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KLINIČKE I RADIOGRAFSKE ODLIKE ADENOMATOIDNOG ODONTOGENOG TUMORA

CLINICAL AND RADIOGRAPHIC FEATURES OF ADENOMATOID ODONTOGENIC TUMOUR

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Sažetak

Uvod: Adenomatoidni odontogeni tumor (AOT) je neuobičajeni, neagresivni tumor poreklom od odontogenog epitela. On čini 3-7% svih odontogenih tumora.

Cilj ovog članka bio je da utvrdi trenutne mogućnosti kliničkog i radiografskog ispitivanja odlika AOT. Koristeći odgovarajuće ključne reči, pretražili smo obilnu literaturu PubMed baze podataka u poslednjih deset godina. Od 57 članaka o AOT, 35 je imalo studijske kriterijume i oni su uključeni u pregled.

Rezultati pokazuju da je najčešće mesto pojave AOT u posteriornim delovima mandibule, što je u suprotnosti sa postojećim podacima iz literature, prema kojima se tvrdi da se AOT najčešće pojavljuje u anteriornom regionu maksile. Ovaj članak daje korisne informacije parteći demografske, kliničke, radiografske i histološke odlike AOT.

Ključne reči: adenomatoidni odontogeni tumor, odontogeni tumor, intrakoštani

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Abstract

Introduction: Adenomatoid odontogenic tumour (AOT) is an uncommon, non-aggressive tumour arising from the odontogenic epithelium. It accounts for 3-7% of all odontogenic tumors.

The objective of this systematic review was to determine the recent trends in the clinical and radiographic features of AOT. We conducted a comprehensive literature search regarding AOT in PubMed database over the last ten years using suitable search words. Out of 57 articles of AOT, 35 met the study criteria and were included in the review.

The results our review results showed that the mandibular posterior region was the commonest site for the occurrence of AOT. This is contrary to the existing literature data which state that AOT is commonest in the maxillary anterior region. This review provides valuable information and update regarding the demographic details, clinical, radiographic and histologic features of AOT.

Key words: adenomatoid odontogenic tumour, odontogenic tumour, intraosseous

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Uvod

Adenomatoidni odontogeni tumor (AOT) je neuobičajen, neagresivni tumor poreklom od odontogenog epitela¹. Prvi put ga je opisao Dreiblad² 1907. godine kao pseudo-adenameloblastom, a kasnije i Harbitz³, kao ameloblastom. Philipsen i Birn⁴ su predložili da ne bude posmatran kao ameloblastom na osnovu njegovog kliničkog ponašanja, već su predložili termin „adenomatoidni odontogeni tumor“. Svetska zdravstvena organizacija je 2005. godine definisala AOT kao tumor sastavljen od odontogenog epitela sa raznolikom histoarhitekturom, koji je ugrađen u zrelo vezivno tkivo strome i karakteriše se sporim ali progresivnim rastom⁵.

Tumor se nekada naziva i dvotrećinski tumor, zbog toga što se 2/3 slučajeva javlja u maksili, 2/3 slučajeva kod mladih žena, 2/3 slučajeva je udruženo sa neizniklim zubima i 2/3 slučajeva su očnjaci⁶.

Metodologija

Sprovedno je sveobuhvatno istraživanje literature PubMed baze podataka, sa terminima „adenomatoidni odontogeni tumor“, „AOT“, „radiografske odlike“ i „impaktirani zub“ u periodu od 2005. do 2014. godine. Pronađeno je 57 članaka preliminarnom pretraživanju baze podataka, među kojima je 35 imalo uključujuće i isključujuće kriterijume Tabela 1. Dobijeni su izgled pacijenta, klinički, radiološki i histološki podaci i prezentovani u Tabeli 2^{2,6-36}. Lokacija ciste je razmatrana u regiji sekutića, očnjaka, premolara, molara i retromolara. Kada lezija zahvata više regija, smatra se ugroženim centralni deo regije.

Introduction

Adenomatoid odontogenic tumour (AOT) is an uncommon, non-aggressive tumour of the odontogenic epithelium¹. It was first described by Dreiblad² in 1907 as pseudo adenoameloblastoma and later by Harbitz³ in 1915 as cystic adamantoma. Philipsen and Birn⁴ in 1969 suggested that it should not be considered as ameloblastoma due to its different clinical behaviour and proposed the term ‘adenomatoidodontogenic tumour’. WHO in 2005 defined AOT as ‘a tumour composed of odontogenic epithelium presenting a variety of histoarchitectural patterns, embedded in a mature connective tissue stroma and characterised by slow but progressive growth⁵.

The tumour is sometimes referred to as ‘two-thirds tumour’ because it occurs in the maxilla in about 2/3 of the cases, about 2/3 of the cases arise in young females, 2/3 of the cases are associated with an unerupted tooth, and 2/3 of the affected teeth are the canines⁶.

