



Has differentiated thyroid cancer (DTC) staging changed with in the last ten years in the Silesia region of Poland?

Czy obserwujemy różnice w ciągu ostatniego dziesięciolecia w zaawansowaniu zróżnicowanego raka tarczycy w Polsce w województwie śląskim?

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Abstract

Introduction: The aim of the study was to compare the advancement of thyroid cancer at diagnosis in Polish patients from the Silesian district in the years 1999 and 2008.

Material and methods: The analyzed group consisted of Silesian district patients with thyroid cancer, who were registered by the Department of Tumour Epidemiology of the Institute of Oncology in Gliwice in the years 1999 and 2008. From a group of 186 patients who entered on record in 1999, 167 were qualified for this analysis. Similarly, from 238 patients registered in 2008, finally 226 were added. We analyzed: sex, age at diagnosis, histotype of thyroid cancer, and DTC staging according to TNM (UICC 2002). In 1999 there were 137 females (82.04 %) and 30 males (17.93 %) with thyroid cancer diagnosed at ages 5–81 years. In 2008 there were 183 females (80.97%) and 43 males (19.03%) diagnosed at ages 14–80 years. In both groups, in 1999 and 2008, the median age was the same (51 years).

Results: In the year 1999, 119 (71%) and in 2008, 197 (87%) patients were diagnosed with papillary thyroid cancer ($p = 0.0003$). Relations between age and sex were similar in these years. There was some increase in frequency of patients diagnosed with papillary microcancer (pT1a), which was on the border of statistical significance ($p = 0.05$). A statistically significant increase of pT1 ($p = 0.02$) and decrease of pT4 ($p = 0.001$) and of pTx ($p = 0.002$) was observed in the year 2008 in the whole cohort of DTC patients.

Conclusions:

1. In 2008 the contribution of papillary histotype to all thyroid cancer patients (87%) was significantly higher than in 1999.
2. The percentage of DTC patients diagnosed with pT1 disease was significantly higher in 2008.

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Key words: differentiated thyroid cancer, staging, incidence

Streszczenie

Wstęp: Celem pracy było porównanie zaawansowania raka tarczycy rozpoznanego w województwie śląskim w 1999 i 2008 roku.

Materiał i metody: Analizowano polskich chorych z województwa śląskiego, którzy w 1999 i 2008 roku zostali poprzez karty nowotworowe zgłoszeni do Zakładu Epidemiologii Nowotworów Instytutu Onkologii w Gliwicach z rozpoznaniem raka tarczycy. Ze zgłoszonych w 1999 roku 186 chorych ostatecznie do badania włączono 167, a ze zgłoszonych w 2008 roku 238 chorych włączono 226. Analizowano: płeć chorych, wiek zachorowania, typ nowotworu tarczycy oraz zaawansowanie zróżnicowanego raka tarczycy przez klasyfikację TNM według UICC z 2002 roku. W 1999 roku zgłoszono 137 kobiet (82,04%) i 30 mężczyzn (17,93%) w wieku 5–81 lat, a w 2008 roku 183 kobiet (80,97%) i 43 mężczyzn (19,03%) w wieku 14–80 lat. W obu grupach, w 1999 i 2008 roku mediana wieku była taka sama (51 lat).

Wyniki: W 1999 roku u 119 (71%) chorych rozpoznano raka brodawkowatego tarczycy, a w 2008 roku u 197 (87%) ($p < 0,0003$). Rozkład wieku i płci były podobne. U chorych w 2008 w porównaniu z rokiem 1999 obserwowano wzrost rozpoznania mikroraka brodawkowatego tarczycy (pT1a) na granicy znamienności statystycznej ($p = 0,05$) oraz znamienny statystycznie wzrost raka o niskim zaawansowaniu guza pierwotnego: pT1 ($p = 0,02$), a spadek pT4 ($p = 0,001$) i Tx ($p = 0,002$).

