

Incidence rates of squamous cell carcinoma in Central Poland — a descriptive analysis of available data

Zachorowalność na raka kolczystokomórkowego skóry w Polsce Centralnej — analiza dostępnych danych

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ABSTRACT

Introduction: In recent years, the incidence of non-melanoma skin cancers has increased rapidly all over the world. Squamous cell carcinoma (SCC) is the second most common malignant neoplasm in humans after basal cell carcinoma. Unfortunately, the cancer registry in Poland does not record SCC individually. Thus, the incidence of this neoplasm in a defined population is unknown.

Methods and materials: We have reviewed the clinical records of patients from the Dermatology and Venereology Department, Medical University of Lodz who were diagnosed with SCC by histopathology during the sixteen-year period from 1999 to 2015.

Results: The incidence of SCC was slightly increasing between 1999 and 2008, but levelled off in next years. The largest relative increase in cancers was observed for patients above 74 years. Anatomical site distribution differs according to age of patients. In older patients, most prevalent were face lesions, while clothed areas were more commonly involved in patients below 45 years. The study revealed characteristics of SCC regarding age, gender and localization.

Conclusions: SCC is quite common in our society. In recent years, the incidence rate has been levelling off. Nevertheless, the effective treatment is still very expensive. Moreover, the consistent international registration of this cancer should be applied worldwide.

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Key words: squamous cell carcinoma, incidence rates, non-melanoma skin cancer

STRESZCZENIE

Wprowadzenie: W ostatnich latach zachorowalność na nieczerniakowate nowotwory skóry gwałtownie wzrosła na całym świecie. Rak kolczystokomórkowy skóry jest drugim co do częstości występowania najczęstszym nowotworem złośliwym skóry, zaraz po raku podstawnokomórkowym skóry. Niestety, Krajowy Rejestr Nowotworów w Polsce nie wyróżnia w swojej klasyfikacji osobno raka kolczystokomórkowego skóry. W związku z tym dokładne dane dotyczące zachorowalności w danej populacji pozostają nieznane.

Materiały i metody: Przeanalizowano retrospektywnie dane kliniczne pacjentów leczonych z powodu raka kolczystokomórkowego w Klinice Dermatologii i Wenerologii Uniwersytetu Medycznego w Łodzi, pochodzące z lat 1999–2015.

Wyniki: Zachorowalność na raka kolczystokomórkowego nieznacznie wzrastała między 1999 a 2008 rokiem. W ostatnich 4 latach zaobserwowano jednak tendencję stabilizującą. Najwięcej przypadków zachorowań stwierdzono w grupie pacjentów powyżej 74 rż. Rozmieszczenie anatomiczne zmian różni się w zależności od wieku pacjentów. U starszych pacjentów zaobserwowano większość zmian w obrębie twarzy, podczas gdy u pacjentów młodszych (poniżej 45 rż.) częściej występowały zmiany w obrębie części ciała na ogół zakrytych. W badaniu scharakteryzowano raka kolczystokomórkowego w zależności od wieku, płci oraz lokalizacji zmian.

Wnioski: Rak kolczystokomórkowy skóry często występuje w naszym społeczeństwie. W ostatnich latach jego zachorowalność się ustabilizowała. Niemniej jednak, efektywne leczenie jest wciąż bardzo kosztowne. Co więcej, należy podjąć działania, aby stworzyć spójne międzynarodowe rejestry, umożliwiające zebranie wiarygodnych danych epidemiologicznych, które naświetliłyby skalę problemu, z jakim mamy do czynienia niemal na całym świecie.

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Słowa kluczowe: rak kolczystokomórkowy skóry, wskaźnik zachorowalności, nieczerniakowy rak skóry

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Figure 1. Annual number of cases with diagnosed SCC in relation to gender (n = 181)

INTRODUCTION

Care of complexion and skin protection became more and more fashionable in recent years. However, despite that growing public awareness of the dangerous contribution of UV radiation, non-melanoma skin cancers (NMSCs) are the most common malignancy worldwide. Despite the increasing incidence of all skin cancers with substantial associated morbidity and cost, the overall mortality from NMSC is relatively low. The term NMSC includes many rare primary cutaneous neoplasms but it is mainly used to define basal cell carcinomas (BCCs) and squamous cell carcinomas (SCCs). BCC is the most prevalent skin malignancy followed by SCC. Sunlight exposure is the major factor, with the mixed effect of short and intense as well as cumulative episodes of UV exposition, which contributes to the development of both of these neoplasms. But risk for developing NMSC is also dependent on individual phenotypic characteristics and genetic combination [1, 2].

