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PARAMPHISTOMUM CERVI INFECTION IN THE LIVER OF BUFFALOES IN KARACHI, PAKISATN

Samreen Mirza[1], Nasira Khatoon[1] and F.M. Bilqees[2]

[1]*Department of Zoology, University of Karachi, Karachi-75270, Pakistan*
[2]*Jinnah University for Women, Karachi, Pakistan.*

ABSTRACT

Paramphistomum cervi is one of the most common trematode infection in bovines specially in buffaloes. The present studies have confirmed that a least 50-70% buffaloes slaughtered in slaughter houses are infected with this trematode. During the present survey 130 out of 150 buffaloes were found infected with this parasite, the commonly infected organ was found to be the liver. Hundreds of trematodes were found attached to liver and sometimes hardly any liver tissue was obvious appearing as a mass of beads. This infection has an adverse effect on the health of animals and their byproducts.

Key-words: Trematode, *Paramphistomum cervi*, buffaloes, liver infection, histopathology, Karachi, Pakistan.

INTRODUCTION

Pakistan is a developing country and a large population is engaged with agriculture. They cultivate the crops and domesticate livestock for the national needs. Pakistan is deficient in the production of animal food to feed its increasing human population, which was previously estimated as 148.72 million (Economic Survey of Pakistan, 2005).

Importance of livestock in our socio-economic life is obvious. On the pure economic side, it is one of the major sub-sectors of our economy with its share to Gross National Production (GNP). It is responsible for roughly one third (⅓) of total share of agriculture to the GNP. Livestock accounts for 30% of the Agricultural Gross Domestic Production (GDP) and about 10.6% of total GDP (Economic Survey of Pakistan, 2005). Livestock is not only a great source of protein, for the maintenance of national health, but also provides milk, meat, hides and their byproducts.

Amongst livestock, cattle and buffaloes have a great importance in our social and economical life and are considered as the largest source of milk and meat. In Pakistan mostly people like milk, especially the buffalo milk and their byproducts. In addition hides and skins have great export potential. Besides a sign of prestige in some parts of the country, it is still the chief form of draught power in rural areas particularly for farming operations.

Parasitic diseases are a global problem and considered as a major obstacle in the health and products performance of Livestock. Loss of millions of rupees as retarded growth, poor production of milk, meat, wool and low quality of skin and hides have been reported.

Parasitic diseases may be due to endo-parasites that live inside the body of the host, in blood, tissues, body cavity, digestive tract and other organs which cause infection or due to ecto-parasites.

In Pakistan where hygienic standards are rather low, helminthiasis is a real problem, to the health of man and livestock. Losses caused by helminthes are greater than is generally realized. Losses in form of death, decrease in milk production, poor quality of meat and decreased fertility are worth mentioning. Fascioliasis and paramphistomiasis are threat to the health of cattle all over the world. Fascioliasis is the major factor limiting livestock development in Pakistan and same may be true for Paramphistomiasis.

MATERIALS AND METHODS

About 150 livers of *Bubalus bubalis* were brought from slaughter house of Landhi during June to November, 2007. They were brought to Parasitology Lab., and examined for helminth parasite infection. The livers were cut down in small pieces, bile ducts and biliary passages were cut open and liver tissues were teased with a pair of needle. Numerous trematodes were found attached on the liver and associated organs. Out of 150 livers 120 found to be infected (Figs. 1-4).

OBSERVATION

Enormous number of trematodes were found attached on the liver tissues and among the biliary passages. The were identified as *Paramphistomum cervi* having a thick, flashy, conical body and powerful posterior sucker. In

some forms there is a conspicuous ventral pouch and in others the oral sucker is provided with posterior-dorsal out growths or pockets. Cuticle is non-spinous, pharynx is absent. Intestinal caeca simple and long or only of medium length. Cirrus pouch present or absent. Testes rounded and diagonally arranged instead of regularly one behind the other. Ovary rounded or slightly lobed, situated behind the testes. Uterus long, but mainly an ascending limb, with folds which occupy the dorso-lateral regions. Vitellaria follicular, lateral, well developed, generally extending along the entire lateral regions. Egg not very numerous, generally large and sculptured (Fig. 5).

