INDEX COPERNICUS INTERNATIONAL

ARTYKUŁ ORYGINALNY / ORIGINAL ARTICLE

Evaluation of risk factors for oral cavity and oropharynx cancers in patients under the week activity program of head and neck cancers prevention in Lodz

Ocena czynników ryzyka nowotworów jamy ustnej i gardła środkowego u łódzkich pacjentów badanych w ramach tygodnia aktywności programu profilaktyki nowotworów głowy i szyi

Authors' Contribution:
A – Study Design
B – Data Collection
C – Statistical Analysis
D – Data Interpretation
E – Manuscript Preparation
F – Literature Search
G – Funds Collection

Kalina Owczarek[AB], Anna Jałocha-Kaczka[F], Marzena Bielińska[C], Joanna Urbaniak[E], Jurek Olszewski[D]

Department of Otolaryngology, Laryngological Oncology, Audiology and Phoniatry, Medical University of Lodz, Head: Prof. Jurek Olszewski, MD, PhD

Article history: Received: 14.10.2015 Accepted: 15.11.2015 Published: 15.12.2015

ABSTRACT:

Introduction: The aim of the study was to evaluate risk factors for oral cavity and oropharynx cancers in patients under the week activity program of head and neck cancers prevention in Lodz.

Material and methods: 104 people reported to preventive examinations under the week activity program of head and neck cancers prevention in Lodz (25-th of Semptember, 2015): 33 women aged 21-68 and 38 men aged 23-71. Before ENT examination, subjects completed the questionnaire, which concerned: the degree of education, source of information about preventive examinations, symptoms, smoking, number of smoked cigarettes, alcohol, number of life sexual partners, number of oral sex partners and family history of head and neck cancers.

Results and conclusions: The analysis showed that people who reported to preventive examination were mostly in the age group of 51–60 and over 60, respectively 71,2% of women and 57,9% of men. Patients were at the age, that predispose to oral cavity and oropharynx cancers. In our own material, 15,9% of women and 23,6% of men have smoked. Most of them have smoked 10–20 cigarettes daily. On the other hand, 40,9% of women and 10,5% of men didn't consume alcohol. In our study, both women and men had, at life, 1–3 sexual partners the most often, respectively 78,9% and 60,5%. The oral sex was cultivated by 45,5% of women and 60,5% of men, the most often with 1–3 partners, respectively 95,8% and 70,0%.

Based on complete ENT examination and the presence of risk factors for oral cavity and oropharynx cancers, 15,8% of patients were qualified to further oncological examinations including: videolaryngostroboscopy, neck ultrasound with fine-needle biopsy, neck CT and HPV test.

KEYWORDS: risk factors, oral cavity and oropharynx cancers

STRESZCZENIE:

Wprowadzenie: Celem pracy była ocena czynników ryzyka nowotworów jamy ustnej i gardła środkowego u łódzkich pacjentów badanych w ramach tygodnia aktywności programu profilaktyki nowotworów głowy i szyi.

Materiał i metodyka: W ramach programu profilaktyki nowotworów głowy i szyi do Kliniki Otolaryngologii, Onkologii Laryngologicznej, Audiologii i Foniatrii Uniwersytetu Medycznego w Łodzi zgłosiły się na badania 104 osoby – 66 kobiet w wieku 21–68 lat i 38 mężczyzn w wieku 23–71 lat. Przed badaniem laryngologicznym pacjenci wypełniali ankietę dotyczącą: wykształcenia, sposobu uzyskania informacji o przeprowadzanych w tym czasie badaniach profilaktycznych, zgłaszanych objawów chorobowych, nałogu palenia tytoniu (w tym liczby wypalanych papierosów), ilości spożywanego alkoholu, liczby partnerów seksualnych, uprawiania seksu oralnego, liczby partnerów seksualnych, z którymi uprawiali seks oralny, wystąpienia w rodzinie chorób nowotworowych w obrębie głowy i szyi.