Unfortunately, no reliable statistics on the incidence of SCC exists in Poland due to the lack of an efficient cancer registry system. Only malignant melanomas of the skin are coded as C43 in enhancement of the *International Statistical Classification of Diseases and Health Problem, Tenth Revision* (ICD-10) and registered. Other malignant neoplasms of the skin were referred to as a NMSC and coded as a C44 and registered together [3]. We analyzed incidence rates for primary SCC in the central Poland in the period 1999–2015 by gender, site distribution and age in order to determine trends.

MATERIAL AND METHODS

We have reviewed the clinical records of patients from The Dermatology and Venereology Department, Medical

University of Lodz who were diagnosed with SCC by histopathology during the sixteen-year period from 1999 to 2015.

Considering the wide scientific and research profile, the clinic has extensive material regarding NMSC. The diagnoses in all cases were histopathologically confirmed. All data regarding patient age, gender, tumor localization and pathological subtypes of tumor have been obtained from medical documentation. A patient could be counted for more than one year if we were certain that the new tumors were not a recurrence. SCC cases were subdivided by sex and four age groups — 0 to 44, 45 to 64, 65 to 74, and 75+ years — and analyzed for trends. The results were analyzed statistically by the χ^2 test, with $p < 0.05$ considered as being significant.

RESULTS

During the period 1999–2015, we documented 181 incident cases of SCC in 178 patients (105 females — 59%, 73 males — 41%). Annual number of patients according to sex is presented in Figure 1.

Multiple skin cancers of the same histological type were not common. We have noted only 2 patients having multiple SCCs (1 woman with 3 cases of SCCs and 1 man with 2 cases of SCCs). The mean age at diagnosis with SCC was 73.65 years for women and 69.86 years for men. Rates in both males and females were quite low for the age group below 45. The majority of patients diagnosed with SCC (96.69%) were 45 years or older. 79.01% of SCC cases have been observed in patients above 65 years. Incidence rates are stable across the age groups above 75 years where we have observed slight increase in the following years. The gender distribution of these neoplasms did not show any

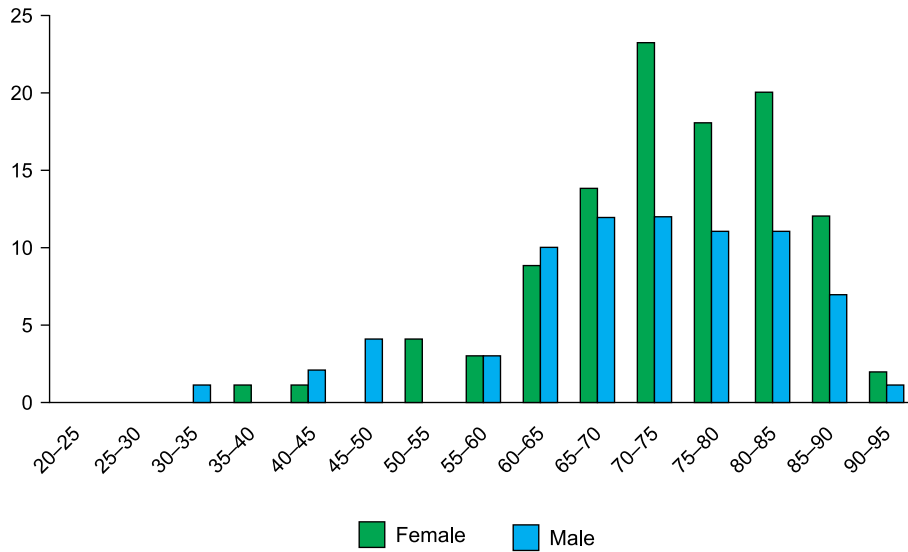


Figure 2. Age specific incidence rates for SCC in relation to gender (n = 181)

Table 1. Anatomical site distribution in relation to age groups

Age (years)	Gender	Trunk		Lower limb		Upper limb		Face		Scalp		Neck		Total
		Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	
< 45	Men	2	67%	0	0%	0	0%	1	33%	0	0%	0	0%	3
	Women	1	50%	0	0%	0	0%	0	0%	0	0%	1	50%	2
	Total	3	60%	0	0%	0	0%	1	20%	0	0%	1	20%	5
45-64	Men	7	47%	0	0%	2	13%	5	33%	1	7%	0	0%	15
	Women	5	36%	4	29%	0	0%	3	21%	1	7%	1	7%	14
	Total	12	41%	4	14%	2	7%	8	28%	2	7%	1	3%	29
65-74	Men	4	20%	3	15%	0	0%	11	55%	1	5%	1	5%	20
	Women	7	23%	6	20%	4	13%	11	37%	1	3%	1	3%	30
	Total	11	22%	9	18%	4	8%	22	44%	2	4%	2	4%	50
> 74	Men	8	28%	3	10%	2	7%	11	38%	2	7%	3	10%	29
	Women	7	16%	10	23%	1	2%	23	52%	2	5%	1	2%	44
	Total	15	21%	13	18%	3	4%	34	47%	4	5%	4	5%	73

predominance. The age distribution in relation to gender is presented in Figure 2.

