Journal of Advanced Zoology

ISSN: 0253-7214
*Volume **44** Issue **S-5 Year 2023** Page **1498:1501***

Episootology, Treatment and Prevention of Lerneosis of Fish

Boliyev Shavkat Kochkarovich[1*], Sulaymanova Nafisa Abdimuminovna[2], Botyrova Zamira Rajaboyevna[3]

[1,2,3]Veterinary Research Institute

**Corresponding author's: Boliyev Shavkat Kochkarovich*

Article History

Received: 08 June 2023
Revised: 15 Sept 2023
Accepted: 28 Oct 2023

Abstract

The article describes epizootology, diagnosis of lerneosis of fish that are fed in artificial reservoirs, clinical signs observed in them, as well as an analysis of scientific sources on methods of treatment and prevention. With lerneosis of fish, cases of blood clots, deep wounds, raising and loss of scales are observed on the body of fish, which leads, first of all, to loss of marketability, growth lag behind development, decreased immunity in Pisces, leading to the fact that it becomes susceptible to various infectious diseases. Lerns in the body of fish penetrate through the gills into the internal organs, causing damage to the liver and intestines, which also leads to the development of hepatitis B of the liver. During pathological studies, blood clots in the liver and intestines and necrosis of the intestinal mucosa were observed in fish with lerneosis. Fish affected by lernaea are carriers of the disease the following year, and the larval stage of lernaea is the source of the disease. Infection of fish with Lernea in fish ponds is generally much higher in improperly constructed, undrained, unsanitary ponds in winter, where their numbers can reach dozens per body of each fish.

Keywords: *Fish, Water, Pond, Salt, Chlorophos, Crab, Lerneosis, Lernaea Elegans, Lernaea Cyprinacea, Carp, Silver Carp.*

1. Introduction

One of the blessings bestowed upon mankind is undoubtedly the fish. This is why people have been involved in fishing since ancient times, and as a result, fishing has become an important branch of agriculture. It is important to further develop the fishing industry, increase the range of fish products, increase export potential, effectively use the capabilities of existing basins, and increase the volume of fish farming based on intensive technologies.

The further development of fisheries in our republic, the effective use of existing natural and artificial lakes and the achievement of high yields are seriously hampered by a number of infectious and non-infectious fish diseases. Among them, lerneosis, considered one of the invasive fish diseases, negatively affects the development of the industry.

The degree of study of the subject

From foreign scientists regarding the study of lerneosis common in Fish Khorosheltseva V.N., Strizhakova T.V., Bortnikov E.S., Mosesyan G.V., Bugaev L.A., Denisova T.V. conducted studies on 1000 specimens of fish (carp, beluga, silver carp, silver carp, perch) in fisheries in a number of regions of Russia, including Rostov (3), Krasnodar (3), Stavropol regions (1). Research has shown that 81 specimens of young fish are affected by lerneosis. Lernaeans were found mainly on the surface of the fish's body and in the gills. [2,9,12].

Lerns in the body of fish penetrate through the gills into the internal organs, causing damage to the liver and intestines, which also leads to the development of hepatitis B of the liver. During pathological studies, blood clots in the liver and intestines and necrosis of the intestinal mucosa were observed in fish affected by lerna.

Korsakova M.V. conducted scientific research in fish farms in more than 15 regions of Russia in the Tver, Yaroslavl, Stavropol, and Ryazan regions of the Russian Federation, applied and recommended the drug "Emicon" for the treatment of Pisces lerneosis. [6,7,11].

Jimil V.I. (2007-2010, Belotserkov National Agrarian University, Belaya, Serkov, Ukraine). Fish affected by lernaea are carriers of the disease the following year, and the larval stage of lernaea is the source of the disease. As a result of the author's study of various reservoirs, kraustaseoses (lerneoses and argullioses) were discovered in the bodies of adult and young fish. [8,11]. During control monitoring in 2007-2011. In 11 fish farms of the Zhytomyr, Kiev, and Cherkasy regions of Ukraine, based on the parasitological examination methods generally accepted during the experiment, the prevalence and intensity of kraustaceosis infestation in different ages of cyprinid fish was determined. In all 11 mentioned fish farms, up to 100% of cases of cyprinid fish affected by lerneosis were recorded. In particular, the proportion of Lernaeans at the copepod stage was 66.7%. In addition, about 20 existing fisheries in the Stavropol, Rostov, Krasnodar regions of the south of the Russian Federation also revealed kraustaceosis, while at the end of June the average intensity of invasion was 10-15%, and the intensity of invasion was 1-10 copies, while repeated experiments in August showed that the intensity of invasion was 45-70%, and the intensity of invasion was 14-52 specimens. [3,10].

