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Epidemiological investigation of hydatidosis in ruminants in different slaughterhouses of Dhaka

S.A. Sarder¹, M.A. Ehsan², A.K.M.M. Anower³, and M.M. Rahman⁴

¹Central Veterinary Hospital, Dhaka, ²Department of Medicine, Bangladesh Agricultural University, Mymensingh, ³Livestock Research Institute, Dhaka and ⁴District Veterinary Hospital, Gazipur

Abstract

A cross-sectional epidemiological investigation was conducted in slaughtered cattle (n=2102), buffaloes (n=827) and goats (n=897) of Dhaka during January to December, 2003 to study the overall frequency and distribution of hydatidosis. The hydatid cysts were diagnosed on the basis of parasitological findings. Of the 2102 cattle, 361 (17.17%), 347 (41.95%) of the 827 buffaloes and 139 (15.49%) of 897 goats were affected with hydatidosis. The present study noted that lungs were more common organ in case of cattle 43.77 %, buffaloes 30.84 % and goat 46.76 % and found higher infection in female than male animals.

Keywords: Hydatidosis, Ruminants, Slaughter houses, Dhaka

Introduction

Hydatidosis or Echinococcosis is a zoonotic disease, mainly endemic in the third world countries like Bangladesh. Due to hydatidosis a significant financial losses incur from condemnation of edible offal, milk, skin and energy in draught power. The havoc of hydatid disease is due to the fact that hygienic disposal of dead animals is generally not practical in Bangladesh, perhaps facilitating the spread of the disease.

Supervision of the slaughterhouses and organization of hygienic precautions concerning food of animal origin are unsatisfactory in Bangladesh. Many slaughterhouses and village markets, where animal slaughtered, have no veterinary supervision and become the places where dogs congregate. Often waste products are thrown in the drain near slaughterhouses and kept in the waste heaps. Frequently farmers leave the hydatid infected offal in the immediate environment of the killing areas. Such offal's are readily accessible to dogs, which in turn transmits the infection to animals and man.

Hydatid disease today is a medical and to a lesser extent, an economic problem in all of the inhabited continents. The prevalence is such that the disease poses important health problems and imposes severe restrictions on the growth of agricultural economic.

In Bangladesh despite the high incidence revealed during the routine examination, little planned work had been done on hydatidosis in domestic animals, dogs and man. Islam *et al.* (1980) investigated human hydatid disease. They reported (1985) hydatid cysts in animals of Dhaka slaughterhouses. They further correlated (1992) the relationship of prevalence to sex and age of the host in hilly area of Bangladesh only. It does not cover the overall distribution of hydatid disease in Bangladesh. For this reason present study were done in different slaughterhouses in Dhaka where the animals bring from different areas of Bangladesh.

Materials and Methods

For the present investigation slaughterhouses in Dhaka were visited randomly for the occurrence of hydatidosis in all slaughtered cattle, goat and buffaloes one or two days in a week during the period January to December, 2003. The viscera including lungs, liver, spleen, heart and kidney of cattle, goat and buffaloes of different age and sex groups were collected from various slaughterhouses. All of samples were brought to the Central Disease Investigation Laboratory, Dhaka in preserve condition to determine the incidence of hydatid disease. The localization, size, type and state of the cysts were also determined and recorded. Ages of the animals were determined and sex and age were recorded.

The diagnosis of the hydatid cyst was based on the size number of the hooks of the protoscolices. The contents of the cysts were examined for the presence of scolices, brood capsules and daughter cysts. The scolices were processed and stained with Semicon's carmine and the fertility of each cyst was assessed by the technique of Echeguia (1971).

Results and Discussion

Slaughterhouse surveys were an economical way of gathering information on livestock diseases, partially subclinical conditions (Leech and Sellers, 1979). Slaughterhouse survey was chosen for this study for three reasons. First no satisfactory test exists for diagnosis hydatidosis in living ruminants (Williams, 1982). Second, Hydatidosis is usually subclinical and unlikely to affect the sample. Third, lesions of hydatidosis usually remain for the life of there animal (Pullar and Marshall, 1958).

