



Age reflects on the occurrence of bovine periodontal lesions

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Introduction

Bovine periodontitis is a progressive infectious process that causes cumulative alterations seen in herds raised extensively in several countries and readily seen slaughtered animals (1). The periodontal lesions that develop throughout the productive life of animals can be characterised by the formation of periodontal pockets, gingival recession, clinical attachment loss and premature loss of teeth. As a polymicrobial infection, its aetiology and pathogenesis are associated with the presence of a biofilm, periodontal pathogens and immune-inflammatory mechanisms. In periodontal disease, epidemiological studies are important to describe the health status of populations, elucidate the aetiology of the disease, identify risk factors, manage its occurrence and design control measures (2). Periodontal disease is common in cattle with a prevalence of 12% reported in one study (3). No published study has investigated the risk factors associated with periodontitis in cattle or other ruminant species.

Aim of the study

The present study was conducted to evaluate some possible risk factors associated with the occurrence of periodontal lesions in cattle slaughtered in the West of Scotland.

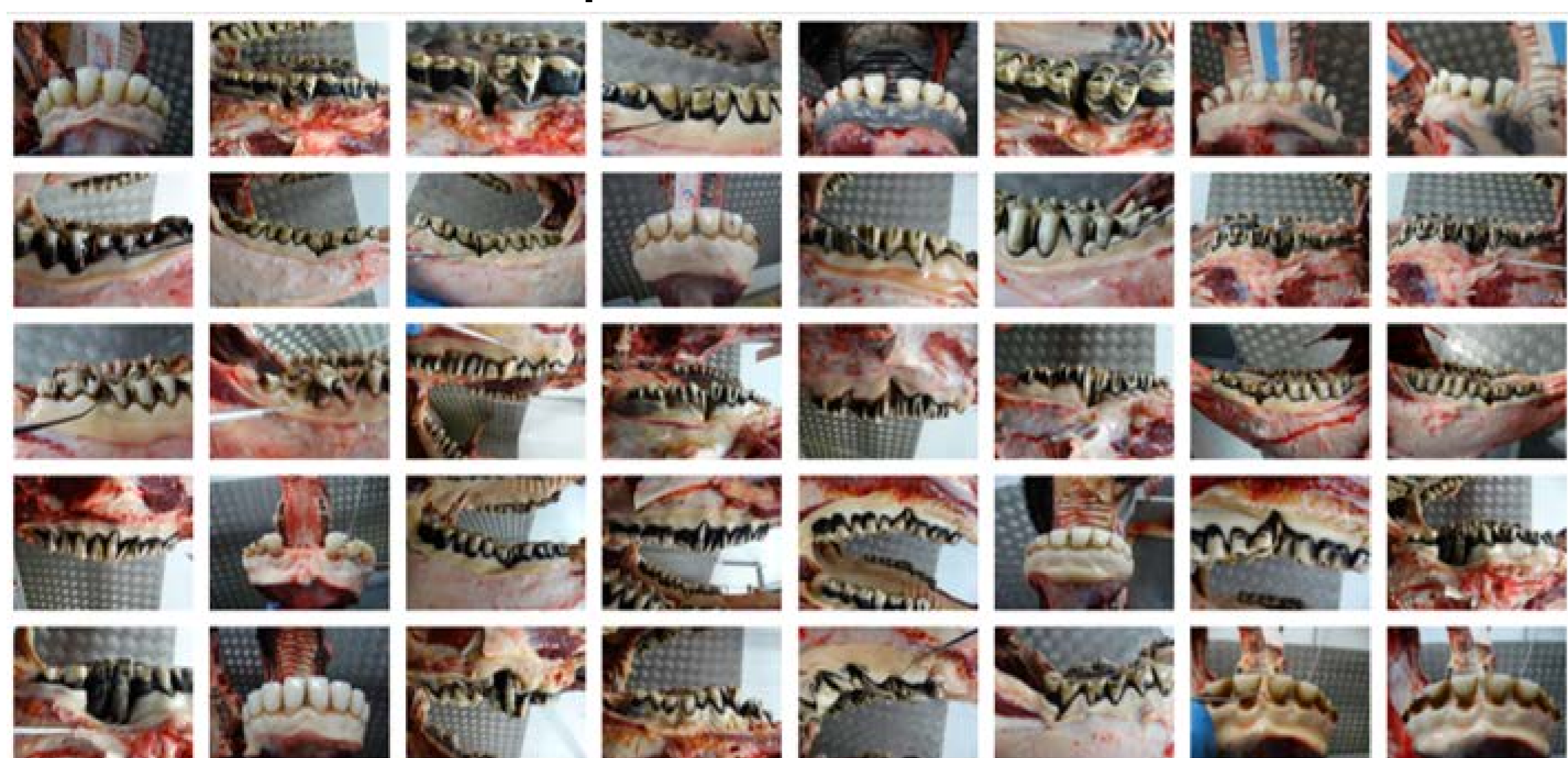
Figure 1: Example of periodontal pocket and gingival recession in a cow affected by periodontal disease



