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UČESTALOST I DISTRIBUCIJA RAZLIČITIH HISTOPATOLOŠKIH TIPOVA TUMORA PLJUVAČNIH ŽLEZDA NA TERITORIJI JUGOISTOČNE SRBIJE TROGODIŠNJA UNICENTRIČNA RETROSPEKTIVNA STUDIJA

INCIDENCE AND DISTRIBUTION OF DIFFERENT HISTOPATHOLOGICAL TYPES OF SALIVARY GLAND TUMORS IN SOUTHEASTERN SERBIA: A THREE-YEAR UNICENTRE RETROSPECTIVE STUDY

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Sažetak

Uvod: Tumori pljuvačnih žlezda predstavljaju grupu heterogenih lezija. U Srbiji postoji malo podataka o tumorima pljuvačnih žlezda, njihovoj učestalosti i distribuciji pojedinih histopatoloških tipova.

Cilj je bio prikazati podatke o karcinomu pljuvačnih žlezda u jugoistočnoj Srbiji.

Pacijenti i metode: Kliničkim retrospektivnim istraživanjem izvršena je analiza podataka iz medicinske dokumentacije pacijenata obolelih od tumora pljuvačnih žlezda koji su lečeni u Službi za maksilofacijalnu hirurgiju Klinike za dentalnu medicinu u Nišu u periodu od 2012. do 2014. godine.

Rezultati: Kada je reč o benignim tumorima, zapaženo je da se Vartinov tumor češće javljao kod muškaraca, a pleomorfni adenom kod žena. S obzirom na to da je broj malignih tumora bio značajno manji, nisu uočene statistički značajne razlike u vezi sa njihovom frekvencijom javljanja između muškaraca i žena. U malim pljuvačnim žlezdama incidencija javljanja tumora bila je znatno manja, te nisu utvrđene statistički značajne razlike koje se tiču zahvatanja pojedinih žlezda. Tumori pljuvačnih žlezda javljali su se u svim uzrastima kod muškaraca i žena sa sličnom frekvencijom. Maligni tumori bili su češći u starijem dobu, a benigni tumori u srednjim decenijama života. Nije bilo razlike između polova kada je reč o pojavi benignih i malignih tumora.

Zaključak: Benigni tumori u pljuvačnim žlezdama znatno češći od malignih, kao i da se i jedni i drugi češće javljaju u velikim pljuvačnim žlezdama. Najčešći benigni tumori u generalnoj populaciji bili su Vartinov tumor i pleomorfni adenom, dok su među malignim tumorima najčešći bili mukoepidermoidni karcinom i salivary duct karcinom.

Cljučne reči: epidemiologija, patologija glave i vrata; pljuvačne žlezde; tumori

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Abstract

Introduction: Salivary gland tumors represent a group of heterogeneous lesions. In Serbia, data on salivary gland tumors, their incidence, and the distribution of certain histopathological types are scarce.

Aim was to present data on salivary gland tumours in Southeast Serbia.

Material and Methods: A clinical retrospective study was used to analyse data from the medical records of patients with salivary gland tumors treated at the Department of Maxillofacial Surgery of the Dental Clinic in Niš, from 2012 to 2014. **Results:** In the case of benign tumors, Warthin's tumor occurred more often in men, and pleomorphic adenoma in women. Considering the significantly lower number of malignant tumors, no statistically significant differences in their frequency of occurrence between men and women were found. In the small salivary glands, the incidence of tumors was significantly lower, and no statistically significant differences were found in the involvement of individual glands. Salivary gland tumors occurred with a similar frequency in men and women of all ages. Malignant tumors were more common in the elderly, while benign tumors occurred more often in the middle decades of life. The occurrence of benign and malignant tumors did not differ between the sexes.

Conclusion: Benign tumors of the salivary glands are far more common than malignant ones, and that both occur more often in the large salivary glands. The most common benign tumors are Warthin's tumor and pleomorphic adenoma, and the most common malignant tumors are mucoepidermoid carcinoma and salivary duct carcinoma in the general population.