Hydatid cysts were found in 361 (17.17 %) of 2102 cattle, 347 (41.95 %) of 827 buffaloes and 139 (15.49 %) of 897 goats (Table 1). Martinez *et al.* (1980) found hydatid cysts in 10.52 % cattle and 7 % of goats. Khan and Haseeb (1984) recorded infection rate 12.3 % for buffaloes, 9.6 % for cattle and 7.5 % for goats. Gita Biswas *et al* (1989) found the infection rate 31.9 % in cattle, 42.25 % in buffaloes and 3.9 % in goats.

In this study incidence increased linearly with age (Table 1). Pullar and Marshall (1958) concluded that variation in age-specific prevalence was related to opportunity for infection rather than increased susceptibility with age. Gemmell (1961) found a significant increase in prevalence of hydatidosis with age of beef and dairy cattle. The linear increase in prevalence with age suggested that no innate age immunity to hydatidosis exists in animals. The higher infection in older animals is probably associated with their age and consequently larger exposure time.

The present observation noted that lungs were more common organ in case of cattle 43.77 %, buffaloes 30.84 % and goat 46.76 % (Table 2). A few earlier workers also observed more cysts in liver and lungs (Gemmell, 1961; Hegde *et al.* 1974). Thompson (1977) in Great Britain found liver lesions more common than lungs. Gita Biswas *et al.* (1989) in India found liver was more common in sheep and goat but lungs were more common in cattle and buffaloes.

Table 1. Age specific incidence of Hydatidosis in animals at slaughterhouses

Species of Animals	No. of animals examined	No. of animals infected	Rate of infection (%)	Incidence of infection in different ages(years) No. of animal (%)				
				1-3	3-5	5-7	7-9	9-Above
Cattle	2102	361	17.17	7(1.94)	28(7.76)	71(19.67)	102(28.25)	153(42.38)
Buffaloes	827	347	41.95	8(2.31)	20(5.76)	62(17.87)	108(31.12)	149(42.94)
Goat	897	139	15.49	17(12.23)	43(30.94)	79(56.83)	-	-

Table 2. Organ specific incidence of Hydatidosis in animals at slaughterhouses

Species of Animals	No. of animals examined	No. of animals infected	Lungs	Liver	Spleen	Heart	Kidney
			No. of animals (%)				
Cattle	2102	361	158(43.77)	132(36.57)	56(15.51)	12(3.32)	3(0.83)
Buffaloes	827	347	107(30.84)	98(28.24)	65(18.73)	74(21.33)	3(0.86)
Goat	897	139	65(46.76)	47(33.81)	13(9.35)	11(7.91)	3(2.16)

In this study higher infection was found in female than male animals (Table 3). Pullar and Marshall (1958) reported a high prevalence of hydatidosis in females than steers. Gemmell (1961) found no variations with sex. Khan and Haseeb (1984) found higher infection in female than in male animals, for sheep and cattle.

In this study different types of cysts were found. Cysts in cattle, buffaloes and goats were mostly sterile 75.60%, 64.40% and 73.02% respectively (Table 4). Al-Abbassy *et al.* (1980) found fertile cysts in 69% cattle, 70% buffaloes and 73% goat. Dada (1980) reported 7.4% and 81.3% fertile cysts cattle and goat respectively.

Table 3. Sex specific incidence of Hydatidosis in animals at slaughterhouses

Species of Animals	Sex	No. of Samples examined	No. of Infected	Percentage of Infected
Cattle	Male	1162	199	17.12
	Female	940	162	17.23
Buffaloes	Male	491	198	40.32
	Female	336	149	44.34
Goat	Male	478	73	15.27
	Female	419	66	15.75

Table 4. Distribution of different types of Hydatid cysts in animals

Species of Animals	No. of Samples examined	Fertile	Sterile	Calcified	Suppurative	Undeveloped
		No. of samples (%)				
Cattle	455	15(3.30)	344(75.60)	44(9.67)	37(8.13)	15(3.30)
Buffaloes	264	39(14.72)	170(64.40)	27(10.22)	21(7.96)	7(2.65)
Goat	304	31(10.20)	222(73.02)	33(10.86)	12(3.95)	6(1.97)

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