In the conditions of Uzbekistan, ectoparasites of Lernaean fish are regularly found in fish that breed mainly in the spring and summer in the reservoirs of Tashkent, Samarkand, Kashkadarya, Andijan, and Fergana regions. Damage levels peaked at 55.8% by the summer season, currently causing the largest economic losses for fisheries.

Fig 1. Inflammatory process in tissues where Lerneas are located

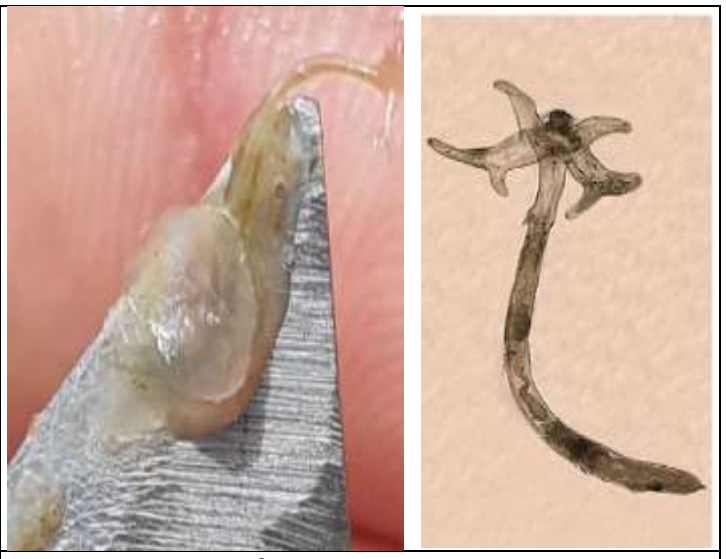

Fig 2. Appearance of Lernea

Purpose of the study. The study of the epizootology of Pisces lerneosis is to develop effective methods and means of treatment and prevention. The causative agent is a copepod (crustacean) of the genus lernaea, the body of a sexually mature female is elongated, cylindrical, not divided into joints, the rear end is slightly expanded, 0.1-1.6 cm long. On the last part of the head there are 4 protrusions through which lerneoses penetrate the body of the fish. Has 5 pairs of bicuspid swimming legs. [3,4] egg sacs 1 pair of long ones, each holding 300-700 eggs. The parasite settles in the body of the fish. The eggs hatch into free-swimming larvae - nauplii. They have 3 pairs of subsequent legs, and over the course of 9 – 10 days they go through 3 nauplial and 5 copepod stages, each time performing a dash in the water. Lernae penetrate deeper into the muscle tissue, piercing the skin of the fish, while settling over the entire surface of the body.

In the tissues where the Lernae are located, an inflammatory process occurs, the tumors become hyperemic and white, narrow ulcers form. Pathogenic bacteria and fungi develop in the affected tissues. The pathogenic effect of the parasite on the fish body is characterized by impaired tissue function, the occurrence of an inflammatory process in the muscles, internal organs, especially the liver, and toxic secretions in the glands of shrimp negatively affect the general condition of the fish body, leading to changes in blood composition and a decrease in hemoglobin levels. Parasitization of 2 or 3 lernaes in the body of young fish leads to their death. This, in turn, limits the economic opportunities of fisheries. Taking into account the climatic and local conditions of our republic, the ecological situation in the territories, conducting a general survey of fish protected reservoirs and the fish contained in them, studying the cause of the disease, shows that one of the urgent tasks is the development and implementation of measures for the treatment and prevention of fish lerneosis. [1,10,12].

Lerneosis is one of the ectoparasites of freshwater fish of the family lernaeidae lernaea elegans, Lernaea cyprinacea - copepods. Crayfish parasitize the body of carp fish, their fry and other wild fish living in the rivers and lakes of our natural basins, including (crucian carp, pike perch, bream) . Due to the absorption of bloody exudate by tissues, the scales on the skin rise slightly, become deformed and become dry. Sick fish do not receive food, move slowly, and accumulate on the surface of the water [4,5,8].

To combat the disease and treat fish affected by lerneosis, they are kept in laboratory conditions in baths in a solution of potassium permanganate at a temperature of 15-20°C in a ratio of 1:50000 for 2-3 hours. In addition, 65% calcium hypochloride gives an excellent effect when treating fish ponds in the form of powder at the rate of 12 kg per hectare and methyline blue in the form of a solution at the rate of 200 grams per hectare.

To get rid of grass carp and carp from Lernaeans, Karbofos is used at a concentration of 0.1 mg/l twice with an interval of two weeks. Adding slaked lime to the pond twice a month in an amount of 100 kg/ha also has a good effect. At the same time, the pH of the water increases to 8.5-9.0, which leads to the loss of the nauplial and copepod stages of free-swimming shrimp.

