MACROSCOPICAL LESIONS OF DIAGNOSTIC VALUE IN BOVINE PATHOLOGY

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Abstract

Beef is one of the most consumed meats in the world, preceded by pork and poultry. Thus, bovine health directly influences public health and there are risks to food biosecurity when diseases of a zoonotic, infectious or parasitic nature are detected in slaughterhouses.

During the 2 years of study carried out in the period 2018-2020, several cattle from the entire territory of Romania were examined necropsically or at the slaughterhouse, especially from the region of Moldova. Most cases were diagnosed with fasciolosis found in 11 cases of cattle, dichrocelliosis (was diagnosed in 7 cases of cattle), hydatidosis (5 cases), bovine tuberculosis (2 animals).

We found numerous acino-nodular foci of the caseous type affecting the lungs and the retropharyngeal, submandibular and mediastinal lymph nodes in tuberculosis; hypertrophic cirrhosis and severe angiocolitis. enlarged gallbladder, dilated bile ducts highlighted in the form of whitish cords on the visceral surface of the liver in fasciolosis; increased consistency of the liver, whitish trajectories consisting of ectasia of superficial bile ducts, lesions of chronic perihepatitis, cholangitis and pericanalicular cirrhosis in dichroceliosis and hydatids on the surface of the lung and liver in hydatidosis. All diagnostics were confirmed through histopathological and microbiological examinations.

The control and examination of the carcass and organs in the slaughterhouse is a very important action and contributes to public health, especially if zoonoses are discovered that can endanger human health.

Key words: bovine, slaughterhouse, zoonosis, tuberculosis, fasciolosis

Bovine tuberculosis is an infectious and contagious disease, with a zoonotic character, which has a nonspecific symptomatology and granulomatous lesions in tissues and organs.

The causative agent of cattle disease is *Mycobacterium bovis*. It is a Gram-positive bacillus, thick and short, straight or curved, not sporulated and not encapsulated.

The representative tinctorial affinity is acid-resistance, highlighted by the Ziehl-Neelsen staining. The cultivation is done in aerobiosis, and the most used media are: Lowenstein, glycerinated potato, Petroff, Petragnani, Dubos, Sauton.

Fasciolosis is a hepato-biliary trematodosis, clinically manifested by anemia, weight loss, jaundice, subcutaneous edema, diarrhea, ascites, and anatomopathologically angiocolitis, cirrhosis and traumatic hepatitis.

The etiological agent of parasitosis is *Fasciola hepatica*, with a foliaceous appearance, measuring 20-30 x 8-15 mm.

Bovine dictyocaulosis is a geohelminthosis, enzootic, evolving acutely and chronically, which parasitizes young in the trachea and bronchi, clinically manifested by severe respiratory syndrome and morphopathology by tracheobronchitis and bronchopneumonia.

The etiological agent is *Dictyocaulus viviparus*, which has an elongated, white body.

The pathogenetic mechanism depends on both the degree of infection and the age of the animals. The larvae on their way to the lymphatic system enter the intestinal barrier and traumatize it, causing inflammation and transient digestive disorders.

In the lung, the passage of larvae through the alveolar septa causes microhemorrhages and destruction of the alveolar walls. Inflammation is complicated by association germs.

Adult parasites by exerting mechanical action cause inflammation of the tracheobronchial mucosa and obstruction of the bronchi, causing respiratory disorders. Therefore, dyspnoea, atelectasis, suffocation attacks and emphysema are found.

Bovine hydatidosis is a severe parasitic zoonosis represented by hydatid cysts, of variable dimensions, which parasitize in the internal organs of both herbivores and omnivores and humans, clinically manifested by weakening syndrome, decreased production and disorders of parasitic

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organs, and morphopathologically by the presence on the surface of the organs of vesicular cystic formations.

The causative agent is the larvae of *Echinococcus granulosus*, which parasitize mainly in the liver and lungs of cattle, but also in other organs.

Hexacanthus embryos reach the intestinal mucosa and then traumatize the passenger to reach the target organs.

The parasitic vesicle develops in the organs of choice through mechanical and compressive action, causing atrophy of adjacent tissues, necrosis and fibrosis.

