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ANATOMOPATHOLOGICAL RESEARCH IN AVIAN INFECTIOUS LARYNGOTRACHEITIS

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Abstract: Infectious laryngotracheitis (ILT) is an endemic infectious disease, caused by the Gallid herpesvirus type 1, which especially affects chickens and pheasants, with acute evolution and great economic importance, clinically characterized by serious respiratory disorders, and histopathologically by catarrhal or hemorrhagic-necrotic laryngotracheitis. The necropsy was performed, using the technique specific to birds, on 14 gallinaceae carcasses in several successive stages, taking a series of samples that were processed using the classic paraffin technique and the hematoxylin-eosin-methylene blue stain. The ILT was suspected based on the lesions present in the laryngotracheal lumen (mucohemorrhagic exudate with blood clots, congestion and hemorrhages of the mucosa), lesions corresponding to the acute form of the disease. Inflammatory processes were observed in the nasal, sinus, and bronchial mucosa. Histologically, hyperplasia of the basal layer of the laryngotracheal mucosa, deepithelialization and giant syncytia were found, in which acidophilic intranuclear inclusions were highlighted, with a clear surrounding area. Hemorrhages, edema and lymphohistiocytic infiltrations were observed on the mucosa.
Keywords: Gallid herpesvirus 1, Avian infectious laryngotracheitis, acidophilic intranuclear inclusions, deepithelialization, hemorrhagic-necrotic lesions of the laryngotracheal mucosa.

• Introduction

Infectious laryngotracheitis (ILT) is an endemic infectious disease, clinically characterized by three evolutionary forms (acute, subacute and chronic). The infectious agent responsible for causing the infection is Gallid herpesvirus 1, a DNA virus, which belongs to the family *Herpesviridae*, subfamily *Alphaherpesvirinae*, genus *Iltovirus* (Gowthaman et al., 2020). The acute (hemorrhagic) form is manifested by severe dyspnea, coryza, sneezing, birds hold their heads in the extension of their necks, with their beaks wide open, shake their heads vigorously, eliminating bloody mucus or blood clots. The subacute form (catarrhal) develops with less serious general and respiratory symptoms. The birds show accelerated, dyspneic breathing, sneezing with nasal discharge and infraorbital sinusitis. The chronic (diphtheroid) form usually is the result of the other forms and is characterized by cachexy, anemia, reduced egg production, dyspnea with attacks of asphyxiation due to the existing pseudomembranes at the level of the tracheal mucosa. The mortality rate is 70% in the acute forms of the disease, decreasing to 2% in the subacute form (Gowthaman et al., 2020, Carnaccini et al., 2021). In the acute form, from an anatomopathological point of view, the presence of a mucohemorrhagic exudate or blood clots in the laryngotracheal lumen, strongly infiltrated, congested or hemorrhagic mucosa. In the subacute form, the secretion is yellowish-white, fibrinous-caseous, with or without hemorrhage. In the chronic form, the laryngotracheal mucosa is covered with deposits in the form of diphtheroid membranes or obstructive caseous plugs, under which the mucosa is denuded, hemorrhagic. Inflammatory processes can be extended to the nasal, sinus or conjunctival mucosa, as well as to the bronchi and air sacs or to the cloacal mucosa and the bursa of Fabricius (El-Saied et al., 2022; Sary et al., 2017; Carnaccini et al., 2021)

• Material and method

The necropsy technique was performed in 14 gallinaceae, originating from Timis County. The samples taken were processed by the classic paraffin technique and stained with hematoxylin-eosin-methylene blue.

• Results and discussions

The macroscopical examination revealed a mucohemorrhagic exudate with blood clots in laryngotracheal lumen. The mucosa was also congested, even hemorrhagic. In some of the cases, a yellowish-white, fibrino-caseous secretion with blood patches was observed. The inflammatory processes were extended to the nasal, sinus, and bronchial mucosa.

Histologically, a hyperplastic basal layer of laryngotracheal mucosa, among with denudation were observed. The presence of giant syncytiums, marginally delimited by hemorrhages, edema and lymphohistiocytic infiltrations were also noted (Fig. 1, Fig. 2). All these changes can be observable in the first 2-5 days of the disease.

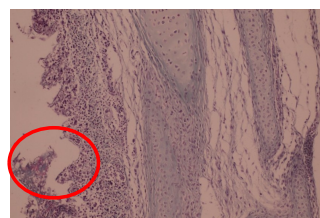


Fig. 1. Infectious laryngotracheitis - mucosal denudations (obj. x20)

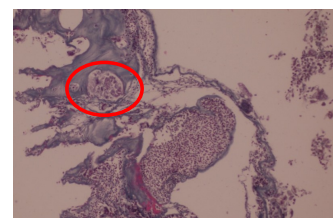


Fig.2. Infectious laryngotracheitis - syncytia with intranuclear inclusion bodies and heterophilic exudate (obj. x20)

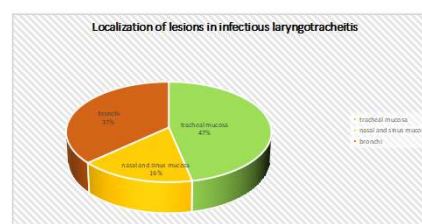


Fig. 3. Localization of lesions in infectious laryngotracheitis

Tracheal mucosa (46%) was the most affected, followed by bronchial mucosa (37%). Few cases presented changes in the nasal and sinus mucosa (17%). The intranuclear inclusions were highlighted in all the histopathological samples (Fig.3).

Consequently, the results of this study confirm the reports of other researchers among the years.

ILT continues to be an important disease for poultry, recent studies carried out in the USA and Canada by Carnaccini et al. (2021) and Sary et al. (2017), declaring its presence in poultry flocks. The disease was confirmed on the basis of the lesional aspects, noted also in the present study.

• Conclusions

Following the analysis and interpretation of the anatomopathological lesions (macroscopic and histopathological), the diagnosis of ILT was confirmed in all the birds. All the birds had lesions in the tracheal mucosa. Five birds had lesions in nasal and sinus mucosa. Eleven birds presented lesions in the bronchi tract. The specific intranuclear inclusions were highlighted in all birds.