

Short Communication

An epizootic of *Ichthyophthiriasis* among fishes in Armand River, Iran

Mehdi Raissy^{1*}, Mahsa Ansari², Manouchehr Moumeni³, Mohammad Ali Goudarzi¹, Hamid Reza Sohrabi¹ and Mojtaba Rashedi¹

¹Faculty of Veterinary Medicine, Islamic Azad University-Shahrekord Branch, Shahrekord, Iran.

²Young Researchers Club, Islamic Azad University-Shahrekord Branch, Shahrekord, Iran.

³Fishery Research Center, Islamic Azad University-Shahrekord Branch, Shahrekord, Iran.

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Ichthyophthirius multifiliis is one of the most important ciliated protozoan parasites of freshwater fish and has been frequently reported from different fish species from Iran and other parts of the world. The parasite regularly is found in skin and gills with high lesions especially in gills and may result to death by disturbance of osmoregulation. The current study was done in spring and summer 2010 as a part of study of parasitic fauna of fish from Armand River. A total of 100 fish were caught from the river and were transported to the fishery laboratory, Islamic Azad University of Shahrekord, alive. Fishes were studied for parasitic infestation after anesthesia and 62 fish of totally 100 studied fish were infected to *I. multifiliis*. The highest infection rate was observed in *Capoeta damascina* (33%) and the lowest was in *Glyptothorax silviae* (1%). High infection of *I. multifiliis* in native fishes will be accompanied with high lesions in fish.

Key words: Fish parasite, Armand River, *Ichthyophthirius multifiliis*.

INTRODUCTION

Ichthyophthirius multifiliis can infect almost all freshwater fish (Ventura and Paperna, 1985) and at least one species of amphibian (Gleeson, 1999). The disease is recognized as one of the most pathogenic diseases of fish resulting in significant economic losses in the affected fish species (Matthews, 1994). The disease due to *I. multifiliis* which is commonly known as "Ich" or white spot disease (*Ichthyophthiriasis*) is widespread and has been reported from different countries (El-Dien et al., 1998). It causes severe epizootics among different fish species in cultured fish, as well as in wild fish populations (El-Dien et al., 1998; Jeong- Ho et al., 2002; Thilakaratne et al., 2003). Naturally occurring outbreaks of *Ichthyophthiriasis* in wild fish populations can yield devastating effects. For example, natural outbreak of the Ich was blamed for the deaths of 18 million *Orestias agassii* in Lake Titicaca, Peru (Wurtsbaugh and Tapia, 1988). Severe damages of the gills and skin epithelium occurs due to the break of the parasites through host skin and gill during infection. This damage might lead to

concession of osmoregulatory process and ion regulation and might serve as a portal of entry for secondary invaders such as bacteria or fungi, leading eventually to death of fish host (Ewing et al., 1994; Tumbol et al., 2001). This research work as a part of parasitological study of fishes in Armand River is aimed to study epizootic of *Ichthyophthiriasis* among fishes in Armand River, Chaharmahal and Bakhtyari Province, Iran.

MATERIALS AND METHODS

A total of 100 fish samples including *Capoeta aculeata*, *Capoeta damascina*, *Capoeta Capoeta*, *Barbus barbulus*, *Barbus grypus* and *Glyptothorax silviae* were studied from March to July 2010. Fishes were caught by local fishermen and were transported alive to the laboratory. Methods used for collecting and fixing the parasite specimens were according to standard protocols (Fernando et al., 1972; Lom and Dykova, 1992). Identification of the fishes was according to Berg (1964) and Abdoli (1999) (Table 1).

RESULTS

A total of 142 fish specimens were studied during spring and summer 2010. Weight, length, age and sex of studied

*Corresponding author. E-mail: mehdi.raissy@iaushk.ac.ir.

Table 1. *Ichthyophthiriasis* in studied fish species.

Fish species	Prevalence (%)	Infected organ
<i>Capoeta aculeata</i>	7	Gills
<i>Capoeta Capoeta</i>	7	Gills, Skin
<i>Capoeta damascina</i>	33	Gills, Skin
<i>Barbus barbulus</i>	10	Gills
<i>Barbus grypus</i>	3	Gills
<i>Glyptothorax silviae</i>	1	Gills
Total	62	

Table 2. Age, sex, length and weight of studied fishes.

Season	Number of fish		Length (cm)		Weight (g)		Age	
	Male	Female	Range	Mean	Range	Mean	Range	Mean
Spring	12	31	19 - 43.5	30.7±5.41	102 - 446	271.6 ± 107.7	1 - 4	2.5 ± 0.978
Summer	22	35	17 - 45	31.2±4.32	75 - 512	250.4 ± 111.6	1 - 4	2.5 ± 0.932
Total	34	66	17 - 45	30.8±4.21	75 - 512	256.3 ± 119.01	1 - 4	2.5 ± 0.952

died fishes are shown in Table 2. According to the results 62 fishes were infected with ectoparasite *I. multifiliis*. The highest prevalence rate was observed in *C. damascina* (33%) and the lowest was in *G. silviae* (1%).

DISCUSSION

I. multifiliis is a ciliated protozoan which causes ich or white spot disease which is a major problem worldwide. The disease is highly contagious and spreads rapidly from one fish to another particularly when fish are crowded. It is capable of causing massive mortality within a short time. An outbreak of "Ich" is an emergency situation which requires immediate treatment, if left untreated; this disease may result in 100% mortality.

Epizootic infections have been reported in cold water salmonid farms and warm water farmed carp, eels and channel catfish (Hine, 1975; Jackson, 1978; Khalifa et al., 1983). Fish may maintain low, subclinical infection, while encysted tomites may persist in water. Enzoitic infections in native fish in natural habitats have been found in *Lebistes reticulatus* in Uganda (Paperna, 1972), in glass eels, cyprinids and cichlids in native habitats of South Africa (Jackson, 1978) and in a variety of native fish in the Southern United States. Transition from non-clinical enzootic to epizootic clinical infection is usually stress-mediated, prompted by adverse growth conditions such as overcrowding, poor feeding and presence of other diseases. Epizootic infection occurs with the warming of the water in early spring when fish are still kept in overcrowded conditions after winter storage. Spontaneous recovery has been observed in both natural infections in natural habitats and in holding facilities and even in experimental infections in aquaria (Paperna,

1972). The potential for spontaneous recovery varied with fish species. After recovery, fish were refractory to reinfection or retained a merely subclinical chronic infection. The observed interspecific variation in susceptibility to infection could, however, also result from differential compatibility of various fish species to man-made habitats and variable vulnerability to stress. Spontaneous recovery from infection and resistance to reinfection of recovered fish indicates that fish are capable of developing defense mechanisms against *I. multifiliis*. Spontaneous recovery observed in carp at temperatures as low as 10°C implies some protective responses other than via humoral antibody production, which becomes suppressed in carp below 12°C (Tumbol et al., 2001). In summary, an epizootic *Ichthyophthiriasis* in fishes in Armand River is reported and native fish species are in real peril asking for high degree of consideration to be preserved otherwise the disease will lead in a mass mortality in fish hosts.

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