A Case of Epicardial Serous Atrophy and Postmortem Chicken Fat and Currant Jelly Clot Formation in a Kitten with Chronic Starvation and Long-term Agony

Ahmet UYAR[1], Emel KARA*[1]

[1]Hatay Mustafa Kemal University, Faculty of Veterinary Medicine, Department of Pathology, Hatay, Türkiye
*Corresponding author: emel.kara@mku.edu.tr

Received 05.03.2025 **Accepted** 15.06.2025 **Published** 30.06.2025

Abstract

In this case report, it was aimed to present pathomorphologically the case of chicken fat and currant jelly with serous atrophy of the epicardial fat tissue in the heart associated with chronic starvation, cachexia, and long-term agony in a kitten. The material of this case was an approximately 6-month-old kitten. A systemic necropsy of the kitten was performed. On gross examination, the epicardial fat layer around the coronary band in the atrioventricular region of the heart and the mesenteric fat tissues lost their normal color and consistency. Serous atrophy characterized by a soft, shiny, jelly-gelatinous, light gray-brown, translucent appearance was observed. There was a layer called chicken fat, characterized by jelly-like erythrocytes forming a currant jelly at the bottom and blood plasma containing platelets and leukocytes on top, with an elastic consistency and yellowish transparent appearance in the right and left atrium and ventricles of the heart and the truncus aorta. According to the pathomorphological findings, the case of chicken fat and currant jelly with epicardial serous atrophy in the kitten is the first case reported in our country.

Keywords: Agony, Chicken fat, currant jelly, kitten.

Uzun Süre Agonili ve Kronik Aç Yavru Bir Kedide Postmortem Chicken Fat ve Currant Jelly ile Epikardiyal Seröz Atrofi Olgusu

Öz

Bu olguda, yavru bir kedide görülen kronik açlık, kaşeksi ve uzun süreli agoniyle ilişkili epikardiyal yağ dokusunda seröz atrofi ile birlikte görülen chicken fat olgusunun patomorfolojik bulgularla sunulması amaçlandı. Olgunun materyalini yaklaşık 6 aylık yavru bir kedi oluşturdu. Yapılan sistemik nekropside kalbin atrioventriküler bölgesinde, koroner bandının çevresindeki epikardiyal yağ tabakası ile mezenterial yağ dokuları normal renk ve kıvamını kaybetmiş ve yumuşak, parlak, peltemsi-jelatinöz, gri- açık kahve renkli, şeffaf görünüm ile karakterize seröz atrofi gözlenmiştir. Kalp açıldığında ise sağ ve sol atrium ve ventriküller ile trunkus aortada, ağır olan eritrositlerin altta kaldığı (currant jelly), üstte ise trombosit ve lökositleri içeren kan plazması ile birlikte, elastiki kıvamda ve sarımsı saydam görünüşte civciv yağına benzeyen ve chicken fat olarak adlandırılan bir tabaka bulunmaktaydı. Patomorfolojik bulgular sonucuna göre yavru bir kedide nadir olarak görülen epikardiyal seröz atrofi ile birlikte chicken fat olgusu ülkemizde bildirilen ilk vakadır.

Anahtar kelimeler: Chicken fat, epikardiyal seröz atrofi, yavru kedi

To cite this article; Uyar, A. & Kara, E. (2025). A Case of Epicardial Serous Atrophy and Postmortem Chicken Fat and Currant Jelly Clot Formation in a Kitten with Chronic Starvation and Long-term Agony. *Veterinary Journal of Kastamonu University*, 4(1) 39-42.