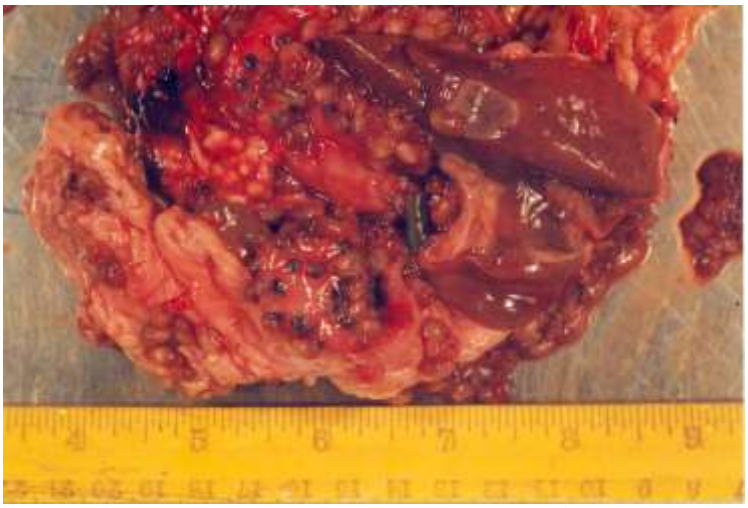
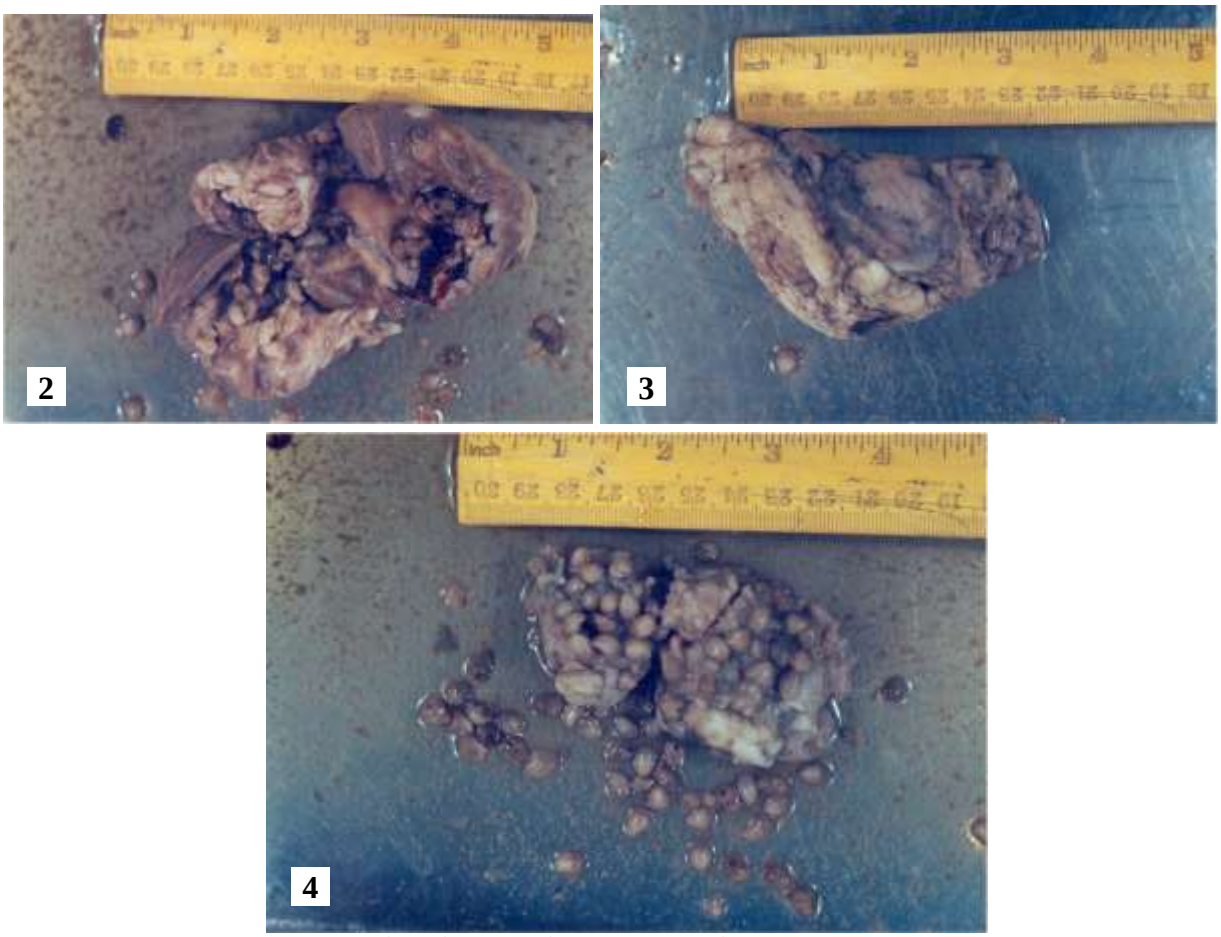


Fig. 1. Portion of liver and associated structures showing trematode infestation (fresh specimen).



