

Cardiac Hematoma with Pericardial Effusion in a Dog

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Abstract : A 12-year-old spayed female, Golden Retriever presented with dyspnea and lethargy of 3 months duration. Pericardial effusion and cardiac mass were identified on echocardiography. Pericardiectomy and mass resection were performed for treatment of pericardial effusion and histopathological analysis was conducted for the definitive diagnosis. The mass was diagnosed as hematoma with mainly erythrocyte, fibrin and many of neutrophils based on microscopic description. Severe purulent pericarditis thickened by inflammatory cells and reactive fibrous tissue were identified, but not diagnosed as neoplasm. This is the first case report in veterinary literature of a dog with pericardial effusion caused by cardiac hematoma.

Key words : pericardial effusion, hematoma, pericarditis, geriatric dog.

Introduction

A hematoma is a focal extravasation of blood appears frequently after trauma causing the rupture of blood vessels. It is caused by so many causes such as trauma, intoxication, coagulopathy (7). Muscle hematomas are the occurrence of extravasation of blood in a muscle group (8). Pericardial effusion can be caused by masses such as neoplasms, pericardial cysts, hematoma (3). Intrapericardial masses causing pericardial effusion include neoplasms, pericardial cysts, hematoma (10). Cardiac hematomas show no predilection for age, have a slow growth rate, and means to diagnose the hematoma is only microscopic examination (9). When Cardiac tamponade occurs, it can be life-threatening by compression of the heart to the pericardial accumulation of blood, gas or fluid as a result of effusion, rupture, or trauma of the heart, and the compression of heart by localized hematoma may be caused by cardiac tamponade in a dog (5).

Our purpose is to describe the unusual presentation of cardiac hematoma in a geriatric dog with clinical signs and associated with pericardial and pleural effusion.

Case

A 12-year-old spayed female, Golden retriever was referred with history of acute severe dyspnea and lethargy. Local animal hospital noticed her pericardial effusion and performed pericardiocentesis but did not find out the cause. The patient was depressed and maintained sternal recumbency. Femoral arterial pulse was weak and paradoxical. On the auscultation, muffled heart and lung sound was noted. Complete

blood cell count and serum chemistry profile indicated mild anemia (Hematocrit, 31.9%; Reference range, 37.0-54.0%). Blood smear examination revealed +1 codocytosis, neutrophilia and monocytosis. On lateral thoracic radiograph, there was severe pleural effusion in thorax and enlarged round cardiac silhouette indicated pericardial effusion (Fig 1). The results of pleural effusion analysis removed by pleurocentesis revealed hemothorax (Hematocrit, 31%). Echocardiographic examination which revealed cardiac tamponade by pericardial effusion and heterogenous mass with small hypoechoic cavities between the heart and the pericardium was performed (Fig 2). A tentative diagnosis of hemangiosarcoma, chemodectoma, lymphoma, or hematoma was made based on all the clinical evidence. Pericardiectomy and mass excision were performed for the treatment of pleural effusion and cardiac mass. After surgery, histopathological investigation was performed for the confirmation of the diagnosis. Preoperatively, Cefazolin (Cefazolin sodium, 25 mg/kg, PO, Chongkundang, Seoul, Korea) and enrofloxacin (5 mg/kg, IV; Baytril50,



Fig 1. Pleural effusion signs in plain radiography of the dog on dorsoventral view.

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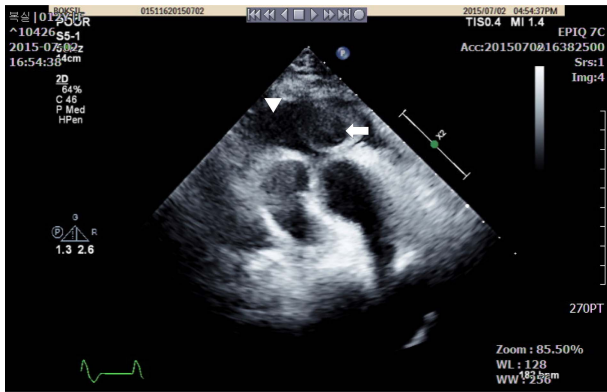


Fig 2. Pericardial effusion (arrow head) and heterogenous mass (arrow) with small hypo-echoic cavities between the heart and the pericardium in right parasternal short axis transaortic view.

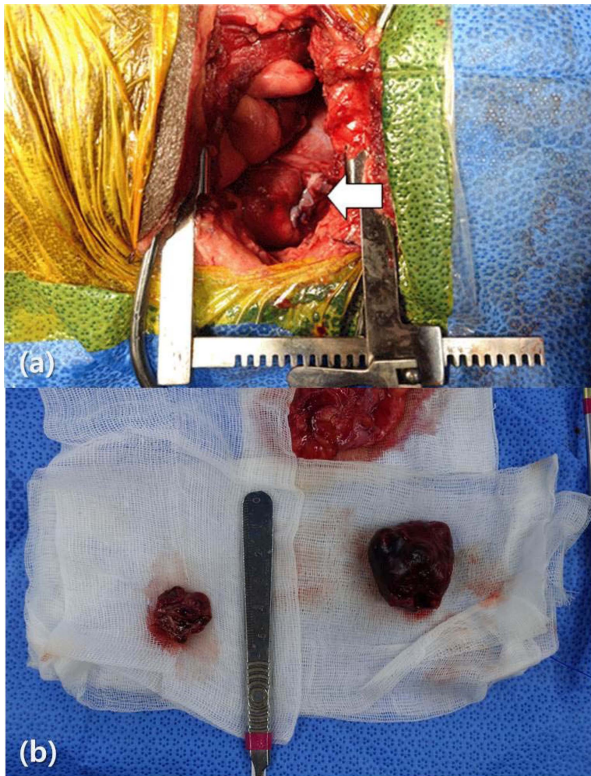


Fig 3. Sanguineous pleural effusion and cardiac mass were found after the resection of the 5th intercostal space (a). And the mass was removed from pericardium (b).

Bayer Animal Health, Seoul, Korea) were given and fluid therapy with normal saline was conducted as a rate of 2.5 ml/kg/h for maintenance. The main operation was conducted using the propofol (6 mg/kg, IV; Anepol, Hana pharm, Seoul, Korea) for preanesthesia and isoflurane 2% (Ifran Solution, Hana Pharm, Seoul, Korea; inspired concentration of 5% in oxygen) for maintenance. The thorax was full of sanguineous effusion and the mass was resected after pericardiectomy (Fig 3a). After resection of mass and pericardium, both were referred to IDEXX Reference Laboratories (Westbrook, ME, USA) for the definitive diagnosis.

The size of 3.02 × 4.10 cm (Fig 3b) mass and pericardium were microscopically examined. The mass was mainly com-

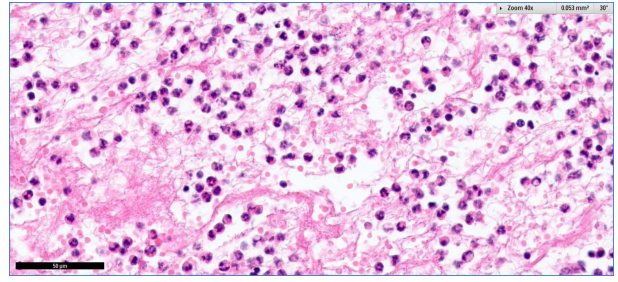


Fig 4. The heart mass is mainly composed of a large amount of hemorrhage, fibrin, small numbers of neutrophils and few lymphocytes in the microscopic examination. The mass was diagnosed with hematoma. H&E stain. Bar = 50 μm.

posed of a large amount of hemorrhage, fibrin, small numbers of neutrophils and few macrophages (Fig 4). The pericardium was thickened by irregularly arranged reactive fibrous tissue, small numbers of neutrophils, lymphocytes, plasma cells and few macrophages. Reactive mesothelial cells were seen. The heart mass was diagnosed as hematoma which is mainly composed of blood, fibrin and many neutrophils. Many neutrophils in this tissue suspected bacterial infection but no bacterial colonies were identified. The pericardium was diagnosed as severe purulent pericarditis thickened by inflammatory cells and reactive fibrous tissue. No neoplasm was notified. The patient remains alive and recovered healthy status after the thoracic surgery.

Discussion

This report described the development of cardiac hematoma in Golden retriever with a history of pericardial and pleural effusion. The lesions observed in pericardium revealed pericarditis and mass was diagnosed as hematoma. Cardiac hematoma is rare and not yet well defined in veterinary medicine. In human medicine, only 22 cases are published and locations of hematomas are ventricular free wall, the septum, right ventricular free wall, and right atrium (9). The origin of pericardial effusion is variable, and prognosis varies with the cause, appropriate diagnosis and treatment should be conducted as soon as possible (2). The variation of prognosis for dogs with pericardial effusion depends on the underlying cause. Dogs with pericardial effusion secondary to malignant tumor such as hemangiosarcoma generally have a poor prognosis. The prognosis of infectious pericardial effusion is a generally guarded to good (11). In one study, the prognosis for dogs with pericarditis or heart mass is poor but dogs underwent pericardiectomy and broad spectrum antibiotics had a positive outcome in previous studies and presented longer survival time than dogs without treatment (1,6).

As the previous studies reported, mean survival time may vary by the clinical severity of pericarditis. History of collapse had a tendency of shorter mean survival time. Patients without ascites had a shorter overall survival time (median survival time, 45 days vs 605 days). In addition, the patient with neoplastic mass survived shorter period. The collapse, absence of ascites and cardiac mass could be negative prognostic indicators (4). In this case, the dog showed respiratory clinical signs but had a normal mental state and cardiac mass

was not a tumor but a hematoma. Pericardiectomy and mass resection were conducted before deterioration of clinical signs.

In conclusion, this is the first description of an pericardial effusion caused by unusual cardiac hematoma of a geriatric dog. However, additional case reports and review of cardiac hematoma in larger study population of geriatric dogs will provide useful clues to veterinary practitioners, further study and clinical trials.

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개에서의 심낭삼출물을 동반한 심장혈종 1예

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요 약 : 12년령의 중성화한 암컷 골든레트리버가 3개월간의 호흡곤란과 기력저하를 주호소로 내원하였다. 심낭삼출물과 심장부위의 종괴가 심장초음파 상에서 확인되었다. 심낭절제술과 종괴 제거가 이루어졌으며 확진을 위해 조직검사를 수행하였다. 종괴는 현미경 검사 상에서 적혈구와 피브린, 호중구로 이루어진 혈종임이 확인되었다. 염증세포와 반응성 섬유 조직에 의해 두꺼워진 중증의 화농성 심낭염 소견이 확인되었으며, 종양 소견은 관찰되지 않았다. 이 증례는 수의학에서 개의 심장혈종에 의한 심낭삼출물 발생의 최초 보고이다.

주요어 : 심낭삼출물, 심낭염, 혈종, 심낭절제술, 노령견