Prevalence of Musculoskeletal Disorders in Kintamani Dog

Prevalensi Kelainan Muskuloskeletal pada Anjing Kintamani

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ABSTRAK

Anjing Kintamani merupakan anjing ras baru yang berasal dari Indonesia. Penelitian ini dilakukan untuk mengetahui prevalensi jenis gangguan muskuloskeletal pada anjing Kintamani berdasarkan pada data yang tercatat di beberapa klinik hewan di Bali selama kurun waktu lima tahun dari Januari 2009 sampai Desember 2013. Sebanyak 475 sampel berhasil dicatat dan variasi prevalensi dianalisis berdasarkan umur dan jenis kelamin. Prevalensi gangguan muskuloskeletal yang ditemukan meliputi luka kecelakaan (3,2%), arthritis (1,3%), kepincangan (0,8%), cedera pada kuku (0,2%), dan hip dysplasia (0%). Berdasarka hasil penlitian dapat disimpulkan bahwa anjing Kintamani tidak sensitif terhadap gangguan musckuloskletal.

Kata kunci: Anjing Kintamani, prevalensi, gangguan muskuloskeletal

ABSTRACT

Kintamani dog is the emerging breed of dog from Bali Indonesia. The study was conducted to determine the prevalence of the type of musculoskeletal disorders in Kintamani dogs based on the data presented at many veterinary clinics in Bali during a period of five years from January 2009 to December 2013. A total of 475 samples was obtained and their variations in prevalence were analyzed on the basis of age and sex. The prevalence of musculoskeletal disorders in Kintamani dogs included accidental wound (3.2%), arthritis (1.3%), lameness (0.8%), nail injury (0.2%), and hip dysplasia (0.0%). Based on this study we concluded that Kintamani dog could be expected not susceptible to musculoskeletal disorders.

Key words: Kintamani dogs, prevalence, musculoskeletal disorders

INTRODUCTION

Kintamani dog is a common houshold pet in Indonesia. The physical and personality characteristics of the Kintamani dog make it a popular household pet in Bali. Kintamani dogs are described as intelligent, hardy, and gently. The kintamani dog looks good appearance. Kintamani dog have a wide range of colour. This breed is native to the village of Sukawana in the distric of Kintamani in Bali. These coats were marked with many colour. Hair colour ranges from all black to all white, with variations of banding, spotting, blazes, tricolour, and blended gray. These dogs are used for companion. The breed took on the name of the region where it was originated. It was designated as a Indonesian breed in 2006 (Puja, 2007).

The Kintamani dog is an evolving indigenous breed at the Kintamani Region in Bali. Native peoples believed that Kintamani dogs are originating from Chow Chow dog. It said that a wealthy Chinese man moved to Bali in the 1400s and brought with him his Chow Chow dog. He settled in the montainous region of Kintamani and married into the Balinese famili of King Jaya Pangus. The Chow Chow interbreed with the local dogs and created a Kintamani dogs, but recent study has proved that Kintamani dog evolved from Balinese feral dogs with little loss of genetic diversity (Puja *et al.* 2005). Since none of information pertianing to the health

problem especially musculoskeletal disorder in Kintamani dog, in the present work, we analyzed the occurrence of musculoskeletal problems in this breeds. Therefore, the objective of this study was to determine the prevalence of musculoskeletal disorder in Kintamani dogs that presented at many veterinary clinics around Bali, Indonesia.

MATERIALS AND METHODS

Study area

A survey questionnaire was used to collect the data. The data were collected from Kintamani dogs presented at clinics and animal hospital in Denpasar Municipality, Badung Regency, and Gianyar Regency of Bali Province for a period of 5 years. A total of 475 kintamani dogs belonging to two either sex and five different age groups was examined.

Statistical analysis

These data were analysed based on sex and age. Chi-square test was used to examine whether the dogs' sex and age associated with any of musculoskeletel disorder. For all statistical analysis, a significant level (p-value) of less than 0.05 was considered as statistically significant. The statistical analysis was executed using SPSS (version 16.0) software.

RESULTS AND DISCUSSION

Results

Out of 475 Kintamani dogs brought to Veterinary Clinic due to various problems from different area from 2009 to 2013, 349 dogs (73.5%) were recorded in Denpasar Municipality, 104 dogs (21.9%) were recorded in Badung Regency, and 22 dogs (4.6%) were recorded in Gianyar Regency. From 475 dogs, 26 dogs (5.5%) were diagnosed having musculoskeletal disorder (Table 1). The dogs were considered healthy because in patient's register, the patients only had daily routine medical check-up, sterilization or neutering. Out of 26 dogs having musculoskeletal disorders, mostly showed accidental wound (15 or 3.2%), but there was no dog showed hip dysplasia (Tabel 2).