Methodology

A comprehensive literature search of the PubMed database with terms such as ‘adenomatoid odontogenic tumour’, ‘AOT’, ‘radiographic feature’ and ‘impacted tooth’ was conducted from 2005-2014. Fifty seven articles were identified in the preliminary database search, among which 35 met the inclusion and exclusion criteria Table 1. Patient demographics, clinical, radiographic and histopathologic information were obtained from these records and are presented in Table 2^{2, 6-36}. The location of the cyst was considered as incisor, canine, premolar, molar and retromolar areas. When the lesion extended to more than one area, the central part of the lesion was considered as the affected site.

Tabela 1. Tabela prikazuje kriterijume uključivanja i isključivanja
Table 1. Table with the inclusion and exclusion criteria

INCLUSION CRITERIA UKLJUČUJUĆI KRITERIJUMI	EXCLUSION CRITERIA ISKLJUČUJUĆI KRITERIJUMI
The paper must be in full text and written in English Članak mora biti u punom tekstu na engleskom jeziku	Cases with ambiguous diagnosis Slučajevi sa dvosmislenom dijagnozom
The age and gender of the patient must clearly be mentioned Starost i pol pacijenata moraju biti jasno naglašeni	Cases without any mention of radiographic or histological features Slučajevi bez ikakvog pomena radiografskih ili histoloških karakteristika
The site of the lesion must be described in detail Mesto lezije mora biti detaljno opisano	
The radiographic features of the case must be mentioned along with the presence or absence of an impacted tooth Radiografske odlike slučaja moraju biti pomenute u okviru prisustva ili odsustva impaktiranog zuba	
The histological features of the lesion must be confirmatory of AOT Histološke odlike AOT moraju biti potvrđene	

Tabela 2. Podaci o prijavljenim slučajevima adenomatoidnog odontogenog tumora
Table 2. Table with the data of reported cases of adenomatoid odontogenic tumour

SL.NO	AUTHOR AUTOR	AGE / GENDER STAROST/ POL	SITE MESTO	RADIOGRAPHIC FEATURES RADIOGRAFSKE ODLIKE	ASSOCIATION WITH IMPACTED TOOTH UDRUŽENOST SA IMPAKTIRANIM ZUBOM	HISTOLOGICAL FEATURES HISTOLOŠKE ODLIKE
1.	Batra P et al (2005) ²	17/F 17/Ž	Right mandibular canine region Regija mandibularnog očnjaka	Well circumscribed radiolucency Jasno okruglo rasvetljenje	Yes, canine Da, sa očnjakom	Ductal lamina surrounded by epithelial cells filled with eosinophilic material Duktalna lamina, okružena epitelijalnim ćelijama, prekrivena eozinofilnim materijalom

2.	Garg D et al (2009) ⁶	20/F 20/Ž	Right maxillary incisor-premolar region Regija desnih i maksilarnih sekutića i pretkutnjaka	Ill-defined radiolucency with radiopaque foci, root resorption Jasno definisano rasvetljenje, sa fokalnim zasenčenjima, resorpcija korena	Yes, canine Da, sa očnjakom	Cells arranged in whorl-like, ductular, ring-like and ribbon-like patterns with bands of eosinophilic material Ćelije aranžirane u spiralne, duktusne, prstenaste i trakaste strukture sa grupisanim eozinofilnim materijalom
3.	Handsche J et al (2005) ⁷	23/M 23/M	Right mandibular canine region Regija desnog mandibularnog očnjaka	Unilocular radiolucency Unilokularno rasvetljenje	Yes, canine Da,sa očnjakom	Whorles, sheets and plexiform arrangement of cells, duct like structures with calcifications Spiralni, listasti i peksiformni aranžmani, duktolike strukture sa kalcifikacijama
4.	Motamedi MHK et al (2005) ⁸	13/F 13/Ž	Left mandibular canine region Regija levog mandibularnog očnjaka	Well defined radiolucency Jasno definisano rasvetljenje	Yes, canine Da, sa očnjakom	Rosettes of spindle shaped epithelial cells with duct like structures Rozete igličastih epitelijskih ćelija sa duktolikim strukturama
5.	Nigam S et al (2005) ⁹	15/F 15/Ž	Left maxillary incisor to premolar region Regija od levog maksilarnog sekutića do pretkutnjaka	Well defined radiolucency, root resorption Jasno definisano rasvetljenje i resorpcija korena	Yes, canine Da,sa očnjakom	Nests, cords and ducts of epithelial cells with eosinophilic amyloid like material Ćelije koje liče na ameloblaste sa listastim retikulum stelatumom i gleđnim matriksom koji prekriva dentin
6.	Vargas PA et al (2006) ¹⁰	16/M 16/M	Left mandibular Region levih mandibularnih kutnjaka (molara)	Well defined unilocular radiolucency with discrete areas of radiopacities Jasno definisano unilokularno rasvetljenje sa zonama diskretnog zasenčenja		