Key words: epidemiology, head and neck pathology; salivary gland; tumors

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Uvod

Tumori pljuvačnih žlezda predstavljaju grupu heterogenih lezija sa kompleksnom kliničkom slikom, različitim histopatološkim karakteristikama i različitim biološkim ponašanjem^{1,2}. Čine od 3% do 10% svih tumora glave i vrata; pritom, njihova pojava u malim pljuvačnim žlezdama mnogo je manje učestala nego u velikim pljuvačnim žlezdama^{3,4}. U dostupnoj literaturi nema preciznih podataka o učestalosti javljanja tumora u malim pljuvačnim žlezdama, kako zbog toga što se većina studija odnosi na velike pljuvačne žlezde, tako i zbog toga što su male pljuvačne žlezde rasprostranjene u različitim anatomskim regijama⁵. Benigni tumori čine 50% svih tumora salivarnih žlezda – više od polovine njih nalazi se u velikim pljuvačnim žlezdama, a od 64% do 80% u parotidnoj pljuvačnoj žlezdi⁶. Svetska zdravstvena organizacija prepoznaje 13 vrsta benignih i 24 vrste malignih tumora pljuvačnih žlezda, koji se mogu javiti i u velikim i u malim pljuvačnim žlezdama⁴. Prema histopatološkom tipu, najčešći benigni tumor jeste pleomorfni adenom, a najčešći maligni tumor mukoepidermoidni karcinom⁶⁻⁹. Nije u potpunosti jasno koji etiološki faktori dovode do nastanka ove grupe tumora; naime, u literaturi se oni dovode u vezu sa izlaganjem ultravioletnom i jonizujućem zračenju, sa upotrebom duvana i alkohola ili sa virusnom infekcijom^{10,11}.

Cilj je bio prikazati podatke o karcinomu pljuvačnih žlezda u jugoistočnoj Srbiji.

Budući da u Srbiji ima malo podataka o tumorima pljuvačnih žlezda, njihovoj učestalosti i distribuciji pojedinih histopatoloških tipova, naš cilj je bio da predstavimo stanje u jugoistočnoj Srbiji.

Pacijenti i metode

Kliničkim retrospektivnim istraživanjem izvršena je analiza podataka iz medicinske dokumentacije pacijenata obolelih od tumora pljuvačnih žlezda koji su lečeni u Službi za maksilofacijalnu hirurgiju Klinike za dentalnu medicinu u Nišu u periodu od 2012. do 2014. godine. Svi tumori su klasifikovani prema klasifikaciji Svetske zdravstvene organizacije (SZO) iz 2005. godine.

Odeljenje za maksilofacijalnu hirurgiju Klinike za dentalnu medicinu u Nišu predstavlja referentni centar za ovu oblast i ka njemu gravitira oko dva miliona stanovnika jugoistočne Srbije.

Statistička analiza

Dobijeni rezultati su, nakon statističke obrade, prikazani u vidu apsolutnih i relativnih brojeva.

Introduction

Salivary gland tumors represent a group of heterogeneous lesions with a complex clinical picture, different histopathological characteristics, and different biological behaviour^{1,2}. They account for 3–10% of all head and neck tumors, with a much lower incidence of occurrence in the minor compared to the major salivary glands^{3,4}. The available literature does not provide precise data on the incidence of tumors in the minor salivary glands, primarily because most studies refer to the major salivary glands, as well as due to the distribution of the minor salivary glands in different anatomical regions⁵. Fifty percent of all salivary gland tumors are benign, more than half arise in the major salivary glands, and 64–80% in the parotid salivary gland⁶. The World Health Organization recognizes 13 types of benign and 24 types of malignant salivary gland tumors that can occur in both the major and minor salivary glands⁴. Regarding the histopathological type, the most common type of benign tumors is pleomorphic adenoma, whereas mucoepidermoid carcinoma is the most common type of the malignant ones⁶⁻⁹. It is not entirely clear which etiological factors lead to the formation of this group of tumors. Literature data suggest that their occurrence is associated with exposure to ultraviolet and ionizing radiation, the use of tobacco and alcohol, or viral infections^{10,11}.

The aim was to present data on salivary gland tumours in Southeast Serbia.

