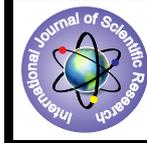


## Incidence of Pathogenic Amphistomes Orthocoelium Scolioceelium (Trematoda: Digenea) in Udaipur (Rajasthan)



### Zoology

**KEYWORDS:** Amphistome,  
Orthocoelium scolioceelium, parasite  
and Bubals bubalis

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### ABSTRACT

The survey of different species of pathogenic amphistome parasites were observed in buffaloes (*Bubals bubalis*) is not uniform. The occurrence of infection of pathogenic amphistomes also fluctuate season wise. It is significant to note that the infection in buffaloes with *Orthocoelium scolioceelium* was more prevalent compared to the rest of the amphistome species in rumen of buffaloes of Udaipur region. High incidence of infection with *Orthocoelium scolioceelium* in buffaloes consistently for two years can be attributed to the presence of infected intermediated host, *Indoplanorbis exustus* round the year. The present study concluded that buffaloes are more susceptible to amphistomes infection irrespective of age, sex and season of the year. So, control of these parasites is essential and the further investigation is need, focusing on control procedures of amphistomes infection in buffaloes.

### Introduction

Paramphistomiasis of livestock is now regarded as a disease of great economic importance. This disease is widely prevalent in domestic ruminants in India, due to presence of amphistomes in the rumen of the ruminants. First of all the incidence of amphistome was reported in Punjab (Baldrey, 1906). Thereafter, in Asam (Pande, 1935), Madras (Varma, 1957), Punjab (Dutt, 1980), Bihar (Sahay et al., 1989), Tirupati (Hafeez and Rao, 1987), Utter Pradesh (Varma et al., 1989), Haryana (Gupta et al., 1987), Tamilnadu (Sanyal, 1991), Madhya Pradesh (Banerjee et al., 1992) and in Rajasthan (Swarnakar, 2007) Some species of amphistome were also identified in other countries such as in Germany (Benesch, 1993), Iran (Mazahery et al., 1994), South Africa (Vatta and Krecek, 2002), in Bangladesh (Tendon et al., 2005 & Uddin et al., 2006) and in Pakistan (Kakar et al., 2008).

However, no research has been carried out so far on the identification of species of amphistome in Udaipur (Rajasthan). It was therefore, decided to identify different species of an amphistome of various season by light microscope.

### MATERIALS AND METHODS

The amphistomes *Orthocoelium scolioceelium* were collected from rumen of the freshly slaughtered buffalo (*Bubalus bubalis*) at local zoo abattoir in Udaipur from January, 2009 to December, 2010. The infected part of rumen from time to time was brought to the laboratory and washed several times in the tap water and then it was transferred into 0.9% physiological saline, fixed in hot AFA (Alcohol 85 ml, formalin 10 ml and acetic acid 5ml.) at 80 to 85° C for few second then pressed between two slides (to make them flat) left in cold AFA, bleached in chlorinated alcohol for twelve hours. Bleached amphistomes were washed in 70% alcohol, stained with alcoholic borex carmine for 5 min, dehydrated in alcoholic series and cleared in clove oil for twelve hours. Cleared amphistomes were mounted in DPX on glass slides and examined under light microscope to finally identify the species. The whole mounts of parasites were used for identification of the worms, on the basis of their morphological character as detailed by Dutt (1980).

### Results

The amphistomes were collected from rumen (Fig. 1 and 2) of the freshly slaughtered buffalo (*Bubals bubalis*) at local zoo abattoir in Udaipur, from May, 2009 to October, 2010. The whole mounts of parasites were used for identification of the worms, on the basis of their morphological character as detailed by Dutt (1980).

The buffaloes were found to be infected throughout the year with various trematode parasites of live amphistome such as *Orthocoelium scolioceelium*. It was found that these species have their own distinct features like shape, size, topography of various organs and other structures distinction.

During the collection of amphistome and identification of spe-

cies, it was found that maximum mature amphistomes species *O. scolioceelium* occurred in July to September. Immature amphistomes species *O. scolioceelium* occurred in ruminant in November to March and *O. scolioceelium* were not observed in April to June.

Moderate infections of mature amphistomes *O. scolioceelium* were observed in August and September) and immature amphistomes species *O. scolioceelium* were present in December and January. No ruminant was found to be infected during April to June.

Light microscopic histology (Haemotoxylen and eosin stained section) of immature and mature amphistomes *Orthocoelium scolioceelium* contains different organs in different shape, size and positions like acetabulum, pharynx, oesophagus, intestinal caeca, excretory system, male reproductive system with testes, seminal vesicle, prostate gland pars musculosa & pars prostatica, female reproductive system with ovary, oviduct, ootype, Mehlsh gland & uterus and genital bulb

### DISCUSSION

From the observations it be discerned that occurrence of infection of amphistomes in buffaloes (*Bubals bubalis*) is not uniform throughout the year (From Jan. 2009 to Dec. 2010). The incidence of infection also fluctuate season wise. It is significant to note that the infection in buffaloes with *O. scolioceelium* was more prevalent compared to the rest of the amphistome species in rumen of buffaloes of Udaipur region. High incidence of infection with *O. scolioceelium* in buffaloes consistently for two years can be attributed to the presence of infected intermediated host, *Indoplanorbis exustus* round the year.

In the summer season (April-June), the water evaporates from the lakes and other water bodies which results in decrease in water surface area. Consequent to this, the density of snails becomes high in each reservoir. Moreover, due to excessive and fast evaporation of water the green vegetation is restricted to the banks of each water body. Due to free grazing in these areas, buffaloes get heavily infected with amphistomes by ingesting encysted amphistome metacercariae.

At the onset of rainy season the contaminated dung of buffaloes gets dissolved in water. This help in spreading the eggs in larger area of the water reservoir. Snails reproduce and their population also increases simultaneously. Eggs hatch releasing miracidium in large number. Miracidia infect the snail population. After a couple of week the cercariae emerge and encysted on the vegetation near water; thus contaminating it completely. When the ruminants graze on such vegetation, they acquire infection. Following rainy season at time in the mid of July to September of each year therefore, density of infection may be observed at the peak.

The buffaloes were found to be infected throughout the year

with *O. scoliocoelium*. Infection was more prevalent in July to September. However in subsequent months October to June the irrigation and water supply to the town from lakes causes water level to recede. Thus lakes become smaller and smaller restricting green vegetation to smaller area. By grazing upon the grass, they ingest many metacercariae in a short period of time. Thus the outbreaks appear in the months that follow the heavier rains (July to September).

The moderate incidence of infection with *P. cervi*, *G. crumenifer*, and *O. scoliocoelium* is seen in August and September each year. It falls down in February which continues up to June. The intensity of the pathogenesis depends upon the magnitude of the fluke burden.

In Survey of Paramphistomes infection in bovines of Bihar state

(Sahay et. al., 1989) seasonal and regional variations were observed. The present study supports the findings of Bihar state in relation to identification of different species of an amphistome.

In Madhya Pradesh, Bangladesh, Rajasthan and Pakistan seasonal variation of the occurrence of Paramphistomiasis was observed in ruminants and it was reported that acute Paramphistomiasis take place soon after first heavy monsoon showers (Varma, 1957, Swarnakar, 2007 and Kakar et al., 2008)

Varma, et al. (1989) surveyed the ruminant of Bareilly (Utter Pradesh) for prevalence of Paramphistomiasis. The present investigation on the identification of different species of amphistome by light microscope in buffaloes of Udaipur, are in agreement with views of Varma, et al., (1989) who have found the rising trend of infection in rainy season.

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