Wyniki i wnioski: Przeprowadzona analiza wykazała, że na badania profilaktyczne najczęściej zgłaszały się osoby w wieku predysponującym do wystąpienia raka jamy ustnej i gardła środkowego – 51–60 lat i powyżej 60 lat. Wśród wszystkich badanych kobiet 71,2% stanowiły te w wieku powyżej 60 lat, wśród mężczyzn odsetek ten wynosił 57,9%. W badaniach własnych do nałogu tytoniowego przyznało się 15,9% kobiet i 23,6% mężczyzn, większość z nich zadeklarowała, że wypala od 10 do 20 sztuk papierosów dziennie. Z kolei alkoholu nie spożywało więcej kobiet (40,9%) niż mężczyzn (10,5%). Jeśli chodzi o dane dotyczące życia seksualnego – 78,9% kobiet i 60,5% mężczyzn miało od 1 do 3 partnerów seksualnych w ciągu całego życia, a 45,5% pań i 60,5% panów uprawiało seks oralny. Z tej grupy – 95,8% pacjentek i 70,0% pacjentów określiło liczbę partnerów tego rodzaju kontaktu seksualnego od 1 do 3.

Po wykonaniu pełnego badania laryngologicznego, oraz biorąc pod uwagę czynniki ryzyka wystąpienia raka jamy ustnej i części ustnej gardła, do rozszerzonej diagnostyki onkologicznej zakwalifikowano 15,8% pacjentów. Wśród osób z tej grupy zaplanowano badanie wideolaryngostroboskopowe, USG szyi z biopsją cienkoigłową, tomografię komputerową szyi oraz wykonanie testu na obecność wirusa HPV.

SŁOWA KLUCZOWE: czynniki ryzyka, nowotwory jamy ustnej i gardła środkowego

INTRODUCTION

The oropharynx (middle pharynx) consists of the base of the tongue, lingual tonsil, epiglottic velleculae, palatopharyngeal arches, palatine tonsils, and tonsilolingual sulcus.

According to GLOBOCAN 2012 data (Cancer Incidence Mortality Prevalence Worldwide), cancer morbidity in women results primarily from breast cancer followed by colon cancer, and lung cancer, whereas in men lung cancer is followed by prostate cancer, and colon cancer.

The highest mortality is due to the lung cancer, breast cancer, and colon cancer in women, and due to lung cancer, colon cancer, and prostate cancer in men, respectively.

The highest head-and-neck cancer morbidity is reported in the following areas: United States of America, Brazil, India, and Central Europe. Similarly, the highest head-and-neck cancer mortality is reported in Brazil, India, and Eastern Europe.

The predicted worldwide morbidity for the year 2020 is not optimistic and suggests an increase of 3,000 cases in women below the age of 65 years, an increase of 13,000 in men below the age of 65 years, an increase of 13,000 in women above the age of 65 years, and an increase of 54,500 in men above the age of 65 years. The predicted mortality for the year 2020 will increase by 1,500 and 8,000 in women and men below the age of 65 years, respectively, and by approximately 2,000 and 10,000 in women and men above the age of 65 years, respectively.

According to GLOBOCAN 2012 data (Cancer Incidence Mortality Prevalence Worldwide), oropharyngeal cancer in Poland constitutes 0.2% and 0.9% of all cancers in women and men, respectively. In general, since 2010 the incidence has risen by 9%, which is primarily attributable to new cases in men between the ages of 50 and 65.

In 2010, the oropharyngeal cancer mortality in Poland was 0.2% and 0.7% in women and men, respectively (an increase of 10.6% since 2000), and the five-year survival rate was 30%.

The awareness regarding the head-and-neck cancer (HNC) is still low. According to the "About Face" study from 2011, 75% of the surveyed Europeans were not able to give basic information on HNC, which is reflected by a small number of early diagnoses.