7.	Sempere FJV et al (2006) ¹¹	9/F 9/F	Left mandibular canine region Regija levih mandibularnih očnjaka	Well defined radiolucency Jasno definisano rasvetljenje	Yes, canine Da, sa očnjakom	Whorled nests of odontogenic epithelium with calcified basophilic spherules, irregular hyaline and amorphous deposits Spiralna gnezda odontogenog epitela sa kalcifikovanim bazofilnim sferama, i regularnim hijalnim i amorfnim depozitima
8.	Jivan V et al (2007) ¹²	40/M 40/Ž	Right mandibular premolar to molar region Regija od desnog mandibularnog pretkutnjaka do kutnjaka	Well defined radiolucency with root resorption Jasno definisano rasvetljenje i resorpcija korena	No Ne	Clusters and strands of cuboidal cells arranged in a lace-like pattern with hyaline material Bokori i trake kuboidnih ćelija aranžiranih u strukturu slične čipki sa hijalnim materijalom
9.	Nonaka CFW et al (2007) ¹³	13/F 13/Ž	Left maxillary canine to pre-molar region Regija levog maksilarnog očnjaka do pretkutnjaka	Well defined radiolucency with radiopaque areas Jasno definisano rasvetljenje sa zonom zasenčenja	Yes, canine Da, sa očnjakom	Islands and sheets of globular cells with duct like structures, amorphous eosinophilic material and calcified areas Ostrvca, listasti i globularni ćelijski infiltrati, sa strukturama sličnim duktusima, amorfnim eozinofilnim materijalom i kalcifikovanim poljima
10.	Chuan Xiang Z et al (2007) ¹⁴	16/M 16/Ž	Right maxillary canine region Regija maksilarnog očnjaka	Well defined unilocular radiolucency Jasno definisano unilokularno rasvetljenje	Yes, canine Da, sa očnjakom	Nests or rosette like structures and tubular or duct like appearance of odontogenic epithelium with eosinophilic amorphous material and globular calcifications Odontogeni epitel koji se javlja u vidu gnezda, rozete, tubula ili duktusa, sa amorfnim eozinofilnim materijalom i tubularnim kalcifikacijama
11.	Kemp S et al (2008) ¹⁵	46/M 46/M	Left Mandibular molar region Regija levog mandibularnog kutnjaka	Unilocular radiolucency with radiopaque foci Unilokularno rasvetljenje sa fokalnim zasenčenjima	No Ne	Sheets of spindle and epithelial cells, duct like spaces, areas of amorphous calcification Listaste i igličaste epitelne ćelije, duktusni prostori, polja amorfnih kalcifikacija

12.	Bartake AR et al (2009) ¹⁶	14/F 14/Ž	Maxillary anterior to left posterior region Od prednjeg dela do zadnje leve maksilarne regije	Multilocular radiolucency with radiopaque foci Multilokularno rasvetljenje sa fokalnim zasenčenjima	Yes, canine Da, sa očnjakom	Rosette like structures containing eosinophilic droplets, tubular duct like spaces, focal areas of calcification Strukture u vidu rozete koje sadrže eozinofine kapi kanalikularne prostore i polja fokalne kalcifikacije
13.	Carlos-Bregni R (2009) ¹⁷	19/F 19/Ž	Left mandibular molar region Regija levog mandibularn og kutnjaka	Unilocular radiolucency Unilokularno rasvetljenje	No Ne	Cuboidal cells resembling ameloblasts and stellate reticulum, presence of enamel matrix overlying dentin Kuboidalne ćelije nalik ameloblastima i retikulumom stelatumom, prisustvo glednog matriksa koji prekriva dentin
14.	Carlos-Bregni R (2009) ¹⁷	13/F 13/Ž	Left mandibular molar region Regija levog mandibularn og kutnjaka	Unilocular radiolucency Unilokularno rasvetljenje	No Ne	Globular dentin, enamel matrix, stellate reticulum, odontogenic epithelium Globularni dentin, gledni matriks, retikulum stelatum, odontogeni epitel
15.	Ide F (2009) ¹⁸	22/F 22/Ž	Right mandibular pre-molar region Regija desnog mandibularn og prekutnjaka	Unilocular radiolucency with snow-flake like radiopacities Unilokularno rasvetljenje sa pahuljičastim zasenčenjima	No Ne	Tubular and duct like structures, globular calcifications Tubularne i duktusne strukture, globularne kalcifikacije
16.	Martinez A et al (2009) ¹⁹	10/F 10/Ž	Left mandibular molar region Regija levog mandibularn og kutnjaka	Unilocular radiolucency with radiopaque mass Unilokularno rasvetljenje sa masom zasenčenja	No Ne	Rosette-like and duct-like structures with intercellular eosinophilic material, calcified masses of tubular dentin and dentinoid material with enamel matrix foci Ružoloke i duktusne strukture sa intracelularnim eozinofilnim materijalom, kalcifikovanom masomubularnog dentina i dentoidnog materijala sa fokusim glednog matriksa

