significant differences in anti-thyroid antibodies levels were found between the two groups of patients. The HT patients were found to have significantly higher TSH levels than the BG patients. When 36 patients in the BG patients group who had toxic goiters were