In Serbia, data on salivary gland tumors, their incidence, and the distribution of certain histopathological types are scarce. Therefore, the study aimed to present the situation in Southeastern Serbia.

Material and Methods

A clinical retrospective study was used to analyse data from the medical records of patients with salivary gland tumors treated at the Department of Maxillofacial Surgery of the Dental Clinic in Niš, from 2012 to 2014. All tumors were classified according to the 2005 WHO classification.

The Department of Maxillofacial Surgery of the Dental Clinic in Niš is a reference centre in this geographical region, towards which around 2 million inhabitants of southeastern Serbia gravitate.

Statistical Analysis

After statistical processing, the obtained results were shown in the form of absolute and relative numbers.

Za ispitivanje povezanosti između promjenljivih korišćen je χ^2 test. Statistička značajnost određivana je na nivou $p < 0,05$.

Rezultati

Podaci dobijeni na osnovu analize medicinske dokumentacije pacijenata sa tumorima pljuvačnih žlezda prikazani su u Tabelama 1–4, u kojima su navedeni histopatološki tip tumora, uzrast pacijenata, pol i lokalizacija tumora. U Tabeli 5 dati su podaci o distribuciji malignih i benignih tumora prema starosti i polu pacijenata.

Kod benignih tumora postoji statistički značajna razlika u javljanju različitih tipova kada se u obzir uzme pol ($\chi^2 = 10,954$; $p < 0,05$) – Vartinov tumor češće se javljao kod muškaraca, a pleomorfni adenom kod žena. S obzirom na značajno manji broj malignih tumora i postojanje većeg broja tipova, nisu utvrđene statistički značajne razlike u njihovoj frekvenciji javljanja kod muškaraca i kod žena ($\chi^2 = 2,417$; $p = 0,983$).

Poređenjem benignih i malignih tumora utvrđeno je da su i jedni i drugi sa sličnom učestalošću zahvatili velike i male pljuvačne žlezde ($\chi^2 = 0,587$; $p = 0,444$). Međutim, benigni tumori češće su se javljali u parotidnoj žlezdi, a maligni u submandibularnoj ($\chi^2 = 9,822$; $p < 0,01$). Svi tipovi benignih tumora sa istom učestalošću zahvatili su sve tri velike pljuvačne žlezde ($\chi^2 = 1,934$; $p = 0,747$), kao i maligni tumori ($\chi^2 = 24,007$; $p = 0,155$). U malim pljuvačnim žlezdama, incidencija javljanja i benignih i malignih tumora znatno je manja, te nisu utvrđene statistički značajne razlike koje se tiču zahvatanja pojedinih žlezda ($\chi^2 = 0,384$; $p = 0,983$). Ni kod benignih ($\chi^2 = 4,188$; $p = 0,839$) ni kod malignih tipova tumora ($\chi^2 = 1,250$; $p = 0,996$) nisu utvrđene razlike u incidenciji javljanja pojedinih tipova tumora ni u jednoj od malih pljuvačnih žlezda.

Tumori pljuvačnih žlezda sa sličnom frekvencijom javljali su se u svim uzrastima kod muškaraca i kod žena ($\chi^2 = 0,418$; $p = 0,811$). Maligni tumori bili su češći u starijem dobu (u osmoj i devetoj deceniji), dok su se benigni tumori češće javljali u srednjim decenijama života (od četvrte do šeste decenije) ($\chi^2 = 30,991$; $p < 0,001$). Ukoliko se svi pacijenti podele u tri starosne grupe (do 40. godine, od 40 do 70 godina i preko 70 godina), može se reći da je u najmlađoj starosnoj grupi učestalost bila mala i slična; u srednjoj starosnoj grupi veća je bila učestalost benignih tumora, a u najstarijoj grupi učestalost malignih tumora ($\chi^2 = 21,962$; $p < 0,001$).

The χ^2 -test was used to examine the association between variables. Statistical significance was determined at the $p < 0.05$ level.

Results

The data obtained from the analysis of the medical records of the patients with salivary gland tumors are shown in Tables 1–4. They include the histopathological type of tumor, the age and gender of the patients, as well as the location of the tumor. Table 5 shows data on the distribution of malignant and benign tumors in relation to the age of the patients.

