THYROID AUTO-IMMUNITY AS A RISK FACTOR FOR RECURRENT MULTINODULAR GOITER AFTER HEMITHYROIDECTOMY

AUTO-IMUNIDADE TIROIDEIA COMO FACTOR DE RISCO PARA RECORRÊNCIA DE BÓCIO MULTINODULAR APÓS LOBECTOMIA

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ABSTRACT

Background. The ideal surgical strategy to multinodular goiter (MNG) is currently still matter of discussion. Thyroid auto-immunity is a well-known risk factor for hypothyroidism and could play a role in MNG's physiopathology. **Objective.** Assess thyroid auto-immunity as a risk factor for MNG recurrence. **Materials and Methods.** Retrospective analysis of a 5-year (January 2012 – December 2016) prospective database of all patients submitted to hemythyroidectomy for MNG. Variables: age, gender, preoperative diagnosis, anti-peroxidase and anti-thyroglobulin antibodies (anti-TPO and anti-Tg); postoperative L-thyroxin therapy, MNG recurrence, contralateral thyroidectomy. MNG recurrence was defined as the need for complementary contralateral lobectomy, or the appearance of new nodules, or an increase in size of at least 50% of the nodules in the remnant lobe. **Results.** 82 patients included. Median follow-up time of 49 months [33 –88]. Thyroid auto-immunity (anti-TPO and/or anti-Tg) was present in 26% of the patients. 39% of the patients required replacement postoperative L-thyroxin therapy. Recurrence of MNG was observed in 15,2% of the patients but none required contralateral thyroidectomy. Univariate analysis did not show a statistical significant relationship between thyroid autoimmunity and MNG recurrence (p – 0, 461). **Discussion / Conclusion.** Thyroid autoimmunity dos not seem to represent a risk factor for MNG recurrence after hemythyroidectomy. This surgical approach was effective, with a low recurrence rate. Also the clinical impact of such recurrence was low with no patient needing contralateral resection.

Keywords: *multinodular goiter; hemithyroidectomy; auto-immunity; risk factor.*

RESUMO

Introdução. A abordagem cirúrgica ideal para o tratamento do bócio multinodular (BMN) é ainda alvo de debate. A presença de auto-imunidade anti-tiroideia é um fator de risco conhecido para hipotiroidismo, podendo desempenhar um papel na fisiopatologia do BMN. **Objectivo.** Avaliar a auto-imunidade anti-tiroideia como fator de risco de recidiva de BMN. **Métodos.** Análise retrospectiva de base de dados prospectiva de todos os doentes submetidos a lobectomia tiroideia por BMN durante 5 anos (Janeiro de 2012 – Dezembro 2016). Variáveis analisadas: idade, sexo, diagnóstico pré-operatório; anticorpos anti-peroxidase (Ac TPO); anticorpos anti-tiroglobulina (Ac TG); hipotiroidismo pós-operatório; recidiva de BMN e necessidade de totalização de tiroidectomia. A recidiva foi definida como o aparecimento de novos nódulos; crescimento de > 50% de nódulos prévios ou a necessidade de totalização. **Resultados.** Amostra de 82 doentes; 68 mulheres e 14 homens; mediana de idade de 56,5 anos [28 – 82]. Tempo médio de follow up de 79 meses. 26% apresentaram auto-imunidade (Ac TPO ou Ac TG positivos) pré-operatoriamente.

39% necessitaram de levotiroxina pós-operatoriamente. Taxa de recidiva de 15,2%; nenhum doente necessitou de totalização. A análise univariada da relação entre auto-imunidade e recidiva foi feita através do teste de Fischer, não tendo significado estatístico (p – 0, 461). **Discussão / Conclusão.** A auto-imunidade anti-tiroideia não aparenta ser fator de risco para recidiva de BMN em doentes submetidos a lobectomia tiroideia. A lobectomia foi uma alternativa eficaz, com baixa taxa de recidiva, não tendo sido registado nenhum caso de necessidade de totalização.

Palavras-chave: *bócio multinodular; lobectomia; auto-imunidade; fator de risco.*

BACKGROUND

Multinodular Goitre (MNG) is one of the most common endocrine disorders[1]. Surgery is a common treatment method, indicated for symptomatic patients or when there's cytological suspicion for malignancy. The ideal surgical strategy is currently still matter of discussion in the surgical community. Hemithyroidectomy is an option when there are no contralateral nodules or when they're clinically irrelevant. However, there is potential for disease progression in the remnant lobe. The incidence and potential clinically relevant risk factors for recurrence are yet to be clearly defined[2].

Thyroid auto-immunity is an established risk factor for hypothyroidism[3]. The existence of high circulating levels of TSH in this patients may stimulate nodular growth and thus play a role in MNG's physiopathology.