Wnioski:

1. Udział raka brodawkowatego tarczycy we wszystkich rakach w województwie śląskim był w 2008 roku znacząco wyższy niż w roku 1999 i wynosił 87%.
2. Stwierdzono znamienny statystycznie wzrost rozpoznania raka w stadium pT1, a spadek pT4 i Tx, co należy uznać za zjawisko korzystne.

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Słowa kluczowe: zróżnicowany rak tarczycy, zaawansowanie, częstość



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Introduction

Differentiated thyroid cancers (DTC), papillary and follicular thyroid cancers, constitute the commonest endocrine malignancy. Among other endocrine neoplasms they are characterized by the most favourable prognosis. During recent years an increasing incidence of thyroid cancer has been observed [1–3].

The aim of the study was to compare the staging of thyroid cancers at diagnosis in patients from the Silesian district of Poland in the years 1999 and 2008.

Material and methods

The analyzed group consisted of Silesian district patients with thyroid cancer, who were registered by the Department of Tumour Epidemiology of the Institute of Oncology in Gliwice in the years 1999 and 2008. From the group of 186 patients who entered on record in 1999, for 167 the full data were available for this analysis. Similarly, from 238 patients registered in 2008, finally 226 were analyzed. In total 393 patients (93% register) were examined.

The following factors were analyzed: sex, age at the time of diagnosis, histotype of thyroid cancer, and DTC staging according to TNM system (UICC 2002). Patients diagnosed in 1999 were selected on the basis of archival data. Diagnosis was based on the evaluation of two independent pathologists, the second from the Institute of Oncology in Gliwice, and staging of the archival patient data of the whole disease course.

Statistical analysis was based on the Pearson χ^2 test with Yates's correction.

Results

In 1999 there were 137 females (82.04%) and 30 males (17.96%) with thyroid cancer. Age range at the time of diagnosis was 5–81 years (mean: 50.8 ± 13.8). In 2008 there were 183 females (80.97%) and 43 males (19.03%) with thyroid cancer diagnosed in the age range 14–80 years (mean: 50.1 ± 14.4). There were no significant changes in age and sex distribution between both cohorts. In both groups, in 1999 and 2008, the median age was the same (51 years).

The comparison of histological diagnoses between the years 1999 and 2008 is presented on Figure 1. In the year 1999 there were 167 patients registered, of which 119 (71%) had papillary thyroid cancer (PTC). In year 2008 there were 226 patients registered, among them 197 (87%) with PTC. The increase was statistically significant ($p = 0.0003$). There was some increase in frequency of patients diagnosed with papillary microcancer (according to the WHO definition), which was on the borderline of statistical significance ($p = 0.05$) (Table I).

Differentiated thyroid cancer staging was analyzed according to the TNM system, initially with a focus on the primary tumour (Fig. 2.). The percentage of patients diagnosed with pT₁ disease was significantly higher in 2008 — 57.14% *v.* 45.06% (Table I). A statistically significant decrease of pT₄ and Tx patients was observed in 2008.