More than 60% of HNC cases are in an advanced stage at diagnosis, of whom 60% die within 5 years. However, if HNS is

diagnosed early, the survival rate is as high as 80—90%. Apart from being a direct cause of death, head-and-neck cancer can cause a loss of speech, communication disturbances, sensory deficits, facial disfigurement resulting in social exclusion, ostracism, and serious life impediments. In Poland, the likelihood of a successful treatment or a reduction of negative consequences of the disease are the greater, the earlier it is diagnosed.

Risk factors of oral and oropharyngeal cancer are tobacco/marihuana smoking, high-volume alcohol abuse (more than 3 or 2 units of alcohol daily for men and women, respectively), high-risk HPV infection, and poor hygiene of the oral cavity and/or pharynx.

Therefore, the aim of this study was to assess risk factors of the oral and oropharyngeal cancer as part of the head-and-neck cancer prevention program in Lodz.

MATERIALS AND METHODS

As part of the head-and-neck cancer prevention program in Lodz (September 25th, 2015), 104 participants (66 women, aged 21-68 years, mean age of 56.7 years; 38 men, aged 23-71 years, mean age of 58.6 years) were enrolled in (1) the Department of Otolaryngology, Laryngological Oncology, Audiology and Phoniatry, University Clinical Hospital, Military Memorial Medical Academy - Central Veterans' Hospital in Lodz; (2) Department of Head and Neck Cancer Surgery, Copernicus Hospital in Lodz; and (3) Otolaryngology Ward, Pirogow Hospital in Lodz.

Prior to an ENT examination, participants filled out a survey regarding the following issues: education, sources of information on health prophylaxis programs, symptoms, smoking, number of cigarettes smoked, alcohol abuse, number of sexual partners in lifespan, oral sex, number oral sexual partners in lifespan, and family history of head-and-neck cancer.

RESULTS

Women who took part in the prevention program were mostly between 51 and 60 years of age (27 participants, 40.9%) or above 60 years of age (20 participants, 30.3%), (Fig. 1). Similarly, men were mostly between 51 and 60 years of age (7 participants, 18.4%) or above 60 years of age (15 participants, 39.5%), (Fig. 1).

Among both women and men, people with secondary or higher education comprised the majority of participants (Tab. I) – 38 (57.6%), 24 (36.4%) and 25 (65.8%), 12 (31.65%) for women and men, respectively.

Men (36, 94.7%) and women (60, 90.9%) accessed information on prophylactic programs through the media (press and television).

Tab. I. Education

	ELEMENTARY		SECONDARY		HIGHER		TOTAL
	N	%	N	%	N	%	N
Women	4	6,1%	38	57,6%	24	36,4%	66
Men	1	2,6%	25	65,8%	12	31,6%	38

Tab. II. Sources of information of preventive programs.

