Lone Atrial Fibrillation in a Dog

Naoyuki TAKEMURA1, Kiyoshi NAKAGAWA1 and Hisashi HIROSE1

1Department of Veterinary Internal Medicine, Nippon Veterinary and Animal Science University, 1–7–1 Kyonan-cho, Musashino City, Tokyo 180–8602, Japan

(Received 18 March 2002/Accepted 12 July 2002)

ABSTRACT. An intact male Pointer aged 9 year was found to have atrial fibrillation (AF). Thoracic radiography and echocardiography as well as routine blood work revealed no cardiac disease. Thus, the dog was diagnosed as lone AF. The arrhythmia disappeared 6 hr after the initiation of the supportive therapy, and relapse was not observed.

KEY WORDS: canine, lone atrial fibrillation.

Atrial fibrillation (AF) is one of the most serious cardiac arrhythmia in dogs [1, 3]. Electrocardiographic (ECG) features of AF are rapid and irregular ventricular response, the absence of P wave, and the presence of fibrillation (f) wave. AF more frequently occurs in large-breed dogs than small-breed dogs and cats [12]. Because an atrial enlargement is considered to be necessary for the genesis and maintenance of this arrhythmia [7], the cardiac disease resulting in severe atrial enlargement would be cause of AF, and such diseases included dilated cardiomyopathy, mitral valve insufficiency and some congenital heart diseases [1, 3, 5, 11]. In humans, AF may not only occur in the presence of a various cardiac disease, but also in the absence of overt cardiac disorder [8, 9]. The latter condition is known as lone AF. To our knowledge, lone AF has not been reported in small animals, and the authors describe the clinical course and ECG findings in a dog with lone AF.

An intact male Pointer aged 9 year weighing 25.6 kg was presented because of decreased activity and staggering since the previous day. The general condition had been same as usual when the dog had go hunting with the owner 5 days before the admission. The dog was chained to the kennel in the owner’s garden. The prevention of heartworm and routine vaccinations were completely performed. On initial examination, the dog was thin, and slightly dehydrated. Although the dog tried to stand retaining attitude somehow, the dog seemed to be tired and immediately crouched. Physical examination revealed hypothermia (37.2 degree). Femoral pulse was irregular in rhythm and intense. Heart rate (HR) was 173 beats per minute (bpm). Decreased intense in cardiac sound was noted, although a cardiac murmur was not auscultated. Routine blood work including complete blood count (CBC), serum chemistry and thyroid hormones was performed. Slight increases in total protein and urea nitrogen were detected. These results might relate to dehhydration. The other results were found to be within reference ranges (Table 1).

ECG showed irregular R-R interval and the absence of P wave (Fig. 1-a), and then the diagnosis of AF was made. Occasional ventricular premature contraction (VPC) was also recorded. Advanced heart failure could be suspected, because AF was commonly associated with severe heart failure. Thoracic radiography and echocardiography were additionally performed. Thoracic radiography revealed the normal appearance of cardiac silhouette and lung field. Echocardiography confirmed normal morphology and contractility of the heart (Fig. 2). Supportive therapy consists of intravenous lactated Ringer solution (5 ml/kg/hr), dexamethasone (0.5 mg/kg) and ampicillin (20 mg/kg) was given, and ECG monitor was continued.

The dog became vigorously, and exercise intolerance was improved 6 hr after the initiation of the therapy. Intense in cardiac sound was normal, and pulse deficit was not palpated. At this time, ECG was recorded (Fig. 1-b) and con-
N. TAKEMURA, K. NAKAGAWA AND H. HIROSE

Affirmed normal sinus rhythm. HR reduced to 97 bpm, and VPC was not recorded. Intravenous fluid was continued. Next day, the dog showed normal appetite and vigor. ECG was found to be normal (Fig. 1-c), and the dog was discharged. Owner mentioned that the dog had never intake any toxin or garbage that possibly induce cardiac arrhythmia. One week after the discharge, the dog was fully healthy and no arrhythmia was detected. On routine evaluation performed 1 year after the discharge, clinical problem associated with heart failure or arrhythmia was not detected. Although myocarditis might also be considered as the cause of lone AF in the present case, the authors could believe that the dog was not be affected with myocarditis, because myocardial inflammation would be ruled out based on the results from CBC and serum chemistry. Thus, the diagnosis of lone AF could be made, however the pathogenesis of the arrhythmia was not determined in the present dog.

As with AF resulting from advanced heart failure, cardiac output would be compromised in dogs with lone AF, because active ventricular filling associated with P wave was absent and rapid ventricular rate decreased diastolic ventricular filling [3]. Therefore, dogs with lone AF might display any clinical sign associated with decreased cardiac output, and this might explain the clinical signs such as decreased activity and staggering.

Based on the present clinical course, the prognosis of canine lone AF would be excellent as in the humans [2]. However, when the arrhythmia persists for long period,
electrical and morphological remodeling could occur and maintain AF [4]. Therefore, ECG monitoring was thought to be essential to detect the termination of AF.

REFERENCES