Table 1 The Problem of Kintamani Dogs Recorded on Veterinary Clinics

Health Problem	Diagnosis	Occurance (%)
Muculoskeletal disorder	History, Clinical	5.5
Other diseases/disorders	History, Clinical	54.1
Healthy	History, Clinical	40.4

Table 2 Occurrence of Musculoskeletal Disorder of Kintamani Dog

Musculoskeletal disorder	Occurrence(%)
Accidental Wound	3.2
Arthritis	1.3
Lameness	0.8
Nail Injury	0.2
Hip Dysplasia	0.0

From 26 dogs having the musculoskeletal disorder, 21(80.77%) were male and 5 (19.23%) were female. The difference of occurrence of musculoskeletal disorders between the male and female was statistically significan ($P<0.05$). Age dependent study revealed that the lameness incidence was higher in 0-3 months old, but the arthritis and accidental wound were found more frequent on above 12 months old (Tabel 3).

Discussion

The study revealed that the most dogs presenting to the veterinary clinics were male (72.6%) and only 27.4% were female. This may correlated with people having the male dog in more larger than having the female one as stated by Dalem (2011). He argued that Balinese people prefer maintaining the male dogs to the female one, because they believe

that the male dog is more agile as a guard and has better properties than those of the female.

In the case of accidental wound, the older male dogs suffered more frequent than the female. It is most likely influenced by the more aggressive nature of males than females. Accidental wound as the most common cause in patients that presenting to a veterinary clinic was also recorded by Holowaychuk (2011). Kolata *et al*. (1980) reported that in two animal hospitals in the United States found approximately 13% of admissions were for the treatment of accidental wound.

Table 3 Association between Musculoskeletal Disorders in Kintamani Dog Based on Sex and Age.

		Musculoskletal conditions				
Variabel	N	AW	Arth	Lam	NI	HD
Sex						
Male	345	12 (3.5%)	4 (1.2%)	4 (1.2%)	1(0.3)	-
Female	130	3 (2.3%)	2 (1.5%)	-	-	-
Age (m onths)						
0-3	158	1(0.6%)	-	2 (1.3%)	1(0.6%)	-
3-6	86	-	-	-	-	-
6-9	40	3 (7.5%)	-	-	-	-
6-12	45	-	-	1 (2.2%)	-	-
>12	146	11 (7.5%)	6 (4.1%)	1 (0.7%)	-	-

N dog numbers, AW accidental wound, Arth Arthritis; Lam lameness, NI nail injury, HD hip dysplasia

Based on the age, the dog of 6-9 months of age and over 12 months showed the same prevalence of accidental wound. It might be caused by poor management, dog bite and automobile accident. Similarly, Atshaba *et al*. (2014) reproted the high prevalence of injury of the dogs, while other workers reported that accidental wounds were frequently caused by poor management (Landsberg *et al*., 2013; William *et al*.,2002).

In this study, the total of Kintamani dogs which diagnosed arthritis was 6 (1.3%) and all of the dogs were above six years old. These result support the early works made in Bangladesh (Tarafder and Samad, 2012). The adult and older dogs are more susceptible to arthritis because this inflammation is caused by the effects of aging on the structure of the joint tissues, especially in articular cartilage (Tobias and Johnston,2012). Getting older leads to an erosion of articular cartilage caused by diminish in activity and cellular response, cellular repair mechanisms, and the nature changing of the extracellular matrix. The study showed that the there was no significant difference ($p>0.05$) in prevalence of arthritis between male and female dogs. The results are consistent with previous finding reported by Runge *et al*. (2010).

Lameness is a symptom of pain in the extremities of dogs, so it is not a specific disease and may indicate disorders of the musculoskeletal system (Hanson *et al*., 2007). Lameness is caused by various factors that may be traumatic or non-traumatic. Since the lameness can be caused by any variour factors, the lameness can be a secondary symptom of a disease. In diagnosing the cause of lameness, skills of medical personnel were needed to determine the cause of lameness precisely (Renberg and Roush, 2001). In this study, four dogs (0.8%) were diagnosed with lameness which the cause was not recorded on the patient's clinical record. Lameness in Kintamani dogs was entirely experienced by males (1.2%) and was

dominated by dogs over 12 months (4.1%). Those are in line with the findings of Tarafder and Samad (2010) at 3.670 dogs in Bangladesh with 35 (0.95%) dogs diagnosed lameness and mostly experienced by dog at 7-36 months (0.3%) and above 36 months (0.49%).

In the present study, one dog (0.2%) was diagnosed nail injury which suffered by 3 month old male dog. Based on these data, the prevalence of nail injury was very low. Similar results occurred in a study conducted by Tarafder and Samad (2010) on 3,670 dogs in Bangladesh. They found seven (0.19%) dogs diagnosed nail injury. The low prevalence of those in Kintamani dogs is not aggreement with O'Neill (2014). This variation may due to differences in management system. O'Neill (2014) reported that on 148.741 dogs in the UK, as many as 103 (2.7%) dogs were diagnosed nail injury. The high rates of dog nail injuries in UK compared to other countries may associated with a Greyhound dogs race (Sicard et al., 1999).

Hip dysplasia is a disorder or disease that characterized by slow ossification of the head of the femur, the weakness of the hip joint, and the singularity at the position of the acetabulum and the head of the femur which resulted in subluxation (Todhunter *et al*., 1999). In the present study, no case of hip dysplasia was observed.

CONCLUSION

Based on the result of this study, its is concluded that the prevalence of musculoskletal problems in Kintamani dogs is low.

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