	MEDIA		FAMILY PHYSICIAN		OTHER		TOTAL
	N	%	N	%	N	%	N
Women	60	90,9%	0	0	6	9,1%	66
Men	36	94,7%	0	0	2	5,3%	38

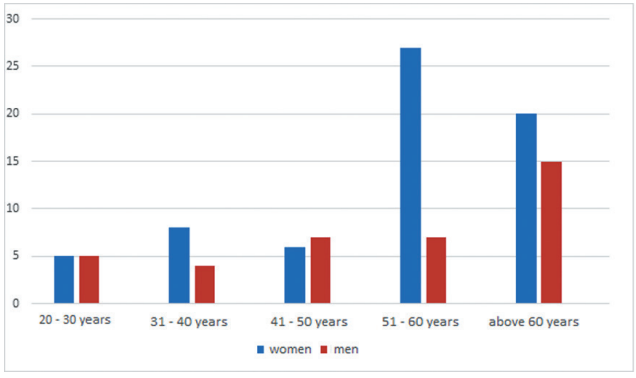

Fig. 1. Gender and age of participants

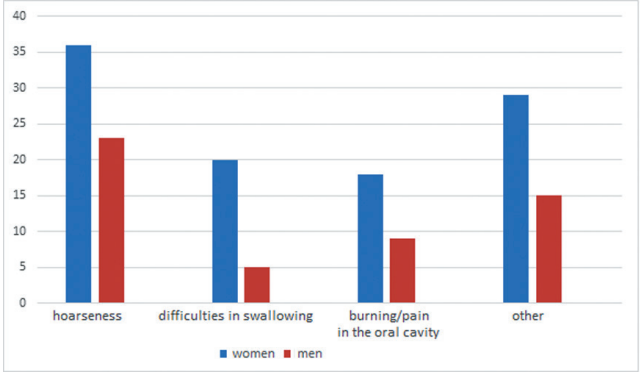

Fig. 2. Reported symptoms

Figure 2 lists the symptoms reported by participants. Hoarseness was reported by 36 women (34.9%) and 23 men (44.2%), difficulties in swallowing by 20 women (19.4%) and 5 men (9.6%), burning/pain in the oral cavity by 18 women (17.5%) and 9 men (17.3%), and other symptoms by 29 women (28.2%) and 15 men (28.8%).

Cigarette smoking prevalence was as follows: Nonsmokers – 49 women (55.7%) and 24 men (43.6%); Past smokers – 25 women (28.4%) and 18 men (32.7%); Current smokers – 14 women (15.9%) and 13 men (23.6%). See Figure 3.

As shown in Table 3, 8 women (26.7%) and 3 men (5.3%) smoked less than 10 cigarettes, 21 women (70.0%) and 18 men (31.6%) smoked 10 to 20 cigarettes, 1 woman (3.3%) smoked over 20 cigarettes.

Twenty-seven women (40.9%) and 4 men (10.5%) drank no alcohol, 37 women (56.1%) and 32 men (84.2%) drank less than 30 units per week, 3.0% of women and 5.3% of men drank more than 30 units of alcohol per week. See Table IV.

Forty-five women (78.9%) and 23 men (60.5%) had 1-3 sexual partners, 7 women (12.1%) and 7 men (18.4%) had 4-7 sexual partners, 8.8% of women and 4 men (10.5%) had more than 7 sexual partners.

Thirty women (45.5%) and 23 men (60.5%) had oral sex (Tab. V)

Twenty-three women (95.8%) and 14 men (70.0%) had 1-3 oral sex partners, one woman (4.25%) and 4 men (20.0%) had 4-7 oral sex partners, 2 men (10.0%) had over 7 oral sex partners.

Twelve women (18.2%) and 4 men (10.5%) had a family history of head-and-neck cancer (Tab. VI)

Fifteen participants (15.8%) were referred for further oncological work-up following a full ENT examination.

DISCUSSION

Women who took part in the prevention program were mostly between 51 and 60 years of age or above 60 years of age (71.2%). In men, the percentage of participants between 51 and 60 years of age or above 60 years of age was 57.9%, which in this gender is a predisposing factor for oral and oropharyngeal cancer.