Introduction

Blood is normally coagulated in the venous vessels immediately after death. During rigor mortis, uncoagulated blood is completely expelled from the left ventricle into the aorta (Berkin & Alçığır, 2007). This is why necropsy does not find blood in the left ventricle of the heart, the aorta, or the main branches of the aorta. However, some blood remains in the right ventricle and can coagulate (Jubb and Kennedy, 2015). The postmortem coagulum, also known as Alaka, is elastic or gelatinous in consistency and does not adhere to the vessel walls or the inner surface of the heart (Berkin & Alçığır, 2007). However, if the coagulation process begins during the agony stage, the erythrocytes collapse because their specific gravity is higher than that of the plasma. The coagulum in this shape has a multilayered form (Reece, 2004; Berkin & Alçığır, 2007). The heavy erythrocytes settle at the bottom and form a gelatinous structure, known as currant jelly (Berkin & Alsiğır, 2007). On top of it, the plasma containing platelets and leukocytes forms a layer, also known as chicken fat, due to its elastic consistency and transparent yellow appearance. The sedimentation rate of erythrocytes varies according to the animal species. The erythrocyte sedimentation rate is higher in horses than in other species (Reece, 2004). Due to the rapid sedimentation rate, the formation of a layer resembling chicken fat is considered normal in horses (Çelik, 1996; Reece, 2004; Berkin and Alçığır, 2007; Jubb and Kennedy, 2015). However, in other animals, this thick layer is linked to illnesses or situations that raise the erythrocyte sedimentation rate and usually shows up when blood starts to clot during the dying process.

The aim of this report is to present the case of chicken fat and currant jelly with serous atrophy in the epicardial fat tissue associated with excessive dehydration, cachexia, and long-term agony in a kitten.

Case Report

The case involved a kitten about 6 months old that was brought to the Pathology Department of the Faculty of Veterinary Medicine at Mustafa Kemal University in Hatay. According to the person who brought the animal to the veterinary clinic in Hatay for examination and hospitalization for treatment of the kitten, the kitten had been abused by children through rough handling. A clinical examination by the veterinarian revealed that the kitten was extremely lethargic, tired, dehydrated, and cachectic, and it was reported that the kitten had received the necessary veterinary treatment for a duration of 10 days. During the final days of the treatment period, the kitten entered a stage of agony and eventually died. A systemic necropsy was performed, and all tissues were examined grossly. Macroscopic examination revealed serous atrophy characterized by soft, shiny, viscous, light coffee-gray, and translucent epicardial fat around the coronary band in the atrioventricular region of the heart and similar changes in the mesenteric fat tissue in the intestines, both having lost their normal color and consistency. In the atria, ventricles, and aorta of the heart, there was a layer called chicken fat, which was determined to be composed of blood plasma with a gelatinous mass of erythrocytes known as currant jelly at the bottom and platelets and leukocytes at the top, exhibiting an elastic consistency and yellowish translucent appearance. As seen in Figure 1, a chicken fat and currant jelly appearance was observed.

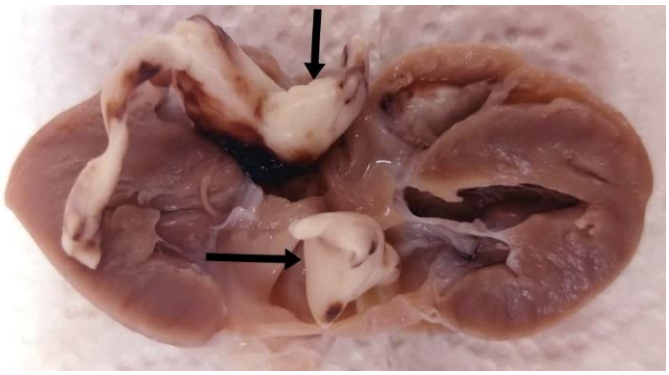

Figure 1. Macroscopic view of the chicken fat and currant jelly layers in the atria, ventricles and aorta.