The development of specific vesicular formations in the mass of the liver and lungs leads superficial hydatids in the lung rupture, hydrothorax occurs as a result of pulmonary hypofunction.

Myocardial hydatids cause severe dysfunction due to fibrosis of the heart muscle.

The rupture of hydatid cysts in various organs due to trauma or exertion of animals leads to death.

The studies performed had as primary purpose the highlighting of macroscopic lesions with diagnostic value in the main pathologies encountered in cattle. In order to achieve the objectives of this work within a period of 2 years, a number of 25 cattle were examined after slaughter or autopsy.

MATERIAL AND METHOD

The studies aimed primarily to highlight macroscopic lesions with diagnostic value in the main pathologies encountered in cattle.

The research was carried out over a period of two years, the cattle were slaughtered and examined in the slaughterhouse of SC EMANUEL COM SRL, Botoșani County, Răchiți, Răchiți County, respectively SC SAMCOM MEAT SRL, Botoșani County, Cătămărăști-Deal, Mihai Eminescu County.

The studies were also performed in the Department of Pathological Anatomy, Forensic Medicine and Necropsic Diagnosis of the Faculty of Veterinary Medicine, Iasi, where the carcasses of cattle were necropsied and examined, but especially the samples collected from the above slaughterhouses. The necropsy room is located in Pavilion VI and is composed of: necropsy laboratory for the conduct of Forensic Medicine classes, corpse reception room, cold room.

RESULTS AND DISCUSSIONS

Most cases were diagnosed with fasciolosis, disease found in 11 cases of cattle (Fig. 5, 6), dichrocelliosis (was diagnosed in 7 cases of cattle – Fig. 7, 8), hydatidosis (5 cases – Fig. 9, 10), bovine tuberculosis (2 animals – Fig. 1-4).

We found numerous acino-nodular foci of the caseous type affecting the lungs and the retropharyngeal, submandibular and mediastinal lymph nodes in tuberculosis; hypertrophic cirrhosis and severe angiocolitis, enlarged gallbladder, dilated bile ducts highlighted in the form of whitish cords on the visceral surface of the liver in fasciolosis; increased consistency of the liver, whitish trajectories consisting of ectasia of superficial bile ducts, lesions of chronic perihepatitis, cholangitis and pericanalicular cirrhosis in dichroceliosis and hydatids on the surface of the lung and liver in hydatidosis. All diagnostics were confirmed through histopathological and microbiological examinations.

Fig. 1 Cattle, Simmental breed, age 9, slaughtered on 09.10.2018: Generalized bovine tuberculosis

Fig. 2 Cattle, Black spotted romanian, age 8 years, slaughtered on 10.07.2019: Nodal tuberculosis - tuberculous granulomatous lymphadenitis

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important action and contributes to public health, especially if zoonoses are discovered that can endanger human health.

Fig. 3 Cattle, Black spotted romanian, age 8 years, slaughtered on 10.07.2019: Nodal tuberculosis - tuberculous granulomatous lymphadenitis

Fig. 4 Cattle, Black spotted romanian, age 8 years, slaughtered on 10.07.2019: Nodal tuberculosis - tuberculous granulomatous lymphadenitis

Fig. 5 Bovine, Black spotted romanian, 16 years old, slaughtered on 13.08.2019: Bovine fasciolosis

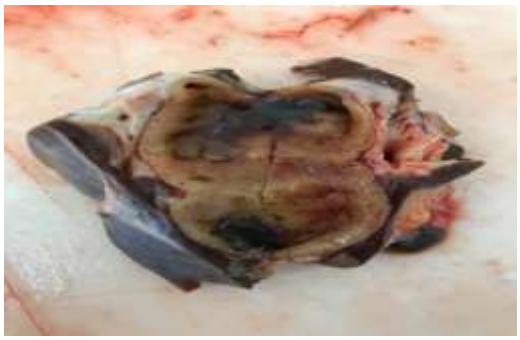

Fig. 6 Bovine, Black spotted romanian breed, 16 years old, slaughtered on 13.08.2019: Bovine fasciolosis