Tab. III. Number of smoked cigarettes

	LESS THAN 10		10-20		MORE THAN 20		TOTAL
	N	%	N	%	N	%	N
Women	8	26,7%	21	70%	1	3,3%	30
Men	3	5,3%	18	31,6%	3	6,0%	57

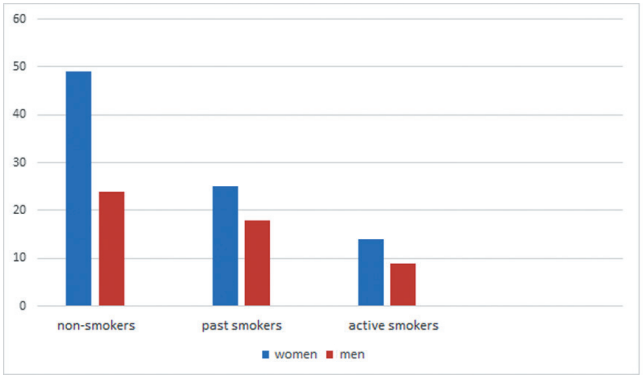

Fig. 3. Tobacco smoking

Alcohol consumption and tobacco smoking both increase the risk of head-and-neck cancer by approximately 330-fold [1]. Tobacco smoking influences primarily laryngeal cancer rather than pharyngeal and oral cancer, whereas alcohol consumptions is associated with oral and oropharyngeal cancer rather than laryngeal cancer [2]. In this study, 15.9% of women and 23.6% of men were active tobacco smokers, of whom the majority smoked 10-20 cigarettes daily. As regards alcohol consumption, the percentage of non-drinkers was higher in women (40.9%) than in men (10.5%).

Both HPV-positive and HPV-negative cancers are associated with tobacco smoking and alcohol consumption [3].

Among the head-and-neck cancers, HPV-positive cancers comprise 4 – 61% of oral cancers, 15 – 100% of oropharyngeal cancers, and 0 – 54% of laryngeal cancers [4]. Infection-related cancers affect 1.9 million patients (17.8%) – Helicobacter pylori (5. 5%), HPV – 5.2%, HBV and HCV- 4.9%, and EBV - 1% [5, 6].

The risk factors for HPV infections are early sexual initiation, a high number of sexual partners, high-risk sexual behaviors, oral sex, unprotected sex, sexual partners who have been treated for cervical dysplasia or cervical cancer, history of sexually transmitted disease, a history of condylomata acuminata or genital warts, lack of screening cervical smear exams, lack of vaccination, immunosuppression (including HIV), male gender, and tobacco smoking [7, 8].

Tab. IV. Alcohol consumption

	NEVER		LESS THAN 30 U PER WEEK		MORE THAN 30 U PER WEEK		TOTAL
	N	%	N	%	N	%	N
Women	27	40,9%	37	56,1%	2	3,0%	66
Men	4	10,5%	32	84,2%	2	5,3%	38

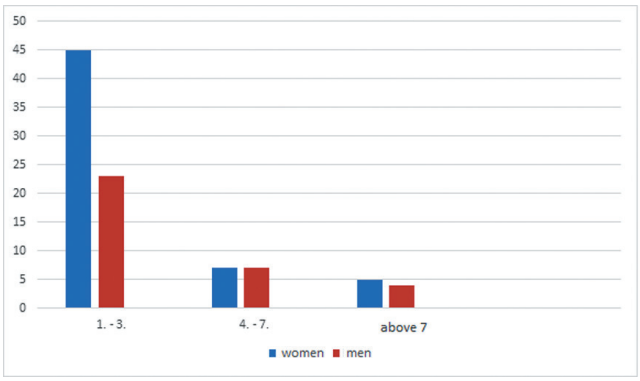

Fig. 4. Number of sexual partners

Tab. V. Oral sex

	YES		NO		TOTAL
	N	%	N	%	N
Women	30	45,5%	36	54,5%	66
Men	23	60,5%	15	39,5%	38

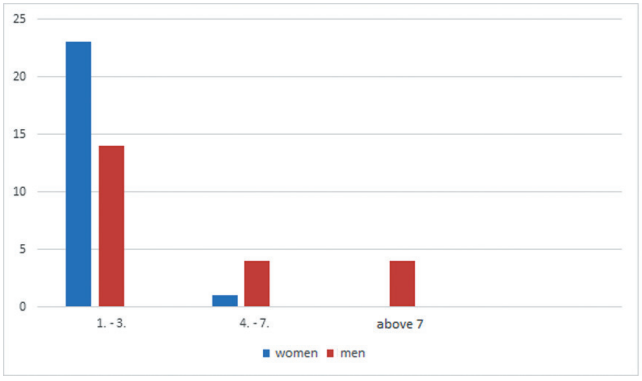

Fig. 5. Number of oral sex partners in lifespan

In this study, the majority of both men and women had 1-3 sexual partners – 78.9% and 60.55, respectively. Forty-five percent of women and 60.5% of men had oral sex, of whom the majority had 1-3 partners – 95.8% and 70.0% for women and men, respectively.