Organic dyes - mainly violet color "K" in a concentration of 0.1-0.2 g/m3 - kill shrimp at the free stage. The drug "Antipar" is mainly used for aquarium fish. In foreign countries, preparations of emikon and doramectin (in an amount of 0.25 g/m3 once a week for 5 weeks) also show good results; crustacean preparations are also widely used. In addition, on farms, 100 kg of salt is left in a bag next to each “feeder” [5,10].

In healthy fish farms, the following measures are taken to prevent disease: regular annual disinfection work in the winter by draining silt deposits in ponds; installation of “filter nets” at the entrance to the fish pond and organization of water collection ponds; preventing the introduction of contaminated fish into the farm and establishing control over the transportation of fish; fish brought into the pond are kept in a 5% solution of table salt for 2-3 minutes, followed by throwing the fish into the pond; storing juvenile and adult fish in separate ponds is one of the important measures [1,4,6].

4. Conclusion

It With fish lerneosis, hemorrhages, the formation of deep wounds, raised scales, and molting are observed on the fish’s body, leading primarily to loss of marketable character, growth lag behind development, decreased immunity in Fish, and becoming susceptible to various infectious diseases.

In the prevention of fish lerneosis, measures for the correct organization of fish ponds, complete anesthesia of the pond and its disinfection by drying in the winter period, in the spring-summer period, treating the pond with slaked lime twice a month, filling the pond with slaked lime twice a month, are highly effective in preventing the disease. bag in the amount of 400 kg per hectare.

References:

1. «Рыбоводство» Учебник. Каплич В.М., Герасимчик В.А., Зявгинцев В.Б., Минск 2016 год. Стр. 290-292.
2. “Болезни рыб и пчёл” Учебное пособие. Герасимчик В.А., Садовникова Е.Ф., Минск ИВС Минфина 2017 год. Стр. 92-96
3. Journal Contribution. Статья. «Лернеоз объектов аквакультуры в рыбоводных хозяйствах Южного региона Российской Федерации» (Всероссийский научно-исследовательский институт рыбного хозяйства и океанографии (ФГБНУ «ВНИРО»), Азово-Черноморский филиал ФГБНУ «ВНИРО» («АзНИИРХ»), Ростов-на-Дону Южный федеральный университет, Ростов-на-Дону) Хорошельцева В.Н., Стрижакова Т.В., Бортников Е.С., Мосесян Г.В., Бугаев Л.А., Денисова Т.В., 2022 год. Стр. 41-43.
4. “Baliq kasalliklari”, O‘quv qo‘llanma. Daminov A.S., Nasimov Sh.N., Gerasimchik V.A., Eshbo‘riyev S.B., Qurbonov F.I., Toshkent-2020 йил. 23-27 бет.
5. “Инвазионный болезни рыб”, Учебно-методическое пособие, Новак А.И., Новак М.Д., Рязань-2012 год. Стр. 51-56.
6. Hemaprasanth K. P., Sridhar N., Raghuanth M. R. *Lernaea cyprinacea* infection in a new host Puntius pulchellus in intensive culture system and its control by doramectin // Journal of Parasitic Diseases. 2017. Vol. 41, no. 1. Pp. 120–127.
7. Ихтиопатология. Учебник, Головина Н.А., Стрелков Ю.А., Воронин В.Н., Головин П.П., Евдокимова Е.Б., Юхименко Л.Н.. М.: Мир, 2003 год. Стр.353-364.
8. “Болезни рыб и основы рыбоводства”, учебник, Грищенко Л.И., Акбаев М.Ш., Васильков Г.В., Москва . Колос 1999 год. Стр. 404-407.
9. “Рыбоводства”, учебник, Каплич В.М., Звгиянцев В.Б., Герасимчик В.А. Минск, “ИВЦ Минфина” 2016 г. Стр. 290-292.

10. Safarova F.E,. Azimov D.A., Akramova F.D., Shakarboyev E.B., Qahramonov B.A. “Baliqlar kasalliklari” Toshkent 2020 yil. 18-25 bet.
11. Джмиль В.И. Материалы v научно-практической конференции международной ассоциации паразитоценологов «Паразитарные системы и паразитоценозы животных» Витебск ВГАВМ 2016 24-27 мая. «Мониторинг инвазионных болезней карпов в отдельных прудовых хозяйствах Украины» (Белоцерковский национальный аграрный университет, г. Белая Церковь, Украина) стр. 43-45.
12. Panjvini F., Abarghuei S., Khara H., Parashkoh H.M. Parasitic infection alters haematology and immunity parameters of common carp, *Cyprinus carpio*, Linnaeus, 1758 // Journal of parasitic diseases. 2016. Vol. 40, no. 4. Pp. 1540–1543.