Regarding benign tumors, there was a statistically significant difference in the occurrence of different types in relation to gender ($\chi^2 = 10.954$, $p < 0.05$)—Warthin's tumor occurred more often in men, whereas pleomorphic adenoma was more common in women. Considering a significantly lower number of malignant tumors and the existence of a greater number of types, no statistically significant differences were determined in the incidence between men and women ($\chi^2 = 2.417$, $p = 0.983$).

Having compared benign and malignant tumors, it was determined that they occurred in the major and minor salivary glands with a similar incidence ($\chi^2 = 0.587$, $p = 0.444$). However, benign tumors occurred more often in the parotid gland, whereas malignant tumors occurred in the submandibular gland ($\chi^2 = 9.822$, $p < 0.01$). All types of benign tumors affected all three major salivary glands with the same incidence ($\chi^2 = 1.934$, $p = 0.747$), which was the case with malignant tumors as well ($\chi^2 = 24.007$, $p = 0.155$). The incidence of both benign and malignant tumors in the minor salivary glands was significantly lower, thus no statistically significant differences were found regarding the involvement of individual glands ($\chi^2 = 0.384$, $p = 0.983$). No differences in the incidence of certain tumor types in each of the minor salivary glands were found either in benign ($\chi^2 = 4.188$, $p = 0.839$) or in malignant tumor types ($\chi^2 = 1.250$, $p = 0.996$).

Salivary gland tumors had a similar incidence in men and women of all ages ($\chi^2 = 0.418$, $p = 0.811$). Malignant tumors were associated with older age (8th–9th decade), whereas benign tumors were more common in middle-aged individuals, i.e., between the 4th and the 6th decade ($\chi^2 = 30.991$, $p < 0.001$). Upon the division of all patients into three age groups—up to 40 years, 40–70 years, and over 70 years—the incidence in the youngest age group was small and rather uniform. However, there was a higher incidence of benign tumors

U pojavi malignih tumora nije bilo razlike između polova ukoliko se u obzir uzme starost ($\chi^2 = 1,538$; $p = 0,819$); to važi i za pojavu benignih tumora pljuvačnih žlezda ($\chi^2 = 0,489$; $p = 0,783$).

in the middle-aged group, that is, malignant tumors in the oldest ($\chi^2 = 21.962$, $p < 0.001$).

The occurrence of malignant tumors did not differ regarding gender and age ($\chi^2 = 1.538$, $p = 0.819$), and neither did the occurrence of benign salivary gland tumors ($\chi^2 = 0.489$, $p = 0.783$).

Tabela 1. Benigni tumori pljuvačnih žlezda u svim pljuvačnim žlezdama

Table 1. Benign salivary gland tumors in all salivary glands

Dijagnoza / Diagnosis	Broj / No.	Procenat u odnosu na sve tumore / Percentage of all tumors	Muškarci / Male N (%)	Žene / Female N (%)	Uzrast / Age range (years)
Warthin's tumor	65	42.48%	48 (64.9%)	17 (34.0%)	39–77
Pleomorphic adenoma	51	33.33%	22 (29.7%)	29 (58.0%)	12–76
Myoepithelioma	4	2.61%	1 (1.4%)	3 (6.0%)	55–65
Basal cell adenoma	3	1.96%	2 (2.7%)	1 (2.0%)	52–70
Oncocytoma	1	0.65%	1 (1.4%)	0 (0.0%)	75
Ukupno / Total	124	81.04%	74 (48.36%)	50 (32.68%)	12–77