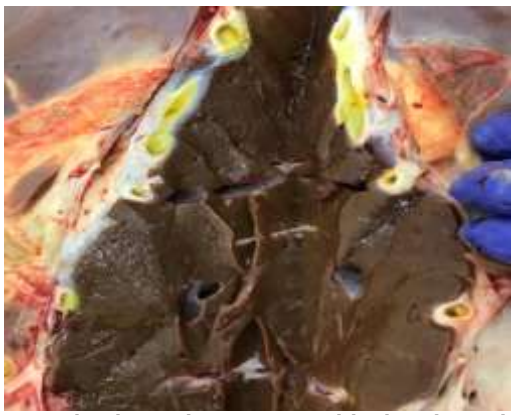

Fig. 7 Holstein cattle, 13 years old, slaughtered on 16.09.2019: Bovine dichrocelliosis

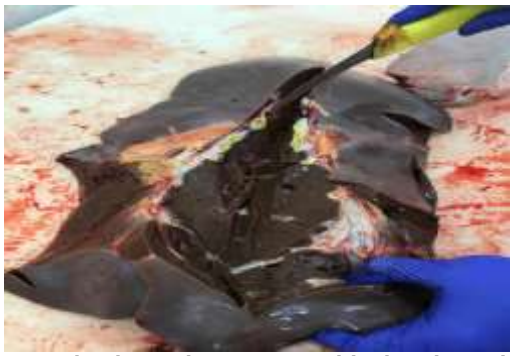

Fig. 8 Holstein cattle, 13 years old, slaughtered on 16.09.2019: Bovine dichrocelliosis

Fig. 9 Cattle, Mixed breed, age 15, slaughtered on 12.02.2020: Bovine hydatidosis

Fig. 10 Cattle, Mixed breed, age 15, slaughtered on 12.02.2020: Bovine hydatidosis

CONCLUSIONS

In the case of diseases with parasitic etiology, the macroscopic lesions were sufficient to elucidate the diagnosis, however, for a detailed description of the changes encountered, samples were taken for histopathological examinations.

The parasitosis identified in most cases does not cause mortality, but causes a decrease in the productive yield of cattle, and at the time of slaughter the affected organs are confiscated, confirming their economic importance.

The control and examination of the carcass and organs in the slaughterhouse is a very important action and contributes to public health, especially if zoonoses are discovered that may endanger human health.

REFERENCES

1. Oprean O.Z., 1998. *Morfopatologie generală veterinară*. Ed. ”Ion Ionescu de la Brad”, Iași;
2. Perianu T., 2011. *Tratat de Boli Infecțioase ale Animalelor. Bacterioze. Vol. I.* Editura Universitas XXI, Iași;
3. King J. și colab., 2014. *The necropsy book*. A guide for students, residents, clinicians, pathologist and bilogical researchers. Editura Cornell University;
4. Coțofan O., 1992. *Morfopatologie generală.* Universitatea de științe agricole și medicină veterinară ”Ion Ionescu de la Brad”, Iași;
5. Perianu T., 2012. *Tratat de Boli Infecțioase ale Animalelor. Viroze și Boli Prionice. Vol. II.* Editura Universitas XXI, Iași;
6. Mânzat R. M., 2005. *Boli virotice și prionice ale animalelor.* Editura Brumar, Timișoara;
7. Pop M., Vasiu C., Răpuntean Gh., 1981. *Ghid de diagnostic în bolile infecțioase ale animalelor.* Editura Ceres, București;
8. Lazăr M., 2016. *Lucrări practice de diagnostic necropsic veterinar.* Editura ”Ion Ionescu de la Brad” Iași;
9. Enache T. și colab., 1994. *Medicină legală veterinară.* Editura All, București;
10. Ahmed A. El - Sawalhy, 1999. *VeterinaryInfectious Diseases*, Second Edition – A PRACTITIONER ’ S AND STUDENTS GUIDE, Faculty of Veterinary Medicine Mansoura University;
11. Baba A. I., 1996. *Diagnostic necropsic veterinar.* Editura Ceres, București;
12. Oneț V., Oneț E., 1983. *Ghid de diagnostic în bolile parazitare la animalele de fermă.* Editura Ceres, București;
13. Iacob O.C, 2016. *Parazitologie și clinica bolilor parazitare la animale – Helmintoze.* Editura „Ion Ionescu de la Brad”, Iași;
14. Adamești eanu. I. și colab., 1982. *Diagnostic morfoclinic veterinar pe specii și sindroame.* Editura Ceres, București;
15. Paul I., 1982. *Diagnostic morfopatologic veterinar*. Editura Ceres, București;
16. Paul I., 1996. *Etiomorfopatologie veterinară*. Editura All, București;
17. Paul I., 2000. *Etiomorfopatologie veterinară. Vol. 3.* Editura ”Ion Ionescu de la Brad”, Iași;
18. Paul I., 2005. *Etiomorfopatologia bacteriozelor la animale*. Editura PIM, Iași;
19. O. Vlăduțiu, V. Tomescu, 1970. *Bolile bovinelor.* Editura Ceres, București;
20. Dărăbuș Gh., Oprescu I., Morariu S., Mederle N., 2006. *Parazitologie și boli parazitare.* Editura Mirton, Timișoara;
21. Cătoi C., 2003. *Diagnostic necropsic veterinar.* Editura Academis Pres, Cluj-Napoca;