17.	Friedrich R et al (2009) ²⁰	16/M 16/M	Left maxillary canine region Regija levih maksilarnih očnjaka	Slight radiopacity of the sinus with punctate radiopacities Blago zasenčenje sinusa sa tačkastim senkama	Yes, canine Da, očnjak	Rosette-like and tubular structures with eosinophilic cellular material Ružolike i tubularne strukture sa eozinofilnim ćelijskim materijalom
18.	Yilmaz N et al (2009) ²¹	15/F 15/Ž	Mandibular anterior region Regija prednje mandibule	Periapical radiolucency with fine calcifications Periapikalno rasvetljenje sa finim kalcifikacijama	No Ne	Ameloblast like cells forming duct like structures, eosinophilic droplets and odontogenic calcifications Ćelije slične ameloblastima koje formiraju kanalne strukture, eozinofilne kapljice i odontogene kalcifikacije
19.	Friedrich RE et al (2010) ²²	23/M 23/M	Right mandibular canine region Regija desnog mandibularnog očnjaka	Unilocular radiolucency with punctate radiopacities Unilokularno rasvetljenje sa tačkastim zasenčenjima	Yes, canine Da, sa očnjakom	Rosette like or tubular structures with eosinophilic cellular material Ružolike i tubularne strukture sa eozinofilnim ćelijskim materijalom
20.	Tejasvi A et al (2010) ²³	15/M 15/M	Left maxillary incisor region Regija levih maksilarnih sekutića	Well defined unilocular radiolucency Jasno definisano unilokularno rasvetljenje	No Ne	Odontogenic epithelium in duct like pattern, eosinophilic coagulum Odontogeni epitel u formi duktusa sa eozinofilnim koagulumom
21.	Sandhu SV et al (2010) ²⁴	25/F 25/F	Right maxillary incisor to pre-molar region Regija levog i maksilarnog sekutića i pretkutnjaka	Expansion and thinning of bony sinus (CT) Ekspanzija i istanjenje koštanih zidova sinusa (CT)	Yes, canine Da, sa očnjakom	Nests, rosettes, cribriform and lace like pattern of cuboidal cells with hyaline material Gnezdaste, ružolike, korpaste i čipkaste forme kuboidalnih ćelija sa hijalnim materijalom

22.	John JB et al (2010) ²⁵	39/F 39/Ž	Left maxillary pre-molar to molar region Regija levog maksilarnog kutnjaka i pretkutnjaka	Well defined unilocular corticated radiolucency Jasno definisano unilokularno rasvetljenje sa zonom kompakte	Yes, molar Da, sa molarom	Whorls, rosettes and duct like pattern of epithelial cells with calcification Epitelne ćelije sa kalcifikacijama u obliku spirale, rozete, i duktusa
23.	Sekia R et al (2011) ²⁶	21/F 21/Ž	Right maxillary incisor to molar region Regija desnog maksilarnog sekutića i pretkutnjaka	Well defined radiolucency with calcified structures Jasno definisano rasvetljenje sa kompaktnim strukturama	Yes, canine Da, sa očnjakom	Pseudo-tubular structures, acidophilic hyaline like material, dystrophic calcifications Pseudo tubularne strukture, acidofilni, hijalini material, distrofične kalcifikacije,
24.	Bhaskaran P et al (2011) ²⁷	34/F 34/Ž	Left maxillary canine region Regija levog maksilarnog očnjaka	Well circumscribed sclerotic radiolucency, root resorption Jasno, okruglasto sklerotično rasvetljenje, korenska resorpcija	Yes, supernumerary tooth Da, preko brojni zub	Whorls, sheets and duct like structures lined by epithelial cells with evidence of calcification Epitelne ćelije u vidu spirale, lista ili duktusa, sa prisutnom kalcifikacijom
25.	Bhaskaran P et al (2011) ²⁷	15/F 15/Ž	Left maxillary canine region Regija levog maksilarnog očnjaka	Well circumscribed unilocular radiolucency with flecks of calcifications Jasno, okruglasto unilokularno rasvetljenje, sa pahuljičastom kalcifikacijom	Yes, canine Da, sa očnjakom	Focal areas of solid tumours showing whorls, sheets and duct like structures Fokalna polja solidnih tumora spiralne, listaste i duktusne strukture

