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Does the presence of regional lymph node metastases have any impact on the complete remission rate in patients with distant metastases of papillary thyroid carcinoma (PTC), treated by radioiodine therapy?

Czy obecność przerzutów odległych i/lub do węzłów chłonnych ma wpływ na częstość uzyskania pełnej remisji u chorych z rakiem brodawkowatym tarczycy (PTC) leczonych radiojodem?

Tomasz Trybek, Aldona Kowalska

Department of Endocrinology and Nuclear Medicine, Hollycross Cancer Centre, Kielce

Abstract

Introduction: The presence of regional nodal and/or distant metastases has an influence on the results of treatment in patients with differentiated thyroid carcinoma (DTC).
The aim of the study was to evaluate the frequency of complete remission in patients with DTC depending on the presence of lymph nodes and/or distant metastases.
Material and methods: A total of 102 patients (82 females, 20 males) aged 20–86 with N1 or M1 (according to TNM staging) after thyroidectomy and ^{131}I therapy were chosen from among the 625 patients with DTC who were treated in our Department. The patients were divided in 3 groups: group I — TxN1M0, group II — TxN0M1, and group III — TxN1M1.
The documentation was analyzed by classifying the complete remission patients as being those without the presence of radioiodine uptake in the neck or pathological lesions in the whole body ^{131}I scintigraphy scan after six months of ablation therapy, with negative serum thyroglobulin in the absence of anti-thyroglobulin antibodies, and with normal ultrasound image of the neck. We compared the frequency of complete remission in three groups of patients.
Results: We recognized complete remission in 57 patients (82.6%) in group I (TxN1M0), 4 patients (28.6%) in group II (TxN0M1) and 6 patients (31.6%) in group III (TxN1M1).
Conclusions:
1. The highest percentage of complete remission was observed in patients with lymph nodes but without distant metastases (group I).
2. In the case of the presence of distant metastases there was no statistically significant difference in the percentage of complete remission between patients with or without the presence of metastases in lymph nodes.

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Key words: *papillary thyroid carcinoma, metastases, complete remission*

Streszczenie

Wstęp: Obecność regionalnych i/lub odległych przerzutów ma wpływ na wyniki leczenia u pacjentów ze zróżnicowanym rakiem tarczycy. Celem pracy była ocena częstości uzyskania pełnej remisji choroby u pacjentów z rakiem brodawkowatym tarczycy (DTC, *differentiated thyroid carcinoma*) w zależności od obecności przerzutów w węzłach chłonnych i/lub przerzutów odległych.
Materiał i metody: Spośród 625 chorych na DTC leczonych w Świętokrzyskim Centrum Onkologii badaniem objęto 102 chorych (82 kobiety, 20 mężczyzn) w wieku 20–86 lat, z cechą N1 lub M1 według klasyfikacji TNM, postawionej po leczeniu operacyjnym i uzupełniającej terapii ^{131}I. Chorych podzielono na trzy grupy: grupa I — T1-4N1M0 (69 chorych), grupa II — T1-4N0M1 (14 chorych), grupa III — T1--4N1M1 (19 chorych).
Poddano analizie dokumentację chorych, klasyfikując do pełnej remisji chorych, u których w badaniu diagnostycznym po 6 miesiącach od leczenia uzupełniającego ^{131}I nie stwierdzono jodochwytności w badaniu scyntygraficznym szyi i całego ciała, stężenie tyreoglobuliny było nieoznaczalne przy braku przeciwciał anty-Tg, obraz USG szyi był prawidłowy. Porównano częstość remisji w trzech grupach. Zastosowano dokładny test Fisher'a.
Wyniki: Pełną remisję uzyskało 57 chorych (82,6%) w grupie I (T1-4N1M0), 4 chorych (28,6%) w grupie II (T1-4N0M1), 6 chorych (31,6%) w grupie III (T1-4N1M1). Stwierdzono znamienne statystycznie zróżnicowanie między grupą I i II ($p = 0,0001$) oraz grupą I i III ($p < 0,0001$). Natomiast nie stwierdzono takiego zróżnicowania między grupą II i III ($p = 1,0000$).
Wnioski:
1. Największy odsetek pełnych remisji stwierdzono u chorych z zajęciem węzłów chłonnych, lecz bez przerzutów odległych (grupa I).
2. W przypadku obecności przerzutów odległych nie było istotnej statystycznie różnicy w odsetku pełnych remisji między chorymi z obecnością lub bez przerzutów w węzłach chłonnych (grupa II *v.* III, $p = 1,0000$).

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Słowa kluczowe: *rak brodawkowaty tarczycy, przerzuty, pełna remisja*

Tomasz Trybek M.D., Department of Endocrinology and Nuclear Medicine, Hollycross Cancer Centre, Kielce, 25–734 Kielce, S. Artwińskiego St. 3, tel. +48 41 367 42 10, fax: +48 41 345 68 82, e-mail: trytom1@o2.pl

Introduction

Differentiated thyroid carcinomas (DTC) are usually characterized by a good prognosis and survival of patients [1–5]. Papillary thyroid carcinoma (PTC) represents 75–80% DTC, and 10-year survival is observed in 98% of patients. However, the disease may have an aggressive course and 5–27% of patients with DTC develop regional and/or distant metastases. Prognostic factors for recurrences include age, male gender, large tumour size, local tumour invasion, lymph node and distant metastases, poorly differentiated histological type, thyroidectomy, and the absence of ablative treatment with radioiodine [1, 6–11]. The significance of lymph nodes for prognosis of PTC has been a matter of controversy for a long period of time and report emerged on a higher probability of remission and survival in patients with DTC in the N0M1 group compared to those in the N1M1 group, according to the TNM classification [12].

