

ON THE HELMINTH PARASITES OF BUFFALO-CALVES
WITH SPECIAL REFERENCE TO TOXOCARA VITULORUM

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The economic losses caused by several species of ascarids constitute a problem of great importance. LURHS (1935) estimated the annual losses among German pigs caused by *Ascaris* summ to be about 58 Million D.M. In Egypt, AMR and BASSIONI (1957) mentioned that the annual losses due to *Ascaridia galli* had exceeded a Million Egyptian pound among chicken. Since a long time, it has been noticed that Buffalo-calves suffer much from *Toxocara vitulorum* infection. Therefore, biological studies are necessary to estimate the incidence of infection and its course.

Examination of 1005 buffaloes at varying ages revealed that 74.4% of 40-days old buffalo-calves were infected with *Toxocara vitulorum*. However, the incidence of infection had decreased significantly with the increase of age. Buffaloes at the age of 1-2 years, 2-4, 4-6 and 6-10 years showed an incidence of 3.4, 12.5, 14.8, 0.0% respectively. Animals over 10 years showed 1.1% incidence of *T.vitulorum*.

The number of worms collected from 40-days old buffalo-calves slaughtered at Cairo abattoir ranged between 70 and more than 500 with a mean of 219 worms per animal. Eventually, the intestine of few calves were found to be packed with the worms. Most of the *T.vitulorum* worms were concentrated in the first six meters of the small intestine, with their maximum in the 2nd, 3rd and 4th meters. Rarely could be noticed elsewhere.

Ascaris free calves were noticed to suffer from diarrhoea. Probably, such diarrhoea had helped in the expulsion of the present worms.

Buffalo-calves, 1-2 years old showing 3.4% infection rate were mostly males. They were usually kept under good nutritive condition and were usually kept for meat production. The number of worms collected from such infected animals was rather low, ranging between 10-25 with a mean of 18 / animal.

Both buffalo-groups of 2-4 and 4-6 years old showed slightly higher rates of infection with *T.vitulorum*, being 12.5 and 14.8% respectively. Probably they had captured infection at later ages where the worms had reached maturity. The success of such infection may be due to lowered resistance during pregnancy or lactation. Or, they have retained few ascarids after the process of self-curing.

Examination of the faeces of another group, constituted of 4329 buffaloes of different ages and from different localities revealed a rate of infection with *T.vitulorum* of 36.36%. Of such animals, 70.99, 12.73, 3.21, 6.52, 11.27 and 0.05% which ages were up to 2 months, 2-12 months, 1-2 years, 2-4, 4-6 and over 6 years were found infected with *T.vitulorum* respectively. Similar results were also noticed by GADZHEIV (1951&1953) and LEVI and VANPOTIC (1967). However, VAIDYANATHAN, (1949) mentioned that the rate of infection with *T.vitulorum* was considered negligible among calves over 3 months.

The high incidence of infection with *T.vitulorum* was previously related to prenatal infection by DAVTYAN(1935), HERLICH and PORTER (1954) and SRIVASTAVE and MEHRA (1955). However, such conclusions were not proved in the present study. Examination of the foetal membranes, uteri and foetal internal organs (liver, lungs, hearts, intestine) did not show the presence of the larval stages of *T.vitulorum*, the techniques adopted for such investigations were the acid pepsin digestion technique and Baermann-Watzel technique. The age of the foeti had ranged between 4-8 months old.

Experimental infection of buffaloes with *T.vitulorum* was carried out.

1- Two buffalo-cows were kept just after parturition in a hygienic stable which floor was of concrete and allowed dried balanced ration during the whole period of experimentation. Each was given three doses of 100.00 embryonated *T.vitulorum* eggs after 1,2, and 3 months of service. The borned calves were of different sexes. The male calf showed eggs on the 17th day of age with a patent period of 75 days-; while the female one showed eggs in its faeces on the 28th day after birth and the patent period extended for 88 days. The egg counts reached their maximum on the 50 and 58th day of the patent periods in male and female calves respectively. Both animals showed unthriftiness, rough coat, stunted growth and constipation alternating with diarrhoea.

11-29 buffaloes whose age was ranging between 6-54 months were experimentally infected each with 500,000 embryonated *T.vitulorum* eggs. The results did not reveal the establishment of infection in any of them as shown from the daily examination of their faeces for 2 months. The infective eggs were proved to be infective by their inoculation into mice and detection of larvae in the livers six and half hours post infection. Also, examination of the faeces of infected buffaloes did not show any eggs for 6 days post-infection. However, fragments of egg shells were detected in few animals eventually.