26.	Singh V et al (2012) ²⁸	18/F 18/Ž	Right maxillary incisor to molar region Regija od desnog maksilarnog sekutića do kutnjaka	Irregular corticated radiolucency Iregularno kortikalno rasvetljenje	Yes, canine Da, sa očnjakom	Islands and ducts lined by cuboidal cells with amorphous calcified material Ostrvca i kanalići kiuboidalnih ćelija sa amorfnim kalcifikonim materijalom
27.	Mutalik VS et al (2012) ²⁹	14/F 14/Ž	Left maxillary canine region Regija levog maksilarnog očnjaka	Well defined radiolucency, root resorption Jasno, definisano rasvetljenje, korenska resorpcija	Yes, canine Da, sa očnjakom	Whorls, rosettes, duct like and tubular arrangement of epithelial cells with areas of calcification, eosinophilic material and leisegang rings Spiralni, ružoliki, kanalni i tubularni aranžmani epitelnih ćelija sa polljima kalcifikacije, eozinofinim materijalom
28.	Gomez RS et al (2013) ³⁰	32/M 32/M	Left mandibular retromolar area Leva mandibularna površina iza kutnjaka	Well circumscribed unilocular radiolucency Jasno okruglo unilokularno rasvetljenje	No Ne	Nodules, cords and strands of epithelial cells, swirls and ribbons of ameloblast cells, islands of odontogenic epithelium with enamel matrix deposits Čvorići, vrpce i niti epitelnih ćelija upletene trake ameloblasta, ostrvca odontogenog epitela sa depozitima glednog matriksa
29.	Narayan VS et al (2013) ³¹	17/F 17/Ž	Left mandibular molar to right mandibular molar region Regija od desnog kutnjaka	Multilocular radiolucency with radiopaque foci and septae, root resorption Multilokularno rasvetljenje sa fokalnim zasenčenjima, septumima i korenskom resorpcijom	Yes, incisor Da, sa incizivom	Whorls and duct like arrangement of epithelium with foci of basophilic calcifications Epitel u vidu duktusa i spirala, sa fokalnim bazofilnim kalcifikacijama
30.	Shivali V et al (2013) ³²	18/M 18/M	Left mandibular ramus and retromolar area Levi ramus mandibule i predeo iza kutnjaka	Well defined unilocular sclerotic radiolucency Jasno definisano unilokularno rasvetljenje sa zonom skleroze	No Ne	Ductal, rosettes and convoluted pattern of odontogenic epithelial cells with globular irregular calcifications Duktusi, rozete odontogene epitelne ćelije uvijene u rozete i kanaliće, sa iregularnim globularnim kalcifikacijama

31.	Marelli M et al (2014) ³³	18/F 18/Ž	Right maxillary canine region Regija desnog maksilarnog očnjaka	Well circumscribed radiolucency Jasno okruglasto rasvetljenje	Yes, canine Da, sa očnjakom	Odontogenic epithelium with formation of follicles, spindle cells, psammoma bodies Odontogeni epitel koji formira iglice, i folikule
32.	Sharma N et al (2014) ³⁴	14/F 14/F	Right mandibular canine to molar region Desni mandibularni očnjak	Well defined radiolucency with flecks of calcification Jasno definisano rasvetljenje sa pahuljičastim kalcifikacijama	Yes, canine and premolars Da, očnjak i premolar	Duct like pattern with foci of calcifications Duktolike forme i fokalne kalcifikacije
33.	Bhullar RPK et al (2014) ³⁵	24/F 24/F	Right mandibular incisor to molar region Regija desnog mandibularnog sekutića do kutnjaka mandibule	Well defined unilocular corticated radiolucency Jasno definisano unilokularno kortikalno rasvetljenje	Yes, premolar Da, sa premolarom	Nests, whorls and rosette like structures with eosinophilic hyaline droplet material and calcifications Strukture u vidu gnezda, spirale i rozete, sa eozinofilnim hijalnim kapljicama i kalcifikacijama
34.	Vasudevan K et al (2014) ³⁶	14/F 14/Ž	Right maxillary anterior region Desna maksilarna anteriorna regija	Well defined radiolucency with flecks of calcifications Jasno definisano rasvetljenje sa pahuljičastim kalcifikacijama	Yes, canine and premolar Da, sa očnjakom i premolarom	-

Diskusija

Adenomatoidni odontogeni tumor je benigni, sporo rastući, neinvazivni odontogeni tumor, koji čini 3-7% svih odontogenih tumora². Poreklo tumora je kontraverzno, dok neki autori tvrde da se radi o hamartomu⁶. Većina autora prihvata da je odontogenog porekla, jer se nalazi u vilicama u predelu zuba i povezan je često sa impaktiranim zubima. Postoji dokaz da tumorske ćelije vode poreklo od epitela glednog organa; istraživači su takođe sugerisali da tumorske ćelije vode poreklo od ostataka dentalne lamine²⁷. Kako je histogeneza još uvek nesigurna, dugo se raspravljalo o tome da li ima hamartomazni rast ili je prava benigna neoplazma, koja ima citološke odlike slične raznim komponentama glednog organa, dentalne lamine i redukovanoj glednoj epitelu⁶. Karakteristične odlike ove lezije vazane su i za visoku sposobnost diferencijacije epitelnih komponenti i gubitak prijemčivosti mezenhimalnog tkiva za epitel¹.

Martinez A. i sar.¹⁹ utvrdili su da se AOT obično javlja kod mladih pacijenata, u drugoj deceniji života i neuobičajen je kod

Discussion

The adenomatoid odontogenic tumour is a benign, slow growing, non-invasive odontogenic lesion that accounts for 3%-7% of all odontogenic tumours². The origin of AOT is controversial with some authors claiming it to be a hamartoma⁶. However, most authors accept its odontogenic source as it occurs within the tooth bearing areas of the jaws and is often found in close association with impacted teeth. There is evidence that the tumour cells are derived from enamel organ epithelium; investigators have also suggested that the lesion arises from remnants of dental lamina²⁷. As the histogenesis is still uncertain, there has long been a debate as to whether it represents a hamartomatous growth or a true benign neoplasm, having cytological features similar to various components of enamel organ, dental lamina and reduced enamel epithelium⁶. The characteristic features of this lesion are due to both the highly differentiating ability of the epithelial component and the lack of mesenchymal tissue receptive to the influence of the epithelium¹.