Figs. 2, 3, 4. Portions of liver fixed in 5% formalin showing infested *Paramphistomum cervi* trematode.

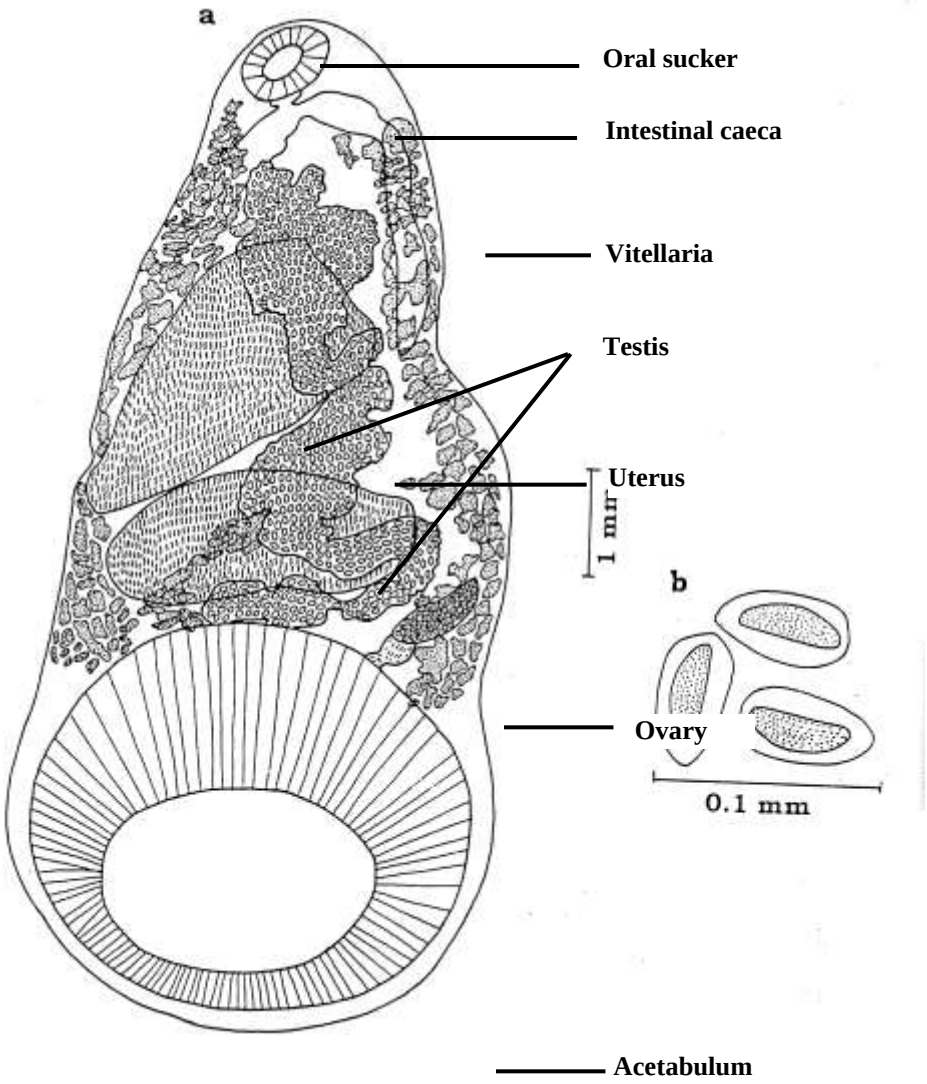


Fig. 5. a. *Paramphistomum cervi* entire specimen, b. Eggs.

During the present study it is observed that the animals with severe infection of *Paramphistomum cervi* appear sick, lazy, weak with dirty fur and partly closed eyes. When these animals are sacrificed sometime only amphistomiasis is observed. But sometimes along with this infection other helminthic infections were also observed e.g., hydatidiosis, fascioliasis and cestodiasis. It was noticed that sick animals are also usually sacrificed at the slaughter houses.

DISCUSSION

Pakistan is basically an agricultural country and present 70% of population are dependent on agriculture. 30% of the total land holdings are held by 80% of total livestock in country. Crop agriculture in Pakistan depends mainly on bullocks. Inspite of this the country has been unable to assure the needed supplies of food grains and animal products including milk. The production and use of animal products in the human diet is receiving tremandous attention and need for developing animal husbandry is recognized very well.