A family history of the head-and-neck cancer was present in18.2% of women and 10.5% of men.

Tab. VI. Family history of head-and-neck cancer

	YES		NO		TOTAL
	N	%	N	%	N
Women	12	18,2%	54	81,8%	66
Men	4	10,5%	34	89,5%	38

Following a full ENT examination, 16 participants (15.8%) were referred for further oncological work-up including videolaryngostroboscopy, ultrasound of the neck with fine-needle biopsy, computerized tomography of the neck, and HPV testing.

HPV testing is recommended for sexually active people who have multiple partners or have oral or anal sex. Moreover, HPV testing is indicated in recurring genital tract infections in women as well as in urethritis and balanits in men.

It is also recommended for women who use long-term oral hormonal contraception, intrauterine devices or plan pregnancy. HPV testing is performed in order to verify abnormal smear examinations, to evaluate treatment outcomes in cervical dysplasia and cervical cancer, and to differentiate between HPV-dependent and HPV-independent cancers while planning treatment.

Currently, there are several commercially available tests. In general, they are based on HPV DNA or mRNA detection. The tests differ in sensitivity and specificity. Sensitivity of a test is determined by the lowest number of viral DNA particles that it can detect [9].

PCR (Polymerase Chain Reaction) was the first technique used in order to detect HPV. Currently, it is also the most widely applied. It is based on viral DNA multiplication with a high sensitivity (1 copy in 10 cells). There are now commercial test available that detect 2 to 37 HPV genotypes. The test can be performed on fresh as well as on frozen, paraffin-embedded tissue and smear samples. RT-PCR (Reverse Transcriptase PCR) is a similar technique which is able to detect low amounts of E6 and E7 gene mRNA transcripts. It can be performed on fresh and frozen samples. RT-PCR is regarded as the "gold standard" in genotyping and classification of HPV-dependent tumors.

Southern blot (Dot blot) is another method of virus detection, in which a complimentary probe is used in order to hybridize viral DNA, which enables whole genome identification. It is characterized by high sensitivity (0.1 – 1 copy per one cell).

In Situ Hybridization (ISH) is a diagnostic technique that enables the differentiation between transient and chronic infection. By applying RNA probes for HPV E6/E7 genes that enable the analysis of viral transcription and integration, it allows transcript analysis directly in the studied sample.

Fluorescent In Situ Hybridization (FISH) is another technique of viral DNA detection, however, it requires the use of fluorescence microscopy. It has a high specificity but low sensitivity. Here, paraffin-embedded samples are used.

HPV-infected cells have an increased expression of p16INK4a, which can be detected by immunohistochemistry. This method is very sensitive but not specific, which can lead to false-positive results.

Is should be stressed that so far a screening strategy for HPV infection has not been established neither with regard to genital nor oral infections.

In Poland, two vaccines are available – a bivalent (Cervarix, HPV 16 and HPV 18) and a quadrivalent (Gardasil, HPV 16, HPV 18, HPV 6, and HPV 11). The efficacy of vaccination for the prevention of HPV 16 and HPV 18 - dependent cervical cancer exceeds 90%, when performed in girls before sexual initiation [9].

Herro et al. [10] point to a beneficial effect of vaccination in terms of HPV-dependent oral and oropharyngeal cancer prevention.

HPV infection is an established positive predictive factor in pharyngeal cancer, whereas the role of HPV in other head-and-neck cancers is not clear.

CONCLUSIONS

Women who took part in the prevention program were mostly between 51 and 60 years of age or above 60 years of age (71.2%). In men, the percentage of participants between 51 and 60 years of age or above 60 years of age was 57.9%. This age range is a risk factor for oral and oropharyngeal cancer.