Experimental infection of mice with oral administration of embryonated eggs of *T.vitulorum* showed that hatching of the eggs took place at the posterior end of the ileum and larvae were detected mostly in the caecum, after 2½ Hours post-infection. Some of the larvae were also detected in the

faeces of infected mice 3 hours post-infection, where also moulting to the third infective stage larva had occurred. Shortly afterwards, i.e., 3½ h.p.i., few larvae began to migrate through the mesenteric vessels to the liver where they were noticed inside the veins and to the mesenteric lymph nodes. In the latter organs, congestion was demonstrated. However, most of the larvae had migrated to the peritoneal cavity towards the liver where they became attached to the liver capsule and its penetration took place. Then, the larvae were seen between the liver cells wandering about to reach a blood vessel, mainly veins to be carried out by the hepatic vein to the posterior vena cava to appear in the lungs. The interesting point was that of the migration to the liver and the larvae reached the liver through penetration of the liver capsule, a finding which was for the first time to be noticed in the present study.

The larvae were carried out to other organs and noticed in the kidneys, spleen, brain and genital organs. Such larvae were considered as visceral larva migrans adding to the zoonotic importance of T.vitulorum where infection to human beings is suspected.

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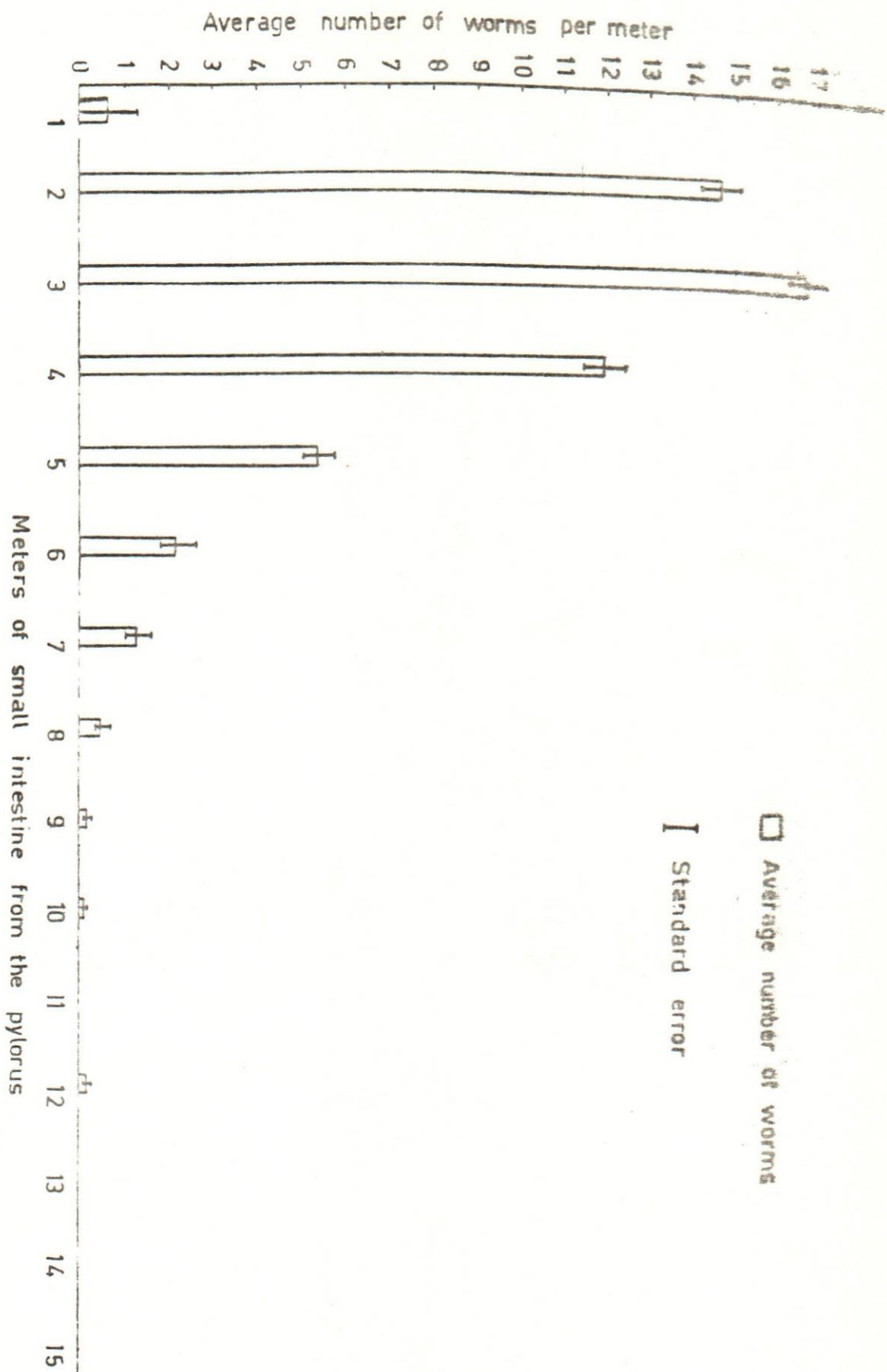


Fig. 1 Frequency distribution of *N. vitulorum* in small intestine of naturally infected buffalo calves