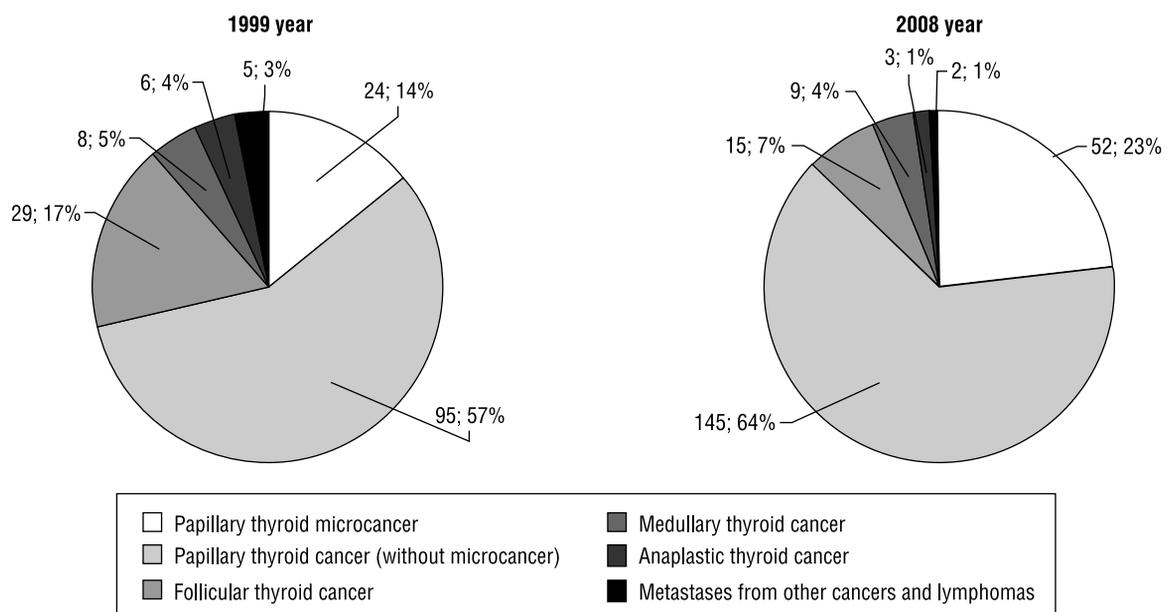


Figure 1. A comparison of histopathological diagnoses of thyroid cancer between the years 1999 and 2008

Rycina 1. Rozkład rozpoznań histopatologicznych nowotworów tarczycy w 1999 i 2008 roku

Table I. A comparison of initial stage cancer (primary tumour) in the years 1999 and 2008

Tabela I. Rozkład zaawansowania guza pierwotnego w 1999 i 2008 roku

| | pT1a | | all pT1 | | pT2-pT3 | | pT4 | | Tx | | Total |
|----------|-------------|-------|-------------|-------|-------------|-------|--------------|------|--------------|------|-------|
| | Number | % | Number | % | Number | % | Number | % | Number | % | |
| 1999 | 24 | 14.81 | 73 | 45.06 | 48 | 29.63 | 12 | 7.41 | 29 | 17.9 | 162 |
| 2008 | 52 | 23.21 | 128 | 57.14 | 75 | 33.49 | 4 | 1.79 | 17 | 7.59 | 224 |
| <i>p</i> | 0.05 | | 0.02 | | 0.42 | | 0.001 | | 0.002 | | |

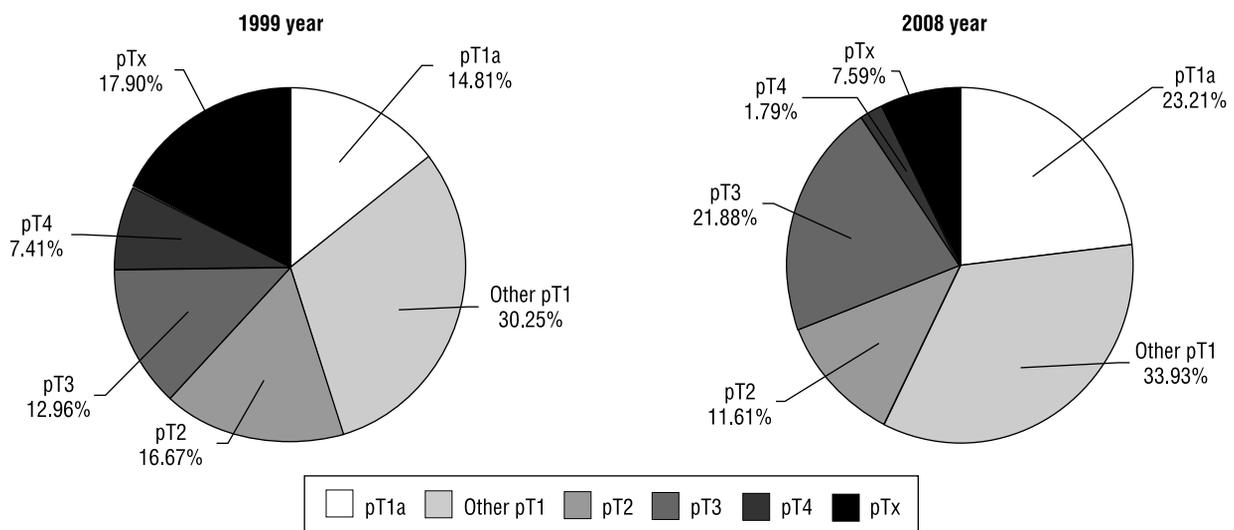


Figure 2. A comparison of DTC initial tumor stage between the years 1999 and 2008 (primary tumour assessed according to TNM UICC 2002)