pacijenata koji imaju preko 30 godina. Žene su češće pogođene od muškaraca u odnosu 1,9:1^{37,38}. Batra i sar.² otkrili su da je 69% AOT dijagnostikivano u drugoj deceniji života, a više od polovine slučajeva javlja se u tinejdzerskom periodu. U prisutnoj analizi utvrđeno je da je starost pacijenta između 9 i 46 godina sa srednjim dobom od 19 godina. Prijavljeno je 22 slučaja u drugoj dekadi života i samo jedan (2,8%) slučaj u petoj deceniji života. Na ženski pol (71,4%) odnosi se dvadeset pet slučajeva dok su deseterica bili muškarci (28,5%), što ukazuje na odnos 2,5:1.

Lezija je retko veća od 3 cm i ima upečatljivu tendenciju da se javlja u prednjim delovima vilica. Dva puta češće se nalazi u maksili nego u mandibuli^{7,19}. Leon i sar.³⁹ u njihovoj studiji od 39 slučajeva AOT utvrdili da je najčešće mesto pojave prednji deo maksile.

U svakom slučaju, među 35 slučajeva koje smo mi razmatrali u ovoj studiji, 19 slučajeva je bilo u mandibuli se (54,3%) dok je 16 bilo u maksili (45,7%). Posteriorne regije u mandibuli, su zahvaćene u 57,8% slučajeva, dok su prednje regije maksile pogođene u 42,2%. Topografska podela u maksili pokazuje da su prednje regije najčešće pogođena mesta sa frekvencijom od 93,7%, dok posteriorne regije pokazuju najmanje afiniteta za AOT (6,3%). Tako da je prema prisutnim podacima posteriorna mandibula predominantno mesto pojave. Ovaj podatak je u suprotnosti sa postojećim podacima iz literature^{13,15,16,19,39}.

Uzrok ovih rezultata može biti sledeći: ili je on to pravi pokazatelj nedavnog trenda u nastanku AOT, ili je odraz pristrasnosti zbog čega se objavljuju samo slučajevi koji pokazuju retku prezentaciju AOT. Neprijavlivanje slučajeva AOT koji se javljaju u maksilarnog prednjem području može biti još jedan od uzroka.

Adenomatoidni odontogeni tumor se može javiti intraosealno i ekstraosealno²⁷. Intraosealni AOT ima ekspanzivni rast i može biti radiografski podeljen na dva tipa: folikularni (perikoronarni) i ekstrapolikularan (ekstrakoronarni). Fridrih i sar.²⁰ ukazuju da je folikularni tip češći tip AOT. Obično se manifestuje kao perikoronarno, jasno ograničeno, kružno, unilokularno rasvetljenje ili mešovita senka sa jasnom granicom kompaktne ili sklerotične kosti koja okružuje neiznikli zub, dok se ekstrapolikularna varijanta javlja kao jasno definisano unilokularno rasvetljenje, između, iznad zuba ili kao rasvetljenje koje se superponira sa korenom zuba⁶.

Martinez A et al.¹⁹ stated that AOT is usually encountered in young patients, usually in the second decade of life and is uncommon in patients over 30 years of age. Females are affected more often than males with a female to male ratio of 1.9:1^{37, 38}. Batra et al.² found that 69% of AOTs were diagnosed in the second decade of life and more than half occur during the teenage years. In the present analysis, it was seen that the age of the patients ranged from 9 to 46 years with a mean age of 19 years. Twenty two (62.8%) of the cases were reported in the second decade of life and only 1 (2.8%) case was seen in the fifth decade. Twenty-five of the cases affected females (71.4%), while 10 were males (28.5%) bringing the female to male ratio to 2.5:1.

The lesion is seldom more than 3 cm in size and has a striking tendency to occur in the anterior portions of the jaws. It is found twice as often in the maxilla as in the mandible^{7,19}. Leon et al.³⁹ in their study of 39 cases of AOT found that anterior maxilla is the commonest site.

However, among the 35 cases that were considered in the present review, 19 cases affected the mandible (54.8%) while 16 cases affected the maxilla (45.7%). In the mandible, the posterior region was affected in 57.8% of the cases while the anterior region was affected in 42.1% of cases. In the maxilla, topographical division showed that the anterior region was the most commonly affected site with a frequency of 93.7% while the posterior region showed the least affinity for AOT (6.2%). Thus, according to the present review results posterior mandible is the predominant site of occurrence. This is contrary to the existing literature data^{13, 15, 16, 19, 39}.

This result may be due to the following reasons: either it is a true indication of the recent trend in occurrence of AOT, or it is a reflection of publication bias wherein only cases which show a rare presentation are being published. Underreporting of cases of AOT occurring in the maxillary anterior region may be another cause.

AOT can occur both intraosseously and extraosseously²⁷. Intraosseous AOT occurs as an expansile growth and can be radiographically divided into two types: follicular (pericoronal) and extrafollicular

Ekstraosealna AOT se prezentuje kao sesilna masa na gingivi²⁷.