Materials and methods

From 250 cattle examined in an abattoir in the West of Scotland, 35 dental arches with periodontal lesions and 40 considered periodontally healthy were selected. Logistic regression analysis was used to evaluate the association between the independent variables, gender, age and breed with periodontitis.

Figure 2: A sample of pictures taken from animals affected by periodontal disease



Conclusions

It is likely that bovine periodontitis has a significant impact on the welfare of affected animals, as it can be a painful, chronic condition leading to difficult feeding and consequent loss of body condition and weight, increased susceptibility to disease and reduced productivity. Oral pain may have only subtle effects on cattle behaviour, and thus the disease is easily ignored or neglected. Logistic regression analysis demonstrated that periodontitis lesions are more prevalent with increasing age of cattle. We hypothesise that increasing age may not represent a risk factor *per se* for the development of bovine periodontitis but may simply reflect the cumulative exposure over time to environmental risk factors.

Results

The average age of animals with periodontitis was 7.4 years (range 1.5 to 16.5 years) and for periodontally healthy animals was 2.9 years (range 1.4 to 10.6 years). A wide range of breeds was identified, the most prevalent being Limousin, Holstein-Friesian and Aberdeen Angus. For statistical analysis, the 75 animals were grouped into two categories, dairy (n=20) or beef (n=55) cattle (Table 1). Age of animals was significantly associated with the presence of periodontal lesions. For every year of age, cattle were 1.53 times more likely to have periodontitis (p<0.001). Gender was not significantly associated with periodontitis (p=0.887). Regarding the breed type, beef cattle were 0.36 times as likely to have periodontitis compared to dairy cattle (p=0.054). A higher prevalence of periodontal lesions in the 35 affected animals was observed between right mandibular third premolar and first molar (40%), between right maxillary third premolar and first molar (28.6%), at the left maxillary third premolar (28.6%) and at the right first incisor (28.6%) (Table 2).

Table 1: Distribution of breed and sex of 75 cattle with periodontal lesions (n=35) and periodontally healthy (n=40) selected from 250 slaughtered animals in Scotland

Breed	Periodontitis (n=35)		Healthy (n=40)		Total
	F	M	F	M	
Limousin	6	2	17	1	26
Holstein Friesian	7	0	4	0	11
Aberdeen Angus	5	0	4	2	11
British Friesian	6	0	2	0	8
Simmental	3	0	3	0	6
Shorthorn	1	1	1	0	3
Belgian Blue	2	0	0	0	2
British Blue	1	0	1	0	2
Charolais	0	0	1	1	2
Belted Galloway	0	1	0	0	1
Blonde D'Aquitaine	0	0	1	0	1
Highland	0	0	0	2	1
Luig	0	0	1	0	1

Table 2: Frequency and location of periodontal lesions in 35 animals slaughtered in the West of Scotland.

Teeth	Maxilla		Mandible		
	Right	Left	Right	Left	
Incisors	First incisor	-	-	10	8
	Second incisor	-	-	5	6
	Third incisor	-	-	3	3
	Fourth incisor	-	-	1	1
Premolars and molars*	PM1	1	1	0	1
	PM1/PM2	1	0	0	2
	PM2	4	1	2	3
	PM2/PM3	3	1	1	3
	PM3	7	10	3	2
	PM3/M1	10	7	14	8
	M1	7	6	2	2
	M1/M2	4	1	1	1
	M2	4	5	0	2
	M2/M3	3	1	1	0
M3	0	1	1	2	

*PM1, first premolar; PM2, second premolar; PM3, third premolar; M1, first molar; M2, second molar; M3, third molar; 11, first incisor; 21, second incisor; 31, third incisor; 41, fourth incisor.

References

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