Tabela 2. Maligni tumori pljuvačnih žlezda u svim pljuvačnim žlezdama

Table 2. Malignant salivary gland tumors in all salivary glands

Dijagnoza / Diagnosis	No.	Procenat u odnosu na sve tumore / Percentage of all tumors	Muškarci / Male	Žene / Female	Uzrast / Age range (years)
Mucoepidermoid carcinoma	6	3.92%	2 (13.3%)	4 (28.6%)	44–72
Salivary duct carcinoma	5	3.26%	3 (20.0%)	2 (14.3%)	74–82
Adenocarcinoma not otherwise specified	4	2.61%	2 (13.3%)	2 (14.3%)	56–76
Squamous cell carcinoma	3	1.96%	2 (13.3%)	1 (7.1%)	71–81
Actinic cell carcinoma	2	1.30%	0 (0.0%)	2 (14.3%)	60–64
MALT lymphoma	2	1.30%	1 (6.7%)	1 (7.1%)	61–72
Non-Hodgkin lymphoma	2	1.30%	2 (13.3%)	0 (0.0%)	75–91
Adenoid cystic carcinoma	2	1.30%	1 (6.7%)	1 (7.1%)	56–67
Small cell carcinoma	1	0.65%	0 (0.0%)	1 (7.1%)	70
Acinocellular carcinoma	1	0.65%	1 (6.7%)	0 (0.0%)	73
Carcinoma ex pleomorphic adenoma	1	0.65%	1 (6.7%)	0 (0.0%)	74
Ukupno / Total	29	18.96%	15 (9.96%)	14 (9.15%)	40–91

Tabela 3. Lokacija i histološki tip 124 benigna tumora pljuvačnih žlezda. Podaci su broj zabeleženih (%) tumora.

Table 3. Location and histological type of 124 benign salivary gland tumors. Data are number (%) of tumors.

Dijagnoza / Diagnosis	Velike pljuvačne žlezde / Major salivary glands			Male pljuvačne žlezde / Minor salivary glands				
	Zaušna / Parotid	Podvilična / Submandibular	Podjezična / Sublingual	Nepce / Palate	Usne / Lips	Sluzokoža obrazna / Buccal mucosa	Jezik / Tongue	Pod usne duplje / Floor of mouth
Warthin's tumor	57 (55.3%)	6 (50.0%)	0 (0.0%)	0 (0.0%)	0(0.0%)	1 (33.3%)	1(100.0)	0 (0.0%)
Pleomorphic adenoma	41 (39.8%)	4 (33.3%)	0 (0.0%)	4(100.0)	0(0.0%)	2 (66.7%)	0 (0.0%)	0 (0.0%)
Myoepithelioma	2 (1.9%)	1 (8.3%)	0 (0.0%)	0 (0.0%)	1(100.0 %)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Basal cell adenoma	2 (1.9%)	1 (8.3%)	0 (0.0%)	0 (0.0%)	0(0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Oncocytoma	1 (1.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0(0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Ukupno / Total	103(83%)	12 (9.6%)	0 (0.0%)	4 (3.2%)	1(0.8%)	3 (2.4%)	1 (0.8%)	0 (0.0%)

Tabela 4. Lokacija i histološki tip 29 malignih tumora pljuvačnih žlezda. Podaci su broj zabeleženih (%) tumora.**Table 4.** Location and histological type of 29 malignant salivary gland tumors. Data are number (%) of tumors.

Dijagnoza / Diagnosis	Velike pljuvačne žlezde / Major salivary glands			Male pljuvačne žlezde / Minor salivary glands				
	Zaušna / Parotid	Podvilična/ Submandibular	Podjezična / Sublingual	Nepce / Palate	Usne / Lips	Obrazna sluzokoža / Buccal mucosa	Jezik / Tongue	Pod usne duplje / Floor of mouth
Mucoepidermoid carcinoma	3 (20.0%)	2 (22.2%)	0 (0.0%)	0 (0.0%)	0(0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)
Salivary duct carcinoma	2 (13.3%)	1 (11.1%)	1 (100.0%)	1(50.0%)	0(0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Adenocarcinoma not otherwise specified	1 (6.7%)	1 (11.1%)	0 (0.0%)	1(50.0%)	0(0.0%)	0 (0.0%)	1(100.0%)	0 (0.0%)
Squamous cell carcinoma	1 (6.7%)	2 (22.2%)	0 (0.0%)	0 (0.0%)	0(0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Actinic cell carcinoma	1 (6.7%)	1 (11.1%)	0 (0.0%)	0 (0.0%)	0(0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
MALT lymphoma	1 (6.7%)	1 (11.1%)	0 (0.0%)	0 (0.0%)	0(0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Non-Hodgkin lymphoma	1 (6.7%)	1 (11.1%)	0 (0.0%)	0 (0.0%)	0(0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Adenoid cystic carcinoma	2 (13.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0(0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Small cell carcinoma	1 (6.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0(0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Acinocellular carcinoma	1 (6.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0(0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Carcinoma ex pleomorphic adenoma	1 (6.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0(0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Ukupno / Total	15 (51.7%)	9 (31.0%)	1 (3.4%)	2 (6.9%)	0(0.0%)	1 (3.4%)	1 (3.4%)	0(0.0%)