Radiografska prezentacija AOT obično pokazuje jasno definisano rasvetljenje sa kompaktnom ili sklerotičnom granicom u očnoj regiji. Vidi se dislokacija susednog zuba, ali retko resorpcija korena zuba.¹ Od 35 slučajeva uzetih na analizu, resorpcija korena susednog zuba pronađena je u 6(17,1%) slučajeva. Uočeno je da su udruženi sa impaktiranim zubima u 65,7% slučajeva. Batra i sar² prijavili su da se impaktirani očajnici nalaze u 59% slučajeva. Slično tome, i u ovoj studiji, pronađeno je da je među impaktiranim zubima najviše očajnika, sa prevalencijom od 82,6%, dok je kod premolara bila 13%, a sekutići, molari i prekobrojni zubi pokazuju minimalnu prevalenciju od 4,3%. Adenomatoidni odontogeni tumor mogu sadržati i više malih fokusa različitog oblika i transparentije ili kalcifikacija koje se mogu manifestovati kao grupice peska ili kao kalcifikovane pahuljice²⁷. Ovi kalcifikovani depoziti mogu se videti u oko 70% slučajeva^{40,41}. Za detekciju ovakvih kalcifikata indikovana je intraoralna periapikalna radiografija. Iz Tabele 2 vidi se da se AOT prezentuje kao unilokularno rasvetljenje u 18 (51,4%) slučajeva, dok se pahuljičasto zasenčenje kalcifikovanog materijala javlja u 14 (40%) slučajeva. Samo u dva slučaja (5,6%) manifestuje se kao multilokularno rasvetljenje sa zasenčenim fokusima.

Radiografski sagledano, diferencijalna dijagnoza AOT može biti: folikularna cista, kalcifikovana odontogena cista, kalcifikovani epitelni odontogeni tumor, unilokularni ameloblastom, keratocistični odontogeni tumor. Lateralna periodontalna cista i keratocistični odontogeni tumor se mogu dijagnostički razmatrati u određenom broju slučajeva. Makroskopski, AOT je jasno definisana lezija koju okružuje tanka fibrozna kapsula. Mikroskopski, tumor je sastavljen od vretenastih epitelijalnih ćelija koje formiraju listaste, duguljaste ili spiralne mase u oskudnoj fibroznoj stromi. Epitelijalne ćelije mogu formirati ružolike strukture u centralnom delu promene⁴². Karakteristične kanalne strukture okružene su jednim slojem epitelnih ćelija, čija su jedra izmeštena iz centralnog položaja³⁷. Mehanizam formiranja ovih tubularnih struktura može biti rezultat sekretorne aktivnosti ćelija, koje su izgleda preameloblasti³⁸.

(extracoronaral). Friedrich et al.²⁰ found that the follicular variety is by far the most frequent type of AOT. It usually appears as a pericoronaral well circumscribed unilocular radiolucency or radiopaque-radiolucent mixed lesion with well-defined corticated or sclerotic border, usually surrounding an unerupted tooth while the extra-follicular variant presents as a well-defined unilocular radiolucency located between, above or superimposed on the root of a tooth⁶. Extraosseous AOT presents as a sessile mass on the facial gingiva²⁷.

The usual radiographic appearance of AOT is a well-defined radiolucency with a corticated or sclerotic border at the cuspid region of maxilla. Displacement of adjacent teeth is seen but root resorption is rare¹. Of the 35 cases taken up for analysis, root resorption of the adjacent teeth was seen in 6 (17.1%) cases. It was noted that there was an associated impacted tooth in 65.7% of the cases. Batra et al.² reported that impacted canines accounted for 59% of the cases. Similarly, in the present study, it was found that among the teeth that were impacted, canine showed the highest prevalence (82.6%), while premolar was associated in 13% of the cases and incisors, molars and supernumerary teeth showed minimal prevalence at 4.3%. AOTs may contain multiple minute variably shaped radiopaque foci or calcifications which may appear as a cluster of pebbles or may show fine snowflake like calcifications²⁷. These calcified deposits are seen approximately in 78% of the cases^{40,41}. Intraoral periapical radiograph is the indicated radiograph for the detection of calcifications. From Table 2, it is seen that AOT presented as a unilocular radiolucency in 18 (51.4%) of the cases, while radiopaque flecks of calcified material were seen in 14 (40%) of the reported cases. Only 2 (5.7%) cases presented as a multilocular radiolucency with radiopaque foci.

Generally, the radiographic differential diagnosis of an AOT includes dentigerous cyst, calcifying odontogenic cyst, calcifying epithelial odontogenic tumour, unilocular ameloblastoma and keratocystic-odontogenic tumour. In some cases, lateral periodontal cyst and keratocystic odontogenic tumour can be considered in the diagnosis. Macroscopically, AOT is a well-defined lesion surrounded by a thick fibrous capsule.