In Pakistan information about the disease, intensity of infection, pathology and histopathology of this fluke is insufficient. Relatively little attention has been paid on the study of this problem.

Paramphistomiasis is characterized by sporadic epizootic of acute parasitic gastro-enteritis with high morbidity and mortality rates, particularly in young animals (Horak, 1971). But hepatic paramphistomiasis caused by *P. cervi*

has not been studied extensively and the role they play in the aetiology of the disease has not been described. It has been reported that deaths in cattle result due to Paramphistome infection (Buttler and Yeoman, 1962; Horak, 1967).

In Asia infection has been recorded in buffaloes and *Paramphistomum explanatum* was recovered by Patnaik (1964) in infected buffaloes. Lee (1967) recorded a high incidence of infection with several species of adult *Paramphistomes* in cattle and buffaloes in West Malaysia. Cattle paramphistomiasis is found in Australia (Boray, 1959). In New Zealand disease has been described causing death due to infection.

In India several outbreaks have occurred due to *P. microbothrium, P. cervi* and *Cotylophoron* spp. (Horak, 1971). There are several species of *Paramphistomum* including *P. microbothrium, P. ichikawai, P. microbothriodes, P. explanatum, P. leydeni, P. scotiac* and *P. hiderniae* which are the synonyms of *P. cervi* (Odening, 1983). According to Motrla and Kotrly (1982) three species of *Paramphistomum* are found in CSSR namely *P. cervi, P. ichikawai* and *P. daubneyi*. But Odening (1983) considered the later two species as synonym of *P. cervi*.

In Iraq *P. cervi* is also common and the snail *Bulinus truncata* can act as the intermediate host (Altaif *et al*., 1978). Albaret *et al*., (1987) have also mentioned the presence of *P. leydeni* and *P. daubneyi* in Vendae, Paris. Species similar to *P. ichikawai* also found in this locality. But they considered this synonymous to *P. cervi* or a new species. *P. cervi* has been reported in Mexico (Castro-Trejo *et al*., 1990). Three snail species of the genus *Lymnaea* including *L. palustris, L. cubensis* and *L. humilis* were infected with *P. cervi*. It was suggested that *L. palustrismay* act as an important vector of *P. cervi* is Mexico.

Paramphistomum has been reported from Malaya (Dawes, 1936). Paramphitomiasis has been recorded from domestic ruminants in India (Dutt, 1980). Two species *P. cervi* and *P. liorchis* have been described from cattle from Ontario, Canada. One specie *P. epictitum* has been reported in farm cattle from Punjab (Gupta, 1963), *P. daubneyi* has been recovered from cattle in Kenya Highland (Dinnik, 1962) and prevalence of *P. daubneyi* infection has been described in cattle in Central France (Szmidt-Adjide *et al*., 2000). Economic losses due to cattle paramphistomiasis from Cuba has been reported (Brito & Breza, 1976).

Paramphistomiasis has been reported in cattle from Brazil (Amato *et al*., 1982). Massive infections of *P. cervi* has been reported in cattle herds in Northern Nigeria (Bogatko, 1975). First time *P. daubneyi* reported from cattle in Algeria (Paenovsky *et al*., 1987). Incidence of bovine paramphistomiasis has been reported from Kenya (Cheruiyot & Wamae, 1988). One specie *P. leydeni* has been reported from France (Graber *et al*., 1980). Paramphistomiasis is water buffaloes has been reported from Nepal (Singh *et al*., 1974).

Paramphiastomiasis is a common infection in cattle specially in buffaloes which are severely affected and create poor health conditions. As a result of this milk production is decreased, quality of meat becomes poor, other byproducts such as hides and wool production is badly affected, becomes poor in quality. This in turn causes economic losses and affects the GNP of the country. Liver of buffaloes is also used in diet but the heavy *paramphistome* infection makes it unusable. There is a great need to adopt serious preventive measures for this infection to avoid economic losses.

Parasites of sheep, goat and cattle have been described previously from other parts of Pakistan including paramphitomes (Bawa, 1939; Gupta, 1943; Bhutta, 1971). But liver infection by *P. cervi* has not been reported previously. Probably this is the secondary site of infection due to severe intestinal involvement. This is the first report of *P. cervi* from the liver of buffaloes in Karachi, Pakistan.

Unfortunately in Pakistan the intermediate snail host have not been identified. Although it is a common parasite of sheep, goat, buffaloes and other ruminants. Paramphistomiasis caused by *P. cervi* in these animals is of great economic importance and its life cycle should be determined identifying the susceptible snail hosts.

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