The information about site distribution has been collected in 157 cases. The location of this tumor in particular age groups in relation to gender is presented in Table 1. The face is the most common site for developing SCCs (41.4%). SCC on the face occurred in 41.79% of males and 41.11% of females. The trunk was the second most common affected area of both sexes, which occurred in 26.11% of cases. Figure 3 presents the localization of SCC lesions.

The study showed significant differences between age groups in the anatomical distribution of skin lesions. In older patients, the majority of lesions are located on the

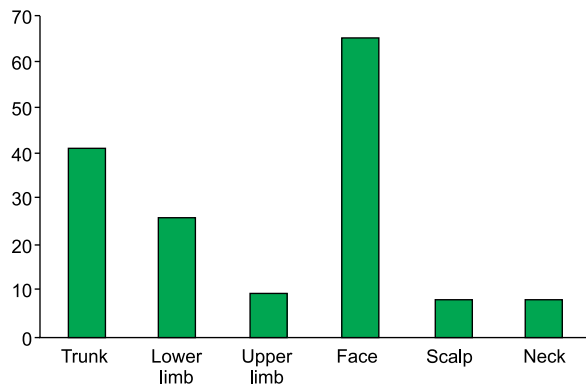


Figure 3. Anatomical site distribution (n = 157)

face. Statistically significant difference has been reported for patients above 75 years ($p < 0.00001$), where 69% of all cases has been observed on the face. The percentage of lesions on the face is very high for group of patients aged between 65 and 74 years and is equal to 66%. On the other hand, the trunk is the most common location for young patients, with percentage equal to 63% for patients below 45 years. Statistically significant difference has been noted for this group ($p < 0.00001$). Lesions on the face have been reported only in 37% of patients below 45 years of age.

DISCUSSION

BCC and SCC are usually grouped together under general term non-melanoma skin cancers. However, these tumors are the most common malignant neoplasms. There is scarce information available on the epidemiology of two most frequent skin cancers in US population. Alarming increase of these cancers is also observed in Europe, including Poland. Unfortunately, reliable and comparable data of NMSC are not available due to the inconsistency of poor ascertainment and registration practice. What is more, very low mortality rate explains why these tumors are frequently not included in cancer registry. This causes making comparison of all NMSC epidemiology challenging. Therefore, the exact incidence of BCC and SCC is also not accurately known. Nevertheless, this tremendous morbidity rate triggers very high health costs.

Our results indicate that overall rates of SCC are high. However, in recent years the incidence rates have been stable. Still SCC remains the second most frequent cancer in Poland and worldwide. These trends have also been recorded in other studies [4–7]. Despite the fact that overall morbidity remained on the similar level in recent years, the incidence rate for people older than 75 years showed substantial increase. Similar results have been observed in Australian population [8].

The reasons for stabilization of the incidence rates of these cancers in last several years are likely to be multifactorial. Maybe the efforts made to educate the public about skin cancer, sun exposure and sun protection finally paid off. The factor that contributes to decreased number of incidents in the youngest group may be their sun protection behavior and recent fashion trend for natural fair and pale complexion. On the other hand, healthy lifestyle that results in more outdoor activities contributes to increased exposure to sun, especially in urban areas [9]. Therefore, taking into account all factors, total annual incidence rates remained on the similar level in recent years.

It is interesting to note that SCC develops in older patients. The average age of analyzed patients with SCC was 72 years. The majority of analyzed patients (79%) were above

65 years, while only 3% of patients were below 45 years. These facts show the characteristic of SCC that occurs in older patients than other NMSC. This information is confirmed by a similar finding that has been obtained in Alberta, Canada [1]. This may suggest that the period from sun exposure to development of the disease is longer for SCC in comparison to other NMSC.

Overall, female subjects had a higher incidence rate of analyzed neoplasm over the entire study period (1999–2015). However, there was no statistically significant difference between men and women. Those observations have been confirmed by other author [10]. On the other hand, some analyses present different results where male cases are more common than female [1]. Data reported by Polish Central Statistical Office (GUS — Główny Urząd Statystyczny) in 2015 showed that in the region of Central Poland (Łódź district) females lived 9 years longer than males [11]. Most studies indicate a higher risk for SCC development in older patients and this fact could explain the proportion in analyzed cohort.

Face region, which is most exposed to the sun, was the most common SCC location, but other anatomical regions in areas traditionally covered by clothes, such as the trunk, are showing an increased predilection for the development of those tumors in recent years [1, 4, 12–15]. The increased frequency of trunk lesions for both sexes is strongly suggestive of exposure associated with leisure activity. It has been determined that outdoor and indoor tanning is important factor for development of SCC [9, 16–18]. Analyzed cases revealed that lesions on normally covered areas of body, such as the trunk, are much more typical for younger patients.