Tabela 5. Distribucija svih tumora pljuvačnih žlezda prema polu i uzrastu**Table 5.** Age and sex distribution of all salivary gland tumors.

Uzrast / Age	Maligni / Malignant			Benigni / Benign		
	Muškarci / Male	Žene / Female	Ukupno / Total (%)	Muškarci / Male	Žene / Female	Ukupno / Total (%)
0-9	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
10-19	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (2.2%)	1 (0.6%)
20-29	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (2.5%)	2 (4.4%)	4 (2.6%)
30-39	0 (0.0%)	0 (0.0%)	0 (0.0%)	7 (8.9%)	5 (11.1%)	12 (7.8%)
40-49	1 (6.2%)	0 (0.0%)	1 (0.6%)	14 (17.7%)	7 (15.6%)	21 (13.7%)
50-59	0 (0.0%)	2 (15.4%)	2 (1.3%)	13 (16.5%)	7 (15.6%)	20 (13%)
60-69	4 (25.0%)	5 (38.5%)	9 (5.9%)	32 (40.5%)	18 (40.0%)	50 (32.7%)
70-79	5 (31.2%)	4 (30.8%)	9 (5.9%)	9 (11.4%)	5 (11.1%)	14 (9.1%)
>80	6 (37.5%)	2 (15.4%)	8 (5.2%)	2 (2.5%)	0 (0.0%)	2 (1.3%)
Ukupno / Total	16 (10.5%)	13 (8.5%)	29 (19.0%)	79 (51.6%)	45 (29.4%)	124 (81.0%)

Diskusija

Kada je reč o tumorima pljuvačnih žlezda u Srbiji, epidemiološki podaci su oskudni u literaturi. Prilikom naše analize, koja je trajala tri godine, konstatovane su 153 tumorske formacije u pljuvačnim žlezdama; od toga, najveći je bio broj benignih tumora u velikim pljuvačnim žlezdama (75,16% svih tumora). Do sličnih rezultata došli su autori u severoistočnoj Kini¹² i Meksiku¹³; s druge strane, autori u Jordanu¹⁴, Brazilu¹⁵, Ujedinjenom Kraljevstvu³ i Iranu⁹ objavili su rezultate studija u kojima je incidencija pojave bila niža nego u ovoj studiji.

Jedna od najobimnijih internacionalnih multicentričnih studija, studija Alsanie i sar., sprovedena na 5.739 slučajeva, pokazala je da se benigni tumori pljuvačnih žlezda javljaju u 65% slučajeva, a maligni tumori pljuvačnih žlezda u 35% slučajeva¹⁶.

Najučestalija pojava tumorskih formacija bila je u parotidnoj (83% svih benignih tumora), a potom u submandibularnoj pljuvačnoj žlezdi (9,6% svih benignih tumora); to je u saglasnosti sa rezultatima autora koji su radili istraživanje na 2.508 pacijenata u severoistočnoj Kini¹², kao i sa rezultatima autora koji su ispitivanje sprovedeli na 599 slučajeva brazilske populacije¹. Dakle, zaključeno je da učestalost ovih tumora, kada je posredi lokalizacija, ne zavisi od rasne pripadnosti.

U sublingvalnoj pljuvačnoj žlezdi nije dijagnostikovani nijedan benigni tumor. Dijagnostikovani je samo jedan maligni tumor, i to salivary duct karcinom. U meksičkoj populaciji takođe je pronađen samo jedan tumor sublingvalne pljuvačne žlezde u seriji od 360 slučajeva³.