Rycina 2. Rozkład zaawansowania guza pierwotnego według klasyfikacji UICC z 2002 roku

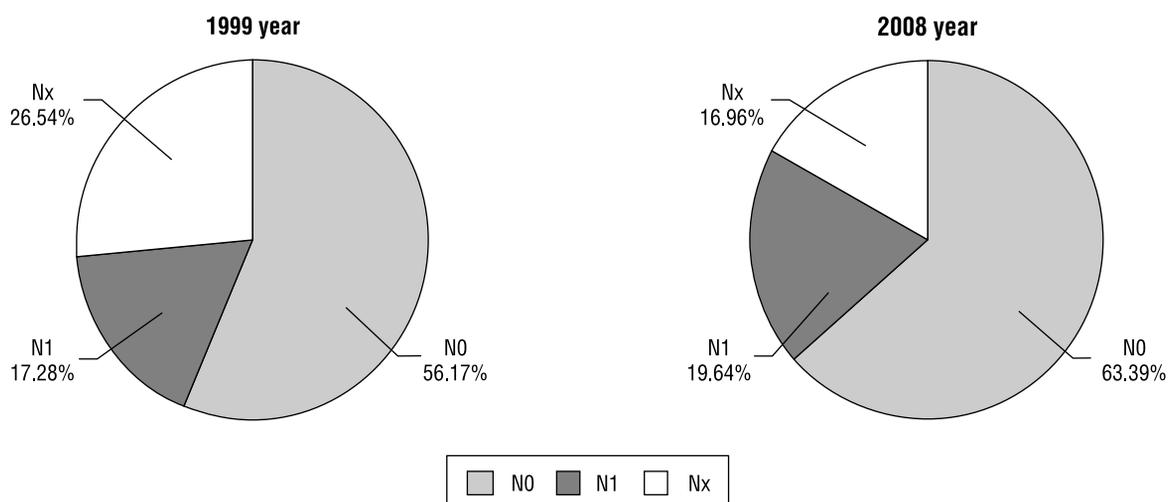


Figure 3. A comparison of the presence of DTS lymph node metastases in the years 1999 and 2008

Rycina 3. Rozkład przerzutów do węzłów chłonnych w 1999 i 2008 roku

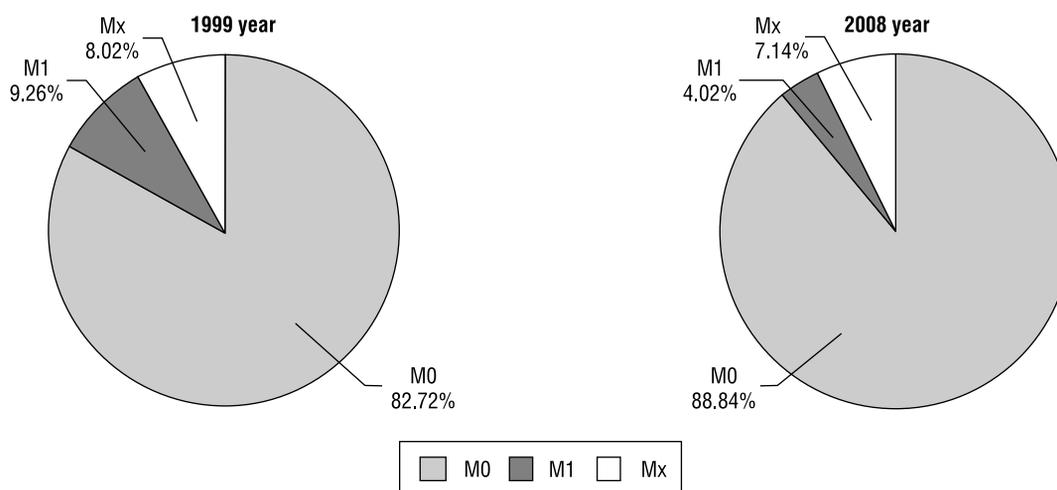


Figure 4. A comparison of the presence of DTC distant metastases at cancer diagnosis in the years 1999 and 2008