Lumen ćelije može biti prazan ili može sadržati male količine eozinofilnog materijala u vidu ameloidne mrlje. Mali kalcifikovani fokusi mogu biti rasuti duž lezije, koje se mogu interpretirati kao abortivna gledna formacija, dentinska masa ili cement²⁷. Analiza histološkog materijala u 35 slučajeva pokazala je spiralne, listaste i pleksiformne aranžmane sa ružolikim ili vretenastim epitelijalnim ćelijama koje okružuju kanalnu arhitekturu. Amorfn eozinofilni ameloid ili hijaline strukture sa distrofičnim poljima kalcifikacije viđaju se u 25 (71,4%) slučajeva. Depoziti glednog matriksa prekrivenih slojem dentina viđaju se u 4 (11,4%) histološke sekcije.

Imunohistohemijske studije ukazuju na pojavu keratina i vimentina u tumorskim ćelijama na periferiji kanala, tubula i spiralnih struktura⁴³. Amelogenin i enukleacija u malim tumorskim ćelijama i kapljicama hijalina nađeni su mineralizovani fokusi⁴⁴.

Kako sve varijante tumora imaju kapsulu, trapiski izbor je hirurška enukleacija i kiretaža promene²³. Stopa recidiva kreće se oko 0,2%³². Ako je folikul zuba prisutan, moguće je ukloniti promenu sa prezervacijom zuba, naročito kada se govori o gornjim očnjacima kod mladih pacijenata². Preporučljivo je dugotrajno praćenje pacijenta. Naš pregled je u saglasnosti sa postojećom literaturom u vezi sa AOT, u pogledu starosti, pola, radiografske prezentacije i histopatoloških odlika. Ipak, pronašli smo da se AOT javlja najčešće u posteriornim regijama mandibule. Ovaj podatak je u suprotnosti sa postojećim podacima iz literature koji ukazuju da je uobičajeno mesto za pojavu AOT anteriorna regija maksile.

Zaključak

1. Adenomatoidni odontogeni tumor je benigni, sporo rastući, ne agresivni odontogeni tumor. U našem pregledu da se najčešće viđa kod žena u drugoj deceniji života, dok je u starijem dobu redak, naročito posle pedesete godine života. Najčešće se javlja u zadnjim delovima mandibule. Adenomatoidni odontogeni tumor obično se manifestuje kao unilokularno rasvetljenje koje uzrokuje resorpciju ili dislokaciju susednog zuba. Impaktirani zub, najčešće očnjak, nalazi se u najvećem broju slučajeva. Ovim radom predstavili smo trenutne literaturne činjenice, bazirane na demografskim parametrima, kliničkim, radiološkim i histološkim odlikama AOT.

Microscopically, the tumour is composed of spindle-shaped epithelial cells that form sheets, strands or whorled masses in a scant fibrous stroma. The epithelial cells may form rosette-like structures about a central space⁴². The characteristic duct-like structures are lined by single layer of columnar epithelial cells, the nuclei of which are directed away from the central lumen³⁷. The mechanism of formation of these tubular structures may be a result of the secretory activity of the cells which appear to be preameloblasts³⁸. The lumen may be empty or may contain small amounts of eosinophilic material that may stain for amyloid. Small foci of calcification may be seen scattered throughout the lesion which have been interpreted as abortive enamel formation, dentinoid material or cementum²⁷.

Analysis of the histopathological features of the 35 cases revealed that the lesions showed whorles, sheets, and plexiform arrangement of cells with rosettes of spindle-shaped epithelial cells surrounding the ductal architecture. Amorphous eosinophilic amyloid and hyaline-like material with dystrophic areas of calcification were seen in 25 (71.4%) of the cases. Deposits of enamel matrix with the overlying dentin was seen in 4 (11.4%) of the histologic sections.

Immunohistochemistry studies of the lesions suggest the expression of keratin and vimentin in the tumour cells at the periphery of the ductal, tubular or whorled structures⁴³. Amelogenin and enamel in small mineralised foci are found in the tumour cells and in hyaline droplets⁴⁴.

Since all variants of the tumour show encapsulation, surgical enucleation or curettage is the treatment of choice². A recurrence rate of 0.2% has been reported³². If the follicle is found to be uninvolved during surgery, it may be possible to remove the lesion while leaving the tooth in place, especially in cases of involvement of the maxillary canine in young patients². A long term follow-up of the patient is recommended. Our review was in accordance with the existing literature of AOT regarding the age, sex, radiographic presentation, and histopathological features. However, we found highest predilection for AOT in the mandibular posterior region. This contradicts the existing literature where the maxillary anterior region is the common site of involvement.

Conclusion

1.AOT is a benign, slow growing, non-aggressive odontogenic tumour. Our systematic review revealed that AOT was most frequently seen in females and in the second decade of life and was rare in older individuals after the fifth decade. The commonest site of occurrence was the mandibular posterior region. It was found that AOT usually presents as a unilocular radiolucency causing resorption or displacement of the adjacent roots. An impacted tooth, usually a canine was found in a majority of the cases. Thus, this review of AOT compiles the recent literature regarding the demographic parameters, clinical, radiographic, and histological features.

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