Anthracosis in a Baboon From a Zoological Garden. A Case Report

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Abstract

Anthracosis is a disease encountered in both humans and animals. The present study was conducted on a baboon from a zoological garden, which died of natural causes. During morphopathological examination, we observed pulmonary anthracosis, with coal particles in both macrophages' cytoplasm and free in septa, interstitium and pleura. The pulmonary anthracosis was moderate, thus the structural and functional changes were minimal and the disease evolved without any clinical manifestation.

Keywords: *anthracosis, baboon, macrophage, zoo.*

INTRODUCTION

Anthracosis belongs to pneumoconioses group and its etiology can be ascribed to: coal dust in air, living in a polluted environment, smoke from biomass etc. (Bilici *et al.*, 2003). We usually encounter the pulmonary form, but other forms, such as mediastinal and esophageal (Bilici *et al.*, 2003) even hepatic and splenic (Mirsadraee, 2014), were reported.

Attempting to elaborate a database with diseases in baboons, Bommineni *et al.* (2011) tracked down pulmonary anthracosis in 78 among the 4297 studied animals.

AIMS AND OBJECTIVES

Baboons are useful animal models for medical research, thus description of any kind of pathology can aid in better understanding diseases that emerge in both baboons and humans.

MATERIALS AND METHODS

A 23 old male baboon, with right-sided heart failure condition, accompanied by stasis, died. The

animal was subsequently brought to Department of Necropsy Diagnosis at UASVM Cluj-Napoca. During necropsy, we harvested lung samples, which were embedded in paraffin for further histological investigations.

RESULTS AND DISCUSSION

Upon microscopic examination of lungs, we highlighted clusters of macrophages disposed perivascular and perialveolar (Fig. 1.). Their cytoplasm was filled with black particles, which induced hypertrophy and distorted the involved macrophages; the nucleus of these cells was masked by the coal particles.

In areas where macrophages carrying coal particles were better represented, we observed a fibroplastic reaction, represented by a mature fibrous connective tissue. Because of the degenerative necrosis of macrophages, we could identify coal particles with a granular aspect in the perialveolar septa and interstitial tissue (Fig. 2.). These particles were also present in pleura (Fig. 3.). The rest of the pulmonary parenchyma

Fig. 1. Macrophages filled with anthracotic pigment

Fig. 2. Anthracotic pigment in interstitial tissue

Fig. 3. Anthracotic pigment in pleura

Fig. 4. Moderate septal congestion

was normal, without densification foci; instead a mild multifocal septal congestion was observed (Fig. 4.).

A similar situation was reported in a monkey from a zoological garden, the authors incriminating urban air pollution as etiological factor (Seema *et al.*, 2010).

The thickening of pleura and fibroplastic reaction suggest that the anthracosis lingered for a period of time, but the presence of free macrophages indicates the fact that the pollutant was still present at the time of death of the animal. Other authors tracked down macrophages filled with pigment particles, upon cytologic examination of the pleural fluid harvested from humans (Pantanowitz *et al.*, 2009).

CONCLUSION

The animal taken into study presented mild pulmonary anthracosis, which did not induce

major structural and functional alterations, therefore it evolved without clinical manifestation.

REFERENCES

1. Bilici A, Erdem T, Boysan SN, Acbay O, Oz B, Besirli K, Gundogdu S (2003). A case of anthracosis presenting with mediastinal lymph nodes mimicking tuberculous lymphadenitis or malignanc. *Eur J Intern Med* 14(7):444–446.
2. Bommineni YR, Dick Jr JE, Malapati AR, Owston MA, Hubbard GB (2011). Natural pathology of the Baboon (*Papio spp.*). *J Med Primatol* 40(2):142–155.
3. Mirsadraee M (2014). Anthracosis of the Lungs: Etiology, Clinical Manifestations and Diagnosis: A Review. *Tanaffos* 13(4):1–13.
4. Pantanowitz L, Warren M, Goulart RA (2009). Anthracotic pigment in pleural fluid: a case report. *Acta Cytol* 53(3):306–308.
5. Seema A, Agarwal DK, Dheeraj A (2010). IBT/010 Pulmonary anthracosis in a monkey: a case report. *J Immunol Immunopathol* 12(2).