Rycina 4. Rozkład przerzutów odległych zróżnicowanych raków tarczycy w 1999 i 2008 roku

The presence of lymph node metastases in the years 1999 and 2008 was also compared and is presented in Figure 3. The percentage of patients diagnosed with N0 disease was higher in 2008 than in 1999, but the difference was not statistically significant. However, the percentage of patients diagnosed with Nx disease was lower in 2008 than in 1999 ($p = 0.03$). No difference in the incidence of N1 stage was observed.

The comparison of the presence of distant metastases in the years 1999 and 2008 is presented in Figure 4. There were less distant metastases diagnosed in 2008; however, the comparison of their frequency did not yield a significant result, while, on the contrary, the comparison of frequencies of M0 patients revealed a significantly higher frequency — 88.8% in 2008 *v.* 82.7% in 1999 ($p = 0.03$).

Discussion

The present study compares the distribution of thyroid cancer histotypes and the initial staging of DTC patients from Silesia (in southern Poland) diagnosed in 1999 and in 2008. In the group of patients diagnosed in 2008 the frequency of PTC (including microcarcinoma) was higher and the difference was statistically significant. The numbers of cases with medullary and anaplastic cancer in 1999 and 2008 were similar, while follicular thyroid cancer showed diminished frequency ($p = 0.0015$). However, in the opinion of some authors, these changes may also be related to better diagnostics or to differences in histopathological evaluation [2–4].

The reasons for the observed rise of absolute and relative papillary thyroid cancer incidence are discussed worldwide [1–3]. The most probable explanation seems

to be increased awareness and diagnostic efficiency. Detection of small thyroid focal lesions by sonography and their efficient diagnosis by fine needle aspiration biopsy may lead to the detection of some papillary thyroid cancers (and especially microcancers) which could never progress to clinically overt disease or would be diagnosed at a later age. The observed increase of pT1 cancers and the borderline significant increase of pT1a papillary microcancers are confluent with this hypothesis. The more frequent occurrence of N0 and M0 DTC speaks also in favour of this hypothesis. On the other hand, one has also to consider the increasing supply of stable iodine in Poland by obligatory iodination of table salt, introduced in 1997. Interestingly, the contribution of follicular thyroid cancer, a histotype believed to be diagnosed in iodine deficient areas more frequently [5–9] was more than two-times lower in 2008 (7%) than in 1999 (17%) ($p = 0.0015$). This fact could speak in favour of the influence of iodine supply on the frequency of different thyroid cancer histotypes. On the other hand, the accuracy of histopathological diagnosis of thyroid cancer histotypes is now much better and the follicular variant of PTC is diagnosed instead of false positive diagnosis of follicular cancer [10, 11].

The large analysis of the accuracy of histopathological diagnosis of thyroid cancer performed in Poland [10, 11] led us to the conclusion that in the past (some ten years ago and more) only 1/3 of all follicular thyroid cancers was diagnosed accurately. Thus, the observed decrease of frequency of follicular thyroid cancer is probably, at least in part, the result of changing pathological criteria of diagnosis. It should be stressed that all the histopathological diagnoses considered in this study, both in 1999 and 2008, were confirmed by an in-

dependent evaluation carried out at the Institute of Oncology in Gliwice.

Conclusions

1. Although we did not perform a complete epidemiology analysis, our results show the relative increase of the participation of papillary thyroid cancer (87%) among all thyroid cancers and suggest an increase in their absolute number.
2. The percentage of differentiated thyroid cancer patients diagnosed with pT₁ disease was significantly higher in 2008 than in 1999.

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