CONCLUSIONS

Recently, the incidence rates in central Poland may not be increasing as fast as in earlier study periods. However, the number of new SCC cases is still very high. Creating a national skin registry recording SCC individually would alleviate much of the difficulty in assessing regional trends and provide necessary information required for international data comparisons. Concerted and sustained effort to educate the public about sun protection, sun-safe behavior and early skin cancer detection will play a major role in stabilizing or even decreasing the future burden of the disease. What is more, it is highly recommended to develop studies that capture epidemiology, cost and mortality of SCC in Poland.

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REFERENCES

1. Jung G.W., Metelitsa A.I., Dover D.C., Salopek T.G. Trends in incidence of nonmelanoma skin cancer in Alberta, Canada, 1988–2007. *Br. J. Dermatol.* 2010; 163: 146–154.
2. Kricke A., Armstrong B.K., English D.R., Heenan P.J. Does intermittent sun exposure cause basal cell carcinoma? A case–control study in western Australia. *Int. J. Cancer* 1995; 60: 489–494.
3. International Statistical Classification of Diseases and Related Health Problems 10th Revision, Volume I, 2009 World Health Organization.
4. Abbas M., Kalia S. Trends in Non-Melanoma Skin Cancer (Basal Cell Carcinoma and Squamous Cell Carcinoma) in Canada: A Descriptive Analysis of Available Data. *J. Cutan. Med. Surg.* 2016; 20: 166–175.
5. Lomas A., Leonardi-Bee J., Bath-Hextall F. A systematic review of worldwide incidence of nonmelanoma skin cancer. *Br. J. Dermatol.* 2012; 166: 1069–1080.
6. Steding-Jessen M., Birch-Johansen F., Jensen A. et al. Socioeconomic status and non-melanoma skin cancer: a nationwide cohort study of incidence and survival in Denmark. *Cancer Epidemiol.* 2010; 34: 689–695.
7. Hannuksela-Svahn A., Pukkala E., Karvonen J. Basal skin carcinoma and other nonmelanoma skin cancers in Finland from 1956 through 1995. *Arch. Dermatol.* 1999; 135: 781–786.
8. Staples M., Elwood M., Burton R. et al. Non-melanoma skin cancer in Australia: the 2002 national survey and trends since 1985, National Cancer Control Initiative, VIC.
9. Wehner M.R., Shive M.L., Chren M.M. et al. Indoor tanning and non-melanoma skin cancer: systematic review and meta-analysis. *BMJ* 2012; 345:e5909.
10. Coups E., Manne L., Heckman C. Multiple skin cancer risk behaviors in the U.S. population. *Am. J. Prev. Med.* 2008; 34 (2).
11. Przeciętne trwanie życia w 2015 r. według województw; Główny Urząd Statystyczny — Portal informacyjny (<http://stat.gov.pl/>), Accessed: November 2016.
12. Pilgrim W., Hayes R., Hanson D.W., et al. Skin cancer (basal cell carcinoma, squamous cell carcinoma, and malignant melanoma): new cases, treatment practice, and health care costs in New Brunswick, Canada, 2002–2010. *J. Cutan. Med. Surg.* 2014; 18: 320–331.
13. Deady S., Sharp L., Comber H. Increasing skin cancer incidence in young, affluent, urban populations: a challenge for prevention. *Br. J. Dermatol.* 2014; 171: 324–331.
14. Gallagher R.P., Hill G.B., Bajdik C.D. et al. Sunlight exposure, pigmentation factors, and risk of non-melanocytic skin cancer: Basal cell carcinoma and Squamous cell carcinoma. *Arch. Dermatol.* 1995; 131: 157–163, 164–169.
15. Rosso S., Joris F., Zanetti R. Risk of basal and squamous cell carcinomas of the skin in Sion, Switzerland: a case-control study. *Tumori* 1999; 85: 435–442.
16. Veierod M.B., Couto E., Lund E. et al. Host characteristics, sun exposure, indoor tanning and risk of squamous cell carcinoma of the skin. *Int. J. Cancer* 2014; 135: 413–422.
17. Zanetti R., Rosso S., Martinez C. et al. The multicentre south European study 'Helios'. I: Skin characteristics and sunburns in basal cell and squamous cell carcinomas of the skin. *Br. J. Cancer* 1996; 73: 1440–1446.
18. Sánchez G., Nova J., Rodriguez-Hernandez A.E. et al. Sun protection for preventing basal cell and squamous cell skin cancers. *Cochrane Database Syst. Rev.* 2016; 25: 7: CD011161.