

УДК 591.69

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PARASITOLOGICAL ASSESSMENT METHODS OF WILD ANIMALS CONDITION IN BELARUS

Intensification of hunting management is promoted by settling density increase of game animals. It increases risk of outbreaks origin of various diseases that will lead to undesirable losses. Together with veterinary service of the Republic of Belarus spread of infectious and invasive diseases monitoring in populations of main game animals species is carried out, and also the methods of their diagnostics are developed. The developed recommendations allow diagnosing such diseases as metastrongylez, trichinosis, parafastiopsoz of hoofed animals, eymerioz of wild boars, echinococcosis, strongyloidiasis, rabies, tuberculosis, etc.

Introduction. Development of Belarus forestry in new state and economic conditions expecting an integrated approach to use of natural resources, creates prerequisites for more intensive development of hunting farm, increase of capacity of hunting grounds and efficiency of rare species populations of hunting animals and birds by means of biotechnical actions, acclimatization and valuable species of wild animals reacclimatization, their selection in nature.

Hunting grounds of Belarus make 18.8 million hectares, including forest ones 7.3 million hectares (39.0%), field ones 10.2 million hectares (5.4%), water and marsh ones – 7.5 million hectares (7.0%). Here are both the grounds open for hunting (17.3 million hectares), and the closed ones (15 million hectares) such as reserves, wildlife areas, national parks where hunting is forbidden. 74 species of mammals live in the Republic of Belarus, from which 19 have the status of hunting ones.

Main part. It is stated that game species are affected by parasites. The only helminthes are registered: a bison has 40 species, an elk – 36, a deer – 34, roes – 40, a boar – 21, a wolf – 21, foxes – 38, a raccoon dog – 25 [1]. Little-studied wild hoofed and carnivorous animals helminthiasis is dicrocelios, parafasciolopsos, paramfistomatidos, moniezios, cysticerocos, trichcefalios, capillarios, trichostron-gylidos, ezofagostomos, epafonstrongylios and many others [2].

These diseases of game animals reduce the quality of hunting production, and sometimes cause their death. Along with economic damage they represent essential menace as a possible source of human contamination. Therefore their prevention and treatment is an important economic task.

Within performance of the State program of development of hunting economy for 2006-2015 "To develop complex actions for protection of wild animals from the diseases causing the greatest damage to populations of hoofed and predatory animals" we studied and generalized available ex-

periment on prevention of wild boar diseases in the republic. Antigelmintes against the most widespread pathogenic helminthiasis causing damage to populations of a wild boar are applied commercially, economic efficiency assessment of preparations application are carried out. Differential express methods of wild mammal parasite cenosis diagnostics [3, 4] are developed and introduced.

Efficiency of wild carnivorous oral vaccination is studied to prevent rabies of animals. Vaccination of wild animals in the area of 17 forestries is carried out, 235 820 baits with a vaccine on the area of 156 721 sq. km are distributed. The carried out researches showed that the proposed vaccine for oral antirabic immunization of wild carnivorous is a high-immunogene preparation. Its application epizootologically, immunologically, both economically is justified and is perspective for rabies prevention in nature.

However nowadays it is necessary to perform works on distribution extent assessment of infectious and invasive diseases in populations of main game animal species and to develop complex recommendations about prevention of their distribution. Within set objectives the top priority tasks are:

1) the veterinary service estimates epizootic situation, carries out clinical and laboratory researches for the purpose of animals diagnosis establishment;

2) the individual quantity of animals by species and diseases with a diagnose of infection, disease, death is taken into account.

For carrying out research the following list of diagnostic operations was used:

1. Parasitic diseases:

1.1. Metastrongylez. For gelminth coprological researches the tests of wild boars excrements investigated to have metastrongylid eggs are selected. Posthumous diagnostics is carried out by opening lungs (trachea, bronchial tubes – large, average, small to final branches) and detection of metastrongylids.

1.2. Trichinosis. It is diagnosed during lifetime of animals by carrying out epizootic, clinical, immunological researches and muscles examining. It is necessary to differentiate trichinous larvae from living and died measles (cisticercs), a sarkotsist, air bubbles.

1.3. Parafastiolopsos of hoofed animals. The tests of wild animal's excrements (an elk, the roe, a deer, etc.) are selected to investigate. Posthumously, opening a liver of a sick animal flat worms-flukes – parafastiolopsises are found.

1.4. Eymerioz of boars. It is diagnosed in complex, on the basis of epizootological, clinical and pathology-anatomical data which have to be surely confirmed with laboratory researches results of wild boars excrements or scrapes from affected areas of intestines mucous membrane of killed or freshly died corpses of animals to have eymeriya in them.

1.5. Sparganoz. Gelminthologically investigating of fresh thin intestines department of carnivores, cestodes *Spirometra erinaei-europaei* having length up 1.5–4 m. are found. These animals are epidemiologically dangerous in sparganoz agent distribution. When carcasses of a wild boar are veterinary and sanitary examined or its fresh corpses pathology-anatomically are opened plerocercoids (sparganyums) lung-testers – larval stages of cestodes in hypodermic cellulose are found.

1.6. Echinococcosis. When detecting larval – bubbly – forms of echinococcus in tissues and organs the posthumous is diagnosed. It is recommended to make careful examination of internal organs and first of all lungs and a liver in which the larval form of echinococcus can be from a pea to the human head size. During lifetime of wild carnivores, echinococcosis is diagnosed by excrements investigation for detection of cestode *Echinococcus granulosus* or its segments and eggs.