INVESTIGATIONS INTO THE PRESENCE OF VIRAL INFECTIONS IN ANIMALS OF HUNTING INTEREST IN NORTHEASTERN ROMANIA

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Abstract

Forest ecosystems are characterized by a great diversity but at the same time by a great capacity for self-regulation, self-reproduction and stability. They still have dominance of the bioecology and pathology of the animals still incompletely elucidated and, respectively, controlled. The following species of wild animals of hunting interest were studied: deer (*Dama dama*), wild boar (*Sus scrofa ferus*) and fox (*Canis vulpes*) and the diseases studied are: African swine fever in wild boars, specific diseases of deers and Rabies in foxes. The study provides support for preventive management actions aimed at protecting the public health and the economy.

Key words: public health; economy; African swine fever; hunting

INTRODUCTION

Romania's integration in the economic and social structures of the European Community is not possible without the alignment of the Romanian scientific research to the community priorities and, especially, to the methodology of the true research. In the fields of biology, human health and veterinary health, the identification of problems can be done by small research teams or even by isolated researchers, but solving them requires, however, broad collaborations between different research and development entities, economic units and public administration.

Forest ecosystems are characterized by a great diversity but at the same time by a great capacity for self-regulation, self-reproduction and stability. They still have dominance of the bioecology and pathology of the animals still incompletely elucidated and, respectively, controlled.

PURPOSE OF THE WORK

The mai purpose of the research is to analyze the epidemiological and zoonotic impact associated with some species of hunting interest in the N-E area of Romania. The following species of wild animals of hunting interest were studied: deer (*Dama dama*), wild boar (*Sus scrofa ferus*) and fox (*Canis vulpes*) and the diseases studied are: African swine fever in wild boars, specific diseases of deer and Rabies in foxes.

We consider the wildlife in Romania an important source of public income that is superficially exploited, partly due to the fact that the biological and health needs of different species of animals of hunting interest are not fully resolved. In addition, many of the wild species are the natural reservoir of many domestic animal diseases, to which is added the presence in wildlife populations of some very serious zoonoses, which make the wild animal a factor of biological pollution of the environment and of permanent risk to public health.

MATERIAL AND METHOD

The research in this study was carried out in Neamt county. The DSVSA database was accessed to obtain informations.

Compared to 2020, if we talk about materials and methods, this year were analyzed for rabies surveillance 157 samples by direct immunofluorescence (IFD) and 5 samples by the intracerebral inoculation test of mice (bioprob). Also for rabies surveillance, 152 mandibular samples from shot foxes were analyzed for biomarker determination control. 152 thoracoabdominal fluid samples for serological control ELISA postvaccine antibodies were also analyzed.

For African swine fever, 744 sets of organs from wild boar were tested by ELISA and 734 blood samples on EDTA for RT-PCR examinations.

For the surveillance of classical swine fever, 254 sets of organs from wild boar were analyzed by ELISA and 254 blood samples on EDTA for examinations in the direction of RT-PCR.

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