

Radiological analysis of oligodontia among dogs in Croatia

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**BUTKOVIĆ, V., M. ŠEHIĆ, D. STANIN: Radiological analysis of oligodontia
among dogs in Croatia. Vet. arhiv 71, 57-63, 2001.**

ABSTRACT

On a sample of 174 X-rayed dogs a statistical analysis was compiled of oligodontia, post-extraction state, impaction and tooth fracture. A total of 261 anomalies were found. The most frequently observed condition was oligodontia (62%) followed by tooth fracture (23.7%), impaction (7.6%) and post-extraction state (6.5%). The majority of patients (28) comprised German Hunting Terriers where, from the total of registered anomalies, tooth fractures accounted for 45% of the cases. Oligodontia is the most frequent anomaly in the Collie. Of 261 acquired anomalies oligodontia was established in 38% of cases.

Key words: teeth anomalies, dog, radiography

Introduction

The reasons for tooth defects (anodontia, oligodontia) are various. It should be emphasised at the outset that no account is taken of the reasons why such a set of teeth is remarked upon as being incomplete according to cynological standards, and why the affected animal is awarded a lower grade, or is deprived of a breeding licence. It is therefore of the utmost importance to investigate whether the condition is hereditary or acquired

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oligodontia, or originating in extraction, impaction or tooth fracture. Radiography in such cases is the only objective method through which we can establish the remains of tooth root, or traces of alveola. Reasons for hereditary oligodontia, breed in kinship, jaw form, congenital attributes and similar have been mentioned by other researchers (BOOESSNECK, 1955; BODINGBAUER and HAGER, 1959; HENNET, 1997). Acquired oligodontia begins as the result of general infectious and parasitical diseases (HARVEY, 1998), during a period of dentition, diseases of the teeth and their surrounding areas, as a result of periodontitis, trauma or tooth extraction.

Due to the fact that no analysis of oligodontia has been performed in Croatia, the aim of this particular work was to attempt to discover its causes and frequency in certain breeds of dog.

Materials and methods

We have elaborated those patients which were directed to the Department of Radiology, Ultrasound Diagnostics and Physical Therapy of the Veterinary Faculty of University in Zagreb because of tooth defects. In the period from 1995 to 2000, 174 dogs were examined for oligodontia, state after tooth extraction, impaction and tooth fracture. Thirty-seven breeds were involved in the analysis, although where an analysed breed represented less than three animals, they were placed in a separate group ("others").

Results

Anomalies were analysed on the teeth of 174 dogs (Table 1). It was observed that changes to teeth were most frequent in the German Hunting Terrier (28), a total of 16.9% of all observed anomalies. This breed was followed by: German Shepherd (21) or 12.06%; Doberman (20) or 11.49%; Collie (16) or 9.19%. The "others" group comprised 24 breeds, and their participation in speculated anomalies was not significant. It should be stressed that the German Hunting Terrier is not the most populous breed in Croatia. From the observed sample it was also noticeable that the Scottish Terrier is a breed with most anomalies as an individual dog – 4 (12).

Table 1. Number and percentage of dogs and anomalies in single breeds

Breed	Number of dogs	%	Number of anomalies	%
Airdale terrier	3	1,72	4	1,53
Bobtail	6	3,44	6	2,30
Dachshund	4	2,29	7	2,68
Yug. sheepdog	8	4,59	10	3,83
Pinscher	4	2,29	10	3,83
Giant schnauzer	8	4,59	11	4,21
Scottish terrier	4	2,29	12	4,60
Poodle	11	6,32	18	6,90
Doberman	20	11,49	21	8,04
Collie	16	9,19	26	9,96
German shepherd	21	12,06	28	10,73
German hunting terrier	28	16,09	40	15,32
German boxer	15	8,62	34	13,03
Others	26	14,94	34	13,03
Total	174	100,00	261	100,00

Table 2. Frequency and percentage of single anomalies in different dog breeds

Breed	Oligodontia	State after teeth extraction	Impaction	Fracture	Total
Airdale terrier	4	0	0	0	4
Giant schnauzer	6	2	0	3	11
Bobtail	6	0	0	0	6
Dachshund	7	0	0	0	7
Yug. sheepdog	9	0	0	1	10
German boxer	10	0	5	19	34
Pinscher	10	0	0	0	10
Doberman	12	2	3	4	21
Scottish terrier	12	0	0	0	12
Germ. shepherd	15	1	3	9	28
Germ. hunt. terrier	15	7	0	18	40
Poodle	15	1	2	0	18
Collie	20	0	2	4	26
Others	21	4	5	4	34
Total	162	17	20	62	261
%	62,06	6,51	7,67	23,76	100,00

The frequency of particular anomalies of different dog breeds is shown in Table 2. A total of 261 anomalies were found among 174, i.e., 50% of dogs had more than one change. From observed anomalies the highest percentage was represented by oligodontia (62%). Among the observed breeds, oligodontia was also most frequently found among Collies (20), German Shepherd, Poodle and German Hunting Terrier (15). Oligodontia was found on 56 teeth in the upper jaw (31.5%) and on 106 teeth in the lower jaw (65.4%) – Table 3. If oligodontia is to be examined separately

Table 3. Frequency of oligodontia on single teeth

Upper jaws											
3	1	2	0	24	11	15	0	0	0	0	56
											34,57%
I ₁	I ₂	I ₃	C	P ₁	P ₂	P ₃	P ₄	M ₁	M ₂	M ₃	
											65,43%
4	0	2	0	33	38	2	22	1	1	3	106
Lower jaws											

by specific teeth, the condition is indicated mostly on the first and third premolar of the upper jaw (36) or 69.6%, followed by the first and second premolar of the lower jaw (71) or 66.9% – Table 3.