In this study, 15.9% of women and 23.6% of men were active tobacco smokers, of whom the majority smoked 10-20 cigarettes daily. As regards alcohol consumption, the percentage of non-drinkers was higher in women (40.9%) than in men (10.5%).

In this study, the majority of both men and women had 1-3 sexual partners – 78.9% and 60.55%, respectively. Forty-five percent of women and 60.5% of men had oral sex, of whom the majority had 1-3 partners – 95.8% and 70.0% for women and men, respectively.

Following a full ENT examination, 16 participants (15.8%) were referred for further oncological work-up including videolaryngostroboscopy, ultrasound of the neck with fine-needle biopsy, computerized tomography of the neck, and HPV testing.

REFERENCES

1. Lubin J.H. et al: Total exposure and exposure rate effects for alcohol and smoking and risk of head and neck cancer: a pooled analysis of case-control studies. Am J Epidemiol, 2009; 170(8): 937–947. http://www.ncbi.nlm.nih.gov/pubmed/19745021
2. D'Souza G. et al: Case-control study of human papillomavirus and oropharyngeal cancer. New Engl J Med, 2007; 356(19): 1944–1956. http://www.ncbi.nlm.nih.gov/pubmed/17494927\
3. Giovino G.A. et al.: The tobacco epidemic in the United States. AM J Prev Med, 2007; 33 Suppl 6: 318–326. http://www.ncbi.nlm.nih.gov/pubmed/18021906
4. Joseph A.W., D'Souza G.: Epidemiology of human papillomavirus-related head and neck cancer. Otolaryngol Clin North Am, 2012, 45(4): 739–764. http://www.ncbi.nlm.nih.gov/pubmed/22793850
5. Parkin D.M.: The global health burden of infection-associated cancers in the year 2002. Int J Cancer, 2006, 118(12): 3030-3044. http://www.ncbi.nlm.nih.gov/pubmed/16404738
6. Gillison M.L. et al.: Evidence for a causal association between human papillomavirus and a subset of head and neck cancers. Cancer Inst, 2000. 92(9): 709–720. http://www.ncbi.nlm.nih.gov/pubmed/10793107
7. Herrero R. et al.: Human papillomavirus and oral cancer: the International Agency for Research on Cancer multicenter study. J Natl Cancer Inst, 2003; 95(23): 1772–1783. http://www.ncbi.nlm.nih.gov/pubmed/14652239
8. Ang K.K. et al.: Human papillomavirus and survival of patients with oropharyngeal cancer. N Engl J Med, 2010; 363(1): 24–35. http://www.ncbi.nlm.nih.gov/pubmed/20530316
9. Paavonen J. et al.: Efficacy of human papillomavirus (HPV)-16/18 AS04-adjuvanted vaccine against cervical infection and precancer caused by oncogenic HPV types (PATRICIA): final analysis of a double-blind, randomised study in young women. Lancet, 2009; 374(9686): 301–304.
10. Herrero R. et al.: Reduced Prevalence of Oral Human Papillomavirus (HPV) 4 Years after Bivalent HPV Vaccination in a Randomized Clinical Trial in Costa Rica. PLoS One, 2013; 8(7): e68329.

Word count: 2750 Tables: 6 Figures: 5 References: 10

Access the article online: DOI: 10.5604/00306657.1182713 Full-text PDF: www.otolaryngologypl.com/fulltxt.php?ICID=1182713

Corresponding author: Department of Otolaryngology, Laryngological Oncology, Audiology and Phoniatry, Medical University of Lodz, 90-549 Lodz, Zeromskiego 113, tel./fax 42/6393581; e-mail: jurek.olszewski@umed.lodz.pl

Competing interests: The authors declare that they have no competing interests.

Cite this article as: Owczarek K., Jałocha-Kaczka A., Bielińska M., Urbaniak J., Olszewski J.: Evaluation of risk factors for oral cavity and oropharynx cancers in patients under the week activity program of head and neck cancers prevention in Lodz. Otolaryngol Pol 2015; 69 (6): 15-21