The necessity of postoperative replacement L-thyroxin therapy is not common. This may represent another glandular dysfunction marker and eventually could predict future recurrences.

OBJECTIVE

The primary outcome was to assess thyroid autoimmunity as a risk factor for MNG recurrence after hemythyroidectomy. The secondary outcome was to evaluate the necessity of postoperative L-thyroxin replacement therapy also as a risk factor for MNG recurrence.

MATERIAL AND METHODS

A retrospective analysis of a prospective database was performed including all consecutive patients submitted to hemythyroidectomy for MNG between January 2012 and December 2016. Variables assessed included the following: gender; age; preoperative diagnosis; presence of anti-TPO and / or anti-Tg; postoperative necessity for L-thyroxin replacement therapy; MNG recurrence and contralateral thyroidectomy.

Hemithyroidectomy was defined as a thyroid lobectomy and isthmusectomy with preservation of the contralateral thyroid lobe.

Recurrence was defined as the need for complementary contralateral lobectomy, or the appearance of new nodules, or an increase of at least 50% in size of the nodules in the remnant lobe.

Having high serum titres of any or both antibodies (anti- TPO or Tg) was regarded as thyroid autoimmunity regardless of pathology evaluation.

Statistical analysis was done by the *IBM® SPSS® statistics software* (v24). Continuous variables were presented as median [min – max]. The univariate relation between patient's characteristics and MNG recurrence was examined with Fischer's exact test for categorical variables. Differences were to be considered significant when the probability value was <.05.

RESULTS

A total of 82 patients were included in the study (*Figure* 1). 68 (84%) patients were female and the

median age was 56,5 years [28–82]. The median follow up time was 49 months [33–88]. Thyroid automimmunity was present in 21 patients (26%) preoperatively. Of the 82 patients, 32 needed replacement L-thyroxin therapy. MNG recurrence was observed in 12 (15,2%) patients. None of this patients needed complementary contralateral thyroidectomy.

Table 1 – ***Demographic characterization of the patients***

Variables	
Age (Median)	56,5 [28–82]
Gender [N (%)] Female Male	 68 (84) 14 (16)
Follow-up time (median; months)	49
Thyroid autoimmunity [N (%)]	19 (26)
L-thyroxin therapy [N (%)]	32 (39)
Recurrence [N (%)]	12 (15,2)

The univariate relationship between thyroid autoimmunity and MNG recurrence was not statistically significant (p – 0, 461) *(Figure 2)*. Postoperative hypothyroidism and consequent necessity of L-thyroxin replacement theraphy was not related to recurrence in a statistically significant way as well (p – 0,109).

DISCUSSION

The ideal surgical strategy for MNG treatment is still a matter of discussion in the surgical community. Hemythyroidectomy may be preferred for it's lower complication rate (such as hematoma, hypopharathyroidism and recurrent laryngeal nerve damage. It also allows to retain glandular function and avoid permanent hormonal supplementation in the majority of patients. On the other hand, the remnant lobe has the potential for the development or progression of the disease. Addionally, surgical treatment of the contralateral lobe is associated with significant morbidity[4].

There are several definitions for recurrence in current literature with great variability in the reported recurrence rates. This makes difficult to make an accurate comparison with present data. However, the recurrence rate of this study was low with a low clinical significance. Reoperation for recurrent MNG was not needed for any patient, which suggests that the adopted surgical strategy was adequate and led to satisfying results in most patients.

Identification of risk factors for MNG recurrence would allow to adjust the surgical approach. Patients

Table 2 – ***Relationship between the variables and MNG recurrence***

	Recurrence	Non-recurrence	Total	p value
Autoimmunity, N (%)				
Yes	3 (4%)	18 (22%)	21 (26%)	0,461
No	9 (11%)	52 (63%)	61 (74%)	
L-thyroxin theraphy, N (%)				
Yes	2 (2,4%)	30 (36,6%)	32 (39%)	0,109
No	11 (13,3%)	39 (47,7%)	50 (61%)	

with higher recurrence risk would potentially benefit of more aggressive procedures. Although several risk factor have been described, such as age, female gender or the presence of contralateral nodularity, none has shown the clinical importance to justify changes in surgical strategy. The variables tested in the present study did also not shown such relevancy.

The present study has some limitations. The retrospective setting has inherent constraints in data recording and availability. A larger number of patients and a longer follow-up period would enhance the statistic and clinical impact of the results.

CONCLUSION

Thyroid autoimmunity and postoperative L-thyroxin replacement therapy did not show to be risk factors for MNG recurrence in patients submitted to hemythyroidectomy. This procedure was an effective option, with low recurrence rate and no need for contralateral resection.

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