The aim of the study was to evaluate the frequency of complete remission in patients with PTC, depending on the presence of lymph node metastases accompanying distant metastases.

Material and methods

A total of 102 patients (82 females, 20 males) aged 20-86 with N1 or M1 (according to the TNM classification) after total thyroidectomy and ^{131}I therapy were selected from 625 patients with PTC treated in our Department. The patients were divided in 3 groups: group I — T1-4N1M0 (69 patients), group II — T1-4N0M1 (14 patients), and group III — T1-4N1M1 (19 patients).

The documentation was analyzed retrospectively. Complete remission was diagnosed if patients did not show any presence of radioiodine uptake in the neck or pathological lesions in the whole body by ^{131}I scintigraphy scan done after six months of ^{131}I therapy, had negative serum thyroglobulin in the absence of antithyroglobulin antibodies, and the ultrasound image of the neck did not show recurrence. We compared the frequency of complete remission in three groups of patients. The exact Fisher test was performed.

Results

We diagnosed complete remission in 57 patients (82.6%) in group I (T1-4N1M0), 4 patients (28.6%) in group II (T1-4N0M1), and 6 patients (31.6%) in group III (T1--4N1M1) (Fig. 1). The significant difference was found between groups I and II ($p = 0.0001$) and between groups I and III ($p < 0.0001$), while the remission rate was similar in both groups M1, independently of the presence or absence of lymph node metastases.

Discussion

Metastases to regional lymph nodes in papillary thyroid carcinoma are frequent, ranging from 35% to 70% in different series and less than 20% in follicular carcinoma. In particular, large, multiple, bilateral lymph node metastases are negative prognostic factors associated with poor survival [7–11]. The 10-year survival rate of DTC with regional lymph node metastases is estimated at around 62%. Also, distant metastases occur more frequently in these patients. Distant metastases occur in approximately 10% of patients with DTC.

In the literature, complete remission after ^{131}I treatment of patients with distant radioiodine-avid metastases is observed in 50% of patients with lung metastases, in 9% of patients with bone metastases, and in 7% of patients with lung and bone metastases. Ten-year survival is estimated at 61% for lung metastases, 21% for bone metastases, and 13% for metastases to both organs [13].

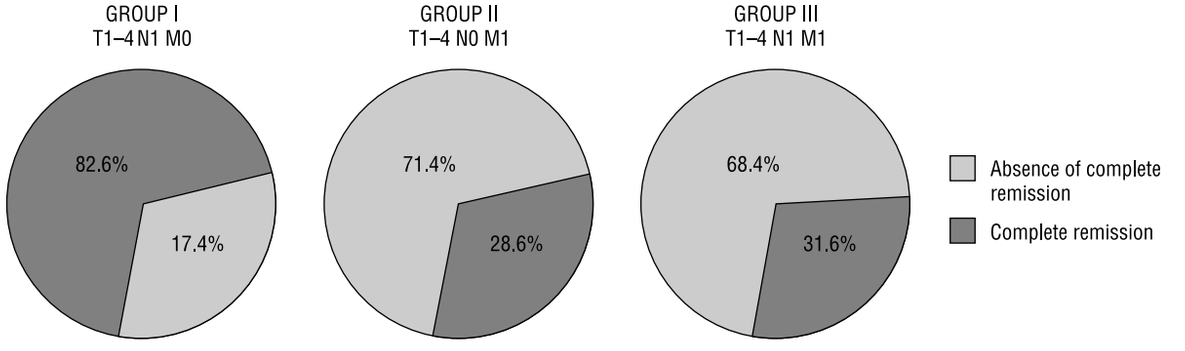

Figure 1. *The percentage of complete remission of the disease in the studied groups of patients*

Rycina 1. *Częstość uzyskania pełnej remisji choroby w badanych grupach pacjentów*

Last year a report appeared to indicate a better prognosis and longer survival in patients with DTC with distant metastases, which was not accompanied by metastasis to regional lymph nodes [12]. This observation prompted us to compare the rate of complete remission observed after radioiodine therapy performed after surgery, in relation to the presence of lymph node or distant metastases. Although it is believed that lymph node metastases are nearly always present if distant metastases are diagnosed, we observed 14% of patients with N0M1 DTC. They constituted 14/33 (42%) of all patients with functional distant metastases. However, there was no difference observed in remission rates between patients with and without lymph node metastases if distant metastases were simultaneously present – in both groups only about a quarter of the patients attained complete remission. In the absence of distant metastases, patients with DTC-derived lymph node metastases were cured in about three-quarters of cases after surgery and radioiodine therapy.

Conclusions

The highest percentage of complete remission was observed in patients with lymph nodes but without distant metastases. In case of presence of distant metastases there was not statistically significant difference in the percentage of complete remission between patients with or without the presence of metastases in lymph nodes.

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