Čak su i autori u Kini opisali veoma mali broj tumora sublingvalne žlezde; s obzirom na to da su oni ispitali velik broj pacijenata¹², može se reći da su tumori ove velike pljuvačne žlezde izuzetno retki, a kada se jave, češće su maligni.

Tumori su izuzetno retki u malim pljuvačnim žlezdama – u našoj studiji, broj benignih tumora u njima iznosio je 7,4% od ukupnog broja svih benignih tumora. Broj malignih tumora u malim pljuvačnim žlezdama iznosio je 13,7% od ukupnog broja svih malignih tumora pljuvačnih žlezda, a dominantni su bili oni u malim pljuvačnim žlezdama na palatumu. Prema podacima iz literature, maligni tumori malih pljuvačnih žlezda čine svega 0,3% svih malignih tumora i imaju goru prognozu i veći stepen recidiva nego tumori velikih pljuvačnih žlezda¹⁷.

Discussion

Epidemiological data in the literature are scarce regarding salivary gland tumors in Serbia. In our study, 153 tumor formations were found in salivary glands within 3 years. The largest number of these formations were benign tumors in the major salivary glands (75.16%). Similar results have been reported by Chinese¹² and Mexican¹³ authors, whereas authors from Jordan¹⁴, Brazil¹⁵, the UK³, and Iran⁹ have reported results that are not in agreement with the results of our study.

One of the most extensive international multicentre studies by Alsanie et al., which included 5739 individuals, showed that benign and malignant salivary gland tumors occurred in 65% and 35% of the cases, respectively¹⁶. Tumor formations most commonly occur in the parotid salivary gland (83% of all benign tumors), followed by the submandibular gland (9.6%), which is in agreement with the results of a study conducted on 2508 individuals in northeastern China¹², as well as with a Brazilian study conducted on 599 individuals¹. Therefore, it can be said that the incidence of these tumors regarding the localization is not race-dependent.

We encountered no benign tumors in the sublingual salivary gland, and only one malignant tumor, i.e., salivary duct carcinoma. In the Mexican population, one sublingual salivary gland tumor was also found in a series of 360 cases³. Even the Chinese authors described a very small number of sublingual gland tumors, given the large number of patients¹². Therefore, it can be concluded that tumors of this major salivary gland are extremely rare, but more often malignant when they do occur.

Tumors are exceptionally uncommon in the minor salivary glands, with only 7.4% of all benign and 13.7% of all malignant salivary gland tumors reported in our country, with a predominance in the minor salivary glands on the palate. According to literature data, malignant tumors of the minor salivary glands make up only 0.3% of all malignant tumors and have a worse prognosis and a higher degree of recurrence compared to those of the major salivary glands¹⁷. The higher incidence of malignant tumors in the minor salivary glands is essential for differential diagnosis^{18,19}.

Men were more often affected by both malignant (9.96% of all tumors) and benign (48.36% of all tumors) salivary gland tumors than women.

Veća učestalost malignih tumora u malim pljuvačnim žlezdama veoma je važna zbog razmatranja diferencijalne dijagnoze^{18,19}.

Muškarci su češće nego žene oboljevali i od malignih (9,96% svih tumora) i od benignih (48,36% svih tumora) tumora pljuvačnih žlezda. Umerena dominacija pojave tumorskih formacija u pljuvačnim žlezdama kod muškaraca uočena je i u podacima dostupnim u literaturi^{20,21}.

Najčešći histološki tip benignih tumora pljuvačnih žlezda bili su Vartinov tumor (42,48% svih tumora) i pleomorfni adenom (33,33% svih tumora). Međutim, u literaturi je često ovaj odnos obrnut, pa se pleomorfni adenom navodi kao najčešći tumor, a Vartinov tumor kao drugi po učestalosti¹². U multicentričnoj internacionalnoj studiji Alsanie i sar. pleomorfni adenom bio je najčešći tip benignog tumora u pljuvačnim žlezdama, sa prevalencijom od 64% u Evropi do 87% u Južnoj Americi¹⁶. Učestalost malignih tumora među svim tumorima pljuvačnih žlezda iznosila je 18,96%; među njima, mukoepidermoidni karcinom (3,92% svih tumora) i salivary duct karcinom (3,26% svih tumora) imali su vodeće mesto. Mukoepidermoidni karcinom zauzima vodeće mesto i u mnogim drugim studijama^{3,16}, dok je na drugom mestu ipak adenoid cistični karcinom u većini studija²²⁻²⁴.