Tooth fracture was diagnosed in 23.7% of observed anomalies. The German Hunting Terrier and German Boxer are the breeds most

Table 4. Frequency of fractures on single teeth

Upper jaws											
7	4	4	3	3	2	1	1	0	0	0	25
											40,32%
I ₁	I ₂	I ₃	C	P ₁	P ₂	P ₃	P ₄	M ₁	M ₂	M ₃	
											59,68%
15	12	3	1	2	3	0	1	0	0	0	37
Lower jaws											

represented. Of the 62 mentioned changes (Table 2) 37 cases were observed, i.e., 59.6% of all tooth fractures.

Tooth fractures were most often observed in the lower jaw (59.6%) – Table 4, and mainly on the first and second incisor, which accounts for 72.9% of all fractures.

Post-extraction state and impaction do not represent a significant finding among observed anomalies (14.1%) – Table 2. However, it should be noted that the post-extraction state was most often observed among German Hunting Terriers (7) or 41.1%, and impaction among German Boxers (5) or 20%.

Discussion

On a sample of 174 dogs radiologically elaborated, four anomalies were analysed which through clinical examination were manifested as oligodontia. The most frequently observed was oligodontia (62%), following by tooth fracture (23.7%), impaction (7.6%), and post-extraction state (6.5%).

Oligodontia could be innate or acquired. Breed characteristics, form and size of the jaw and genetic attributes are mentioned as possible causes of innate oligodontia (BODINGBAUER and HAGER, 1959a; BOESSNECK, 1955; SCHULTZE, 1970; HENNET, 1997). Acquired oligodontia could originate as a consequence of general infective and parasitic illnesses during the dentition period, and in relation to states including periotontitis, trauma or tooth extraction, or tooth loss in advanced age (BODINGBAUER, 1960).

Compared with anamnestic, data trauma is the most frequent cause of tooth loss. Such a condition is most often observed among German Hunting Terriers, where tooth fracture and post-extraction state cause 62.5% of all anomalies. In most cases, oligodontia is observed on the first and third premolar of the upper jaw, and the first and second premolar of the lower jaw. The teeth account for 69.9% (Table 3) of oligodontia cases.

Our research does not present an entirely objective picture in differentiation between innate and acquired oligodontia. The reason for this is that after tooth extraction the alveola fills up with osseous tissue for about five months (BUTKOVIĆ, 1980) when it is no longer possible to distinguish innate from acquired oligodontia.

Tooth fractures were diagnosed in 62 cases, i.e., 23.7% of examined anomalies. The majority of fractures (61.2%) were diagnosed on the first and second incisor of the upper jaw, and especially of the lower jaw (Table 4). They were found to be a consequence of traffic accidents, playing, catching hard objects, and hunting. HARVEY (1996) also quotes similar reasons for tooth fractures.

Tooth impaction does not rank significantly in reflected anomalies (20) or 7.6%, and is observed mostly among German Boxers, which could be connected with jaw configuration.

Post-extraction state was observed in 17 cases (6.5%) and is significantly more representative among German Hunting Terriers. Comparing anamnestic data, such a condition originates as consequence of fights between dog and badger.

Our conclusion is that radiological examination is the only objective method by which we could ascertain whether oligodontia is innate or due to some other anomaly (post-extraction state, impaction, tooth fracture) which in clinical examination is manifested as oligodontia. Making a distinction of particular anomalies is extremely essential from a cynological aspect. In the researched sample, acquired oligodontia was found in 38% of cases.

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Received: 8 November 2000

Accepted: 20 April 2001

BUTKOVIĆ, V., M. ŠEHIĆ, D. STANIN: Radiološka analiza oligodontije u pasa u Hrvatskoj. *Vet. arhiv* 71, 57-63, 2001.

SAŽETAK

Na uzorku od 174 rentgenografrana psa izvršena je analiza oligodontije, stanja nakon ekstrakcije, impakcije i prijeloma zuba. Ukupno je utvrđena 261 anomalija. Najučestalija je oligodontija – 62%, zatim prijelom zuba – 23,7%, impakcija – 7,6% i stanje nakon ekstrakcije zuba – 6,5%. Najbrojniji pacijenti bili su njemački lovni terijer – 28, u kojih je od ukupno registriranih anomalija prijelom zuba bio zastupljen u 45% slučajeva. Oligodontija je najučestalija anomalija u škotskog ovčara. Od 261 anomalije stečena oligodontija je utvrđena u 38% pacijenata.

Ključne riječi: anomalije zuba, pas, rentgenografija