Conclusion

Animals that are chronically dehydrated will catabolize fatty acids to compensate for the energy deficit. As a result, epicardial fat tissue in the coronary band of the heart and fat tissue in places such as the mesenteric tissue in the intestine are catabolized (Ali et al., 2023). Dehydration is also associated with an increased risk of blood coagulum (Liu et al., 2019). Factors such as erythrocyte properties, plasma tensile strength and viscosity, and the bridging capacity of plasma macromolecules affect the ability of erythrocytes to form rouleaux and alter the erythrocyte sedimentation rate (Kutlucan, 2012). The effect of clustering on the rate of sedimentation is significant, and it is thought that the erythrocyte sedimentation rate increases as erythrocyte clustering increases. It has been reported that when certain active plasma proteins in the blood increase, the rate of erythrocyte degradation also increases (Çelik, 1996). Prolonged dehydration is known to activate several pro-inflammatory and anti-inflammatory cytokines, antioxidant markers of oxidative stress and apoptosis, as well as gene expression that supports these findings (Ali et al. 2023). It has been stated that globulins present in plasma influence the rate of erythrocyte destruction, and the increase in fibrinogen and globulin in plasma is effective in forming coils and is the reason for erythrocyte adhesion (Çelik, 1996). The increased sedimentation rate during inflammation is influenced by increased concentrations of fibrinogen, the major coagulation protein, and alpha-globulin (Harrison, 2015). Erythrocyte sedimentation rate is increased in some diseases such as hematological malignancies, rheumatic diseases, cancers, infections, nephritis, toxemia, trauma, heavy metal poisoning, myocardial infarction, and pulmonary embolism (Reece, 2004; Kutlucan, 2012). The erythrocyte sedimentation rate is a nonspecific response and does not always indicate a pathological condition (Reece, 2004). In this case, the phenomenon of serous atrophy and chicken fat formation in the epicardial fat tissue and mesenteric fat tissue is thought to have developed due to excessive dehydration, cachexia, prolonged agony, and pathological changes in erythrocyte sedimentation rate. Accordingly, the case of chicken fat and currant jelly accompanied by excessive dehydration, cachexia, and serous atrophy in the epicardial fat tissue leading to long-term agony in the kitten is very rare, and this case has not been reported before in our country. So it is thought to present the case to contribute to the literature.

References

Ali, M. A., Abu Damir, H., Adem, M. A., Ali, O. M., Amir, N., Shah, A. A. M., Al Muhairi, S. S. M., Al Abdouli, K. O. S., Khawaja, J. R., Fagieri, T. A., Adam, A., Elkhouly, A. A., Al Marri, Z. J., Jamali, M., Murphy, D., & Adem, A. (2023). Effects of long-term dehydration on stress markers, blood parameters, and tissue morphology in the dromedary camel (*Camelus dromedarius*). *Frontiers in Veterinary Science*, *10*. https://doi.org/10.3389/fvets.2023.1236425

Berkin, Ş., & Alçığır, G. (2007). *Nekropsi - Yöntem. (*Şenay Berkin - Günay Alçığır) Nadir Kitap. Geliş tarihi 04 Kasım 2024, https://www.nadirkitap.com/nekropsi-yontem-senay-berkin-gunay-alcigir-kitap8506730.html

Çelik, G. (1996). Atlarda alyuvar sedimentasyon hızı ile hematokrit değer, akyuvar sayısı ve total plazma proteini arasındaki ilişki. *Ankara Üniversitesi Veteriner Fakültesi Dergisi*, *43*(01), Article 01. https://doi.org/10.1501/Vetfak_0000000713

Harrison, M. (2015). Erythrocyte sedimentation rate and C-reactive protein. *Australian Prescriber*, *38*(3), 93-94. https://doi.org/10.18773/austprescr.2015.034

Jubb, Kennedy & Palmer's Pathology of Domestic Animals: Volume 3. (2015). https://shop.elsevier.com/books/jubb-kennedy-and-palmers-pathology-of-domestic-animals-volume-3/maxie/978-0-7020-5319-1

Kutlucan, A. (2012). Eritrosit Sedimentasyon Hızı ve Klinik Kullanımı. *Konuralp Medical Journal*, *4*(3), Article 3.

Liu, K., Pei, L., Gao, Y., Zhao, L., Fang, H., Bunda, B., Fisher, L., Wang, Y., Li, S., Li, Y., Guan, S., Guo, X., Xu, H., Xu, Y., & Song, B. (2019). Dehydration Status Predicts Short-Term and Long- Term Outcomes in Patients with Cerebral Venous Thrombosis. *Neurocritical Care*, *30*(2), 478-483. https://doi.org/10.1007/s12028-018-0628-3

Reece, W. O. (2008). *Dukes Veteriner Fizyoloji*. Medipres Yayıncılık (S. Yıldız, Çev.). Geliş tarihi 04 Kasım 2024, https://www.medipres.com.tr/dukes-veteriner- fizyoloji-pmu9