Benigni tumori su u jugoistočnoj Srbiji bili najučestaliji u sedmoj deceniji života, i kod muškaraca i kod žena. Maligni tumori u pljuvačnim žlezdama dominantno su se javljali posle šezdesete godine. U velikom broju radova navedeno je da se tumorske formacije najčešće javljaju kod žena, i to između treće i pete decenije života^{6,7,8,15,25}. Ipak, u opsežnoj studiji sprovedenoj u Finskoj i Izraelu takođe je pokazano da su sedma i osma decenija najčešće doba za pojavu ovih tumora²⁶.

Zaključak

Ova studija je ukazala na to da su benigni tumori u pljuvačnim žlezdama znatno češći od malignih tumora. Najčešći benigni tumori u generalnoj populaciji bili su Vartinov tumor i pleomorfni adenom, s tim što je Vartinov tumor bio češći kod muškaraca, a pleomorfni adenom kod žena. Među malignim tumorima najčešći su bili mukoepidermoidni karcinom i salivary duct karcinom u generalnoj populaciji – mukoepidermoidni karcinom bio je češći kod žena, a salivary duct karcinom kod muškaraca. Rezultati ove studije pokazali su da su benigni i maligni tumori češći u velikim pljuvačnim žlezdama.

A moderate dominance of salivary gland tumors in men is also observed in literature data^{20,21}. The most common histological type of benign salivary gland tumors is Warthin's tumor (42.48% of all tumors), followed by pleomorphic adenoma (33.33% of all tumors). This order is often reversed in the literature, i.e., pleomorphic adenoma is denoted as the most common tumor, followed by Warthin's tumor¹². In an international multicentre study by Alsanie et al., pleomorphic adenoma is the most common benign salivary gland tumor type with a prevalence of 64% in Europe to 87% in South America¹⁶. The incidence of malignant tumors in relation to all salivary gland tumors amounts to 18.96%, with mucoepidermoid carcinoma (3.92% of all tumors) and salivary duct carcinoma (3.26% of all tumors) occupying the leading position. Mucoepidermoid carcinoma ranks number one in many other studies as well^{3,16}, followed by adenoid cystic carcinoma in most large studies²²⁻²⁴.

The highest incidence of benign tumors in southeastern Serbia is in the seventh decade of life in both men and women. Malignant salivary gland tumors predominantly occur after the age of 60. Numerous studies suggest that tumor formations most often occur in women between the third and fifth decade of life^{6,7,8,15,25}. However, a large study in Finland and Israel has also shown that the seventh and the eighth decade are the most common age for the occurrence of these tumors²⁶.

Conclusion

This study suggests that benign tumors in the salivary glands are far more common than malignant ones. The most common benign tumors in the general population are Warthin's tumor and pleomorphic adenoma. Warthin's tumor is more common in men and pleomorphic adenoma in women. Regarding malignant tumors, mucoepidermoid carcinoma and salivary duct carcinoma are the most common in the general population, with mucoepidermoid carcinoma being more common in women and salivary duct carcinoma in men. In our study, both benign and malignant tumors were more common in the major salivary glands.

We have compared the presented results of the study on the population of Southeastern Serbia with data obtained from similar studies around the world.

Prikazani rezultati istraživanja koje je obuhvatilo stanovništvo jugoistočne Srbije upoređeni su sa podacima dobijenim u sličnim istraživanjima širom sveta; stoga, multicentrično istraživanje na nivou cele Srbije umnogome bi doprinelo ranoj dijagnostici i odgovarajućem tretmanu tumorskih formacija u svim pljuvačnim žlezdama, kao i njihovoj epidemiološkoj evaluaciji.

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However, we firmly believe that a multicentre study at the level of the whole of Serbia would significantly contribute to early diagnosis and appropriate treatment of tumor formations in all salivary glands, as well as to their epidemiological evaluation.

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