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# The Prevalence of Hydatidosis in Sheep and Buffaloes at Multan, Punjab, Pakistan

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