2. Nematodoza of ruminants and wild boars:

2.1. Trichocefalez. The tests of ruminant and wild boars excrements investigated for the purpose to detect agent eggs are selected for investigations. Puberty nematodes in thick department of intestines are detected by gelminthological investigation. The diagnosis is considered to be established after detection of helminthes eggs in excrements and trichocefalyus in thick department of intestines.

2.2. Askaridoz of wild boars. The tests of domestic pigs and wild boars excrements investigated by a flotation method are selected for investigations aiming to detect eggs of helminth. The diagnosis is considered to be established after detection of eggs in excrements, ascarids in thin department of intestines or larvae in a liver and lungs.

2.3. Strongiloidoz. Only fresh tests of young ruminant growth excrements (lain in the summer –

no more than 5–6 h and in autumn – no more than 12–15 h) gelmintoovoscopically investigated for the purpose to detect eggs and strongiloid larvae are selected for investigations.

2.4. Strongilyatoza of ruminant animal's gastrointestinal tract. The excrements investigated by ovoskopiya and larvoskopiya methods are selected for researches. Eggs of strongilyats, relating to different families, are similar, but they are diagnosed as strongilyatoza in general group. Puberty trichostrongilya, kooperiya and ostertagiya are localized in thin department of intestines and in a maw; gemonha – in a maw; nematodira and bunostoma – in thin section of intestine; esofagostoma and habertiya – in thick section of intestines. The posthumous diagnosis is made on the basis of gelmintological autopsy data of a maw and thin section of intestines.

2.5. Ligulez. During lifetime of fish-eating birds the diagnosis is made on the basis of gelmintoovoskopical investigations of their excrements. Posthumously the disease is diagnosed on the basis of died or killed fish-eating birds autopsy and detection of puberty ligula in their intestines and abdominal cavity.

2.6. Opistorhoz. For diagnostics fish-eating animals excrements are investigated to have eggs of opistorhisis. By pathoanatomical autopsy of died or killed animal a liver is investigated to have trematodes.

2.7. Difillobotridoz. For researches excrements tests of animals eating fish are selected that are investigated aiming to excrete in them eggs of difillbotria. Posthumously the diagnosis can be made after intestines autopsy of carnivorous and detection of cestodes in it.

2.8. Mange. Laboratory mange researches are based on detection of scabby pincers or their eggs in skin scrapes. The material of scrapes is investigated to detect mites (either to have their fragments or eggs) or to reveal live mobile mites.

2.9. Bloodsuckers. For researches a hair of an elk and a deer are used. *Lipotena cervi* species occurs in hair of an elk and a deer.

3. Virus and bacterial infections:

3.1. Rabies. For researches a brain with affected central nervous system, as well as fresh corpses of small animals are used.

The diagnosis is made on the basis of laboratory results. Laboratory diagnostics consists in brain research aiming to detect a virus anti-gene in various immunological reactions, to discover little bodies of Babesh – Negri and a biological test on white mice.

3.2. Classical plague of pigs. The diagnosis is made on the basis of epizootological data of clinical pathologic anatomical changes being obligatory confirmed by laboratory researches. For researches

it is necessary to send slices of a spleen, tonsils, the swallow, submaxillary and mesenteric lymph nodes, kidneys, lungs, blood and red marrow ex-amples from the chest bone, selected in the first 2 h after death or slaughter of animals.

3.3. Tick-borne encephalitis are the virus infections being characterized by affection of central nervous system and malfunction of a gastrointestinal track. Diagnostics of arbovirus of infections is formed of virus discover during acute illness and serological reactions during recovery. Sick animals' virus is isolated from blood, and in case of autopsy – from the central nervous system and internals.

3.4. Tuberculosis. When tuberculosis of killed mammals is diagnosed swallow, submaxillary, bronchial, mediastinum and mesenteric over udder lymph nodes as well as the internals (lungs, a liver, a spleen, kidneys, etc.) are subjected to obligatory survey. Tubercular process is mostly often localized in lymph nodes.

3.5. Brucellosis. Pathology anatomical brucellosis changes of ruminants aren't characteristic and can't form the basis for diagnosis statement. The diagnosis is made on the basis of bacteriological, serological and allergic researches results. Besides, surely it is necessary to take into account epizootological data and clinical disease symptoms.

3.6. Chlamydia. The activator is *Chlamidia psittaci*. For researches tissues slices with symptoms of affected respiratory and digestive organs are used. The diagnosis is made taking into account the clinical and epizootological data, pathology anatomical changes, serological research, chlamys exudations and microscopy smear prints. The diagnosis can be considered to be made with quadruple and more increase of antibodies and simultaneously chlamys exudations.

3.7. Salmonellosis of pigs is a disease of 1.5-4-month age piglets, being accompanied with fever, diarrhea and degenerate processes in a small and

large intestine. The diagnosis is made on the basis of epizootological data, a clinical picture and features of a disease course, pathology anatomical changes, results of microbiological research, luminescent analysis and results of a biological test.

3.8. Necrotic balanoposthitis is the low-studied disease of bisons affecting males. At first the illness develops as inflammatory process in a prepu-cial bag. For laboratory researches it is necessary to send slices of a spleen, heart, kidneys, the lungs, affected areas of reproductive organs, the tests of the blood selected in the first 2 h after death or slaughter of sick animals.

Conclusion. Thus, parasitological condition monitoring over the populations of game animal species has to be conducted constantly by specialists of veterinary service and workers of hunting farms, and protected areas. Besides, veterinarians have to inform specialists of hunting, forestry and agricultural enterprises about emergence of especially dangerous diseases among wild and domestic animals.

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Received 21.01.2013