



## First Report of Cardiac Lymphangiectasia in Four-years-old Arabian Mare (*Equus ferus caballus*)

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### Abstract

Lymphangiectasia defines as dilated of any lymph vessels and occur in any kind of animal and anywhere that lymphatic vessels exist. In this research, there has been cardiac lymphangiectasia on the apex region separated after necropsy in a 4-years-old Arabian mare that expired cause of acute colic. Pathologic survey shows about ruptured thin wall vessels and the luminal vessels were lack of red blood cells and light edema. Also, a tortuous cyst filled with clear fluid on the epicardial surface of the heart apex. This study is the first report of cardiac lymphangiectasia in Arabian mare from Iran.

**Keywords:** Cardiac; Lymphangiectasia; Arabian Mare

### Introduction

Lymphangiectasia defines as dilation of lymph vessels and could be acquired secondary to lymph vessel obstruction cause of granulomatous or neoplasms or could cause of congenital developmental disorders [1]. Lymphangiectasia appears in any part of the body that lymph vessels exist and intestinal lymphangiectasia often causes prominently dilation of lymph vessels and protein-losing enteropathy, severe edema, thickening of the bowel wall and ascites [2] that is a serious disease in dogs. Likewise, cardiac lymphangiectasia appears as a tortuous shape that didn't functionally the connection between the lymph vessels cause obstruction or any developmental disease [1]. Cardiac defects measured about 3.5% of all congenital defects in horse [3] that the most common diseases, especially in neonate, are ventricular septal defect (VSD),

tricuspid valve atresia (TVA), Tetralogy of Fallot (TOF), atrial septal defect (ASD) and truncus arteriosus (TA) [4]. These cardiac defects often appear by necropsy or echocardiography and angiography that echocardiogram might be inconceivable in any condition. Cardiac lymphangiectasia usually occur on cardiac lymph vessels and there are few kinds of literature about this defect. The presented report shows the first cardiac lymphangiectasia that finds in necropsy in two-years-old Arabian mare in veterinary hospital.

### Case Presentation

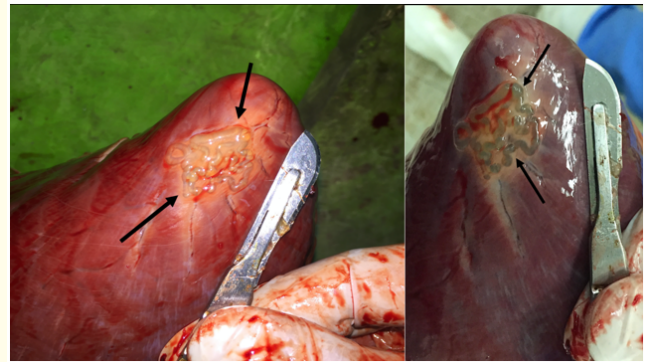
In November 2015, a four-year-old Arabian mare referred to the referral veterinary hospital with the signs of acute pain, general sweat and impatience severe abdominal discomfort and the mare unfortunately dead prior the preparation for surgical inter-

vention. Necropsy performed routinely and all the organs separated for macroscopic inspection. Digestive system investigations demonstrate strangulation and mucosal hemorrhage in colons that defined as fatal effects of colic. In the cardiovascular system, there was a vermiform lesion in the apex of the heart, that looked dilation or extension of tubular texture, that dissected including intact cardiac muscle for next pathologic assays.

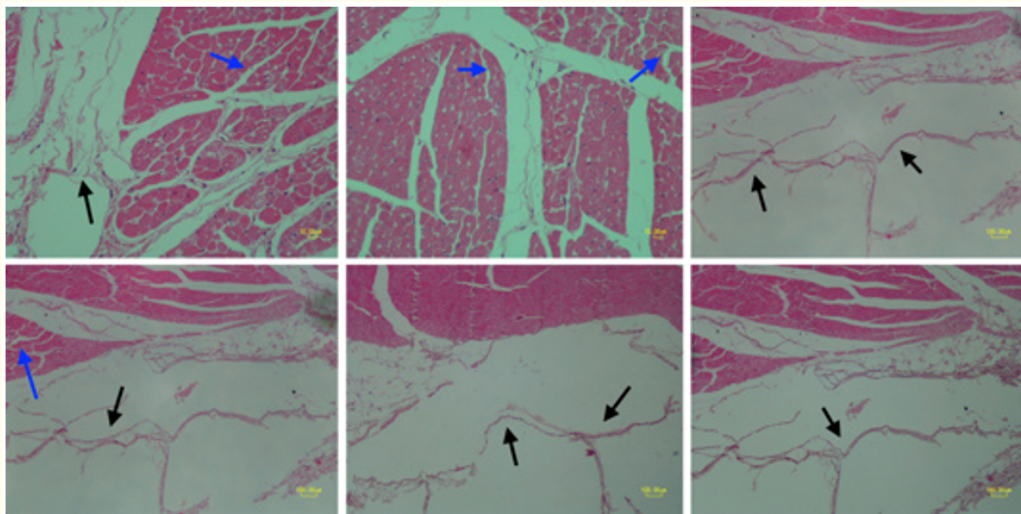
**Histopathology**

tissue sample fixed in buffered formalin. After fixation, sample processes in a tissue processor (Did Sabz Company Model: DS - 2080/H. S/N: 658), embedded in paraffin wax and sectioned in rotary microtome (Did Sabz Co. Model: DS - 4055. S/N: 80229). The mounted slides surveyed as light microscope (Olympus, CX-22). Gross examination revealed localized dilated lymph vessels on the epicardial surface of the heart apex. Histopathological sections in 5 m show tubular texture revealed ruptured and dilated thin wall vessels (Figure 1). The Lumina of the vessels were lack of red blood

cells and light edema were visible. Rupture in the cardiac vessels was controversial but the obvious dilation and circumferential hypertrophic and delicate regions on the wall of the lymph vessel showed on the microscopic investigation (Figure 2).



**Figure 1:** Gross tubular convoluted, hypertrophy lymph vessels in the apex region of the heart.



**Figure 2:** Black arrows showed the thinned and ruptured wall of the lymphatic vessel and light edema were obvious between the myocardial fibers (blue arrows).

**Discussion and Conclusion**

Abnormalities of the cardiovascular tract occur in all species and could be hereditary malformations, lymphatic damages due to neoplasia’s or sometimes parasites. Lymphatic drainage block causes interstitial fluid and accumulation of lymph in tissue or

body cavities [5]. Mesenteric postprandial lymphangiectasia has been seen in foals [6]. Also, congenital lymphangiectasia around epicardium of a young horse was reported from Courtesy College of Veterinary Medicine, University of Illinois [1]. There has been intestinal lymphangiectasia in two foals that revealed by transab-

dominal ultrasonography and elective surgery each one, respectively [4]. In another study from California on 18 neonatal foal cardiac defects investigated as echocardiography or necropsy and VSD, TOF and TVA were the most cardiac findings, respectively. Likewise, this study shows that Arabian horses seem to have a predisposition for cardiac defects [7]. Congenital pulmonary lymphangiectasis is a rare anomaly in people that is causally heterogeneous that occur as either an isolated finding or one manifestation of several multiple congenital anomaly syndromes [8]. Lymphangiectasia etiology is unknown and related to regulatory molecules that involved in lymphangiogenesis with lymph vessels obstruction or dilation, rupture, and leakage in some cases and be secondary as congestive heart failure [9]. There has been a little research on cardiovascular lymphangiectasia in animals as equine and this study proves cardiac lymphangiectasia that based on pathologic assays after necropsy of an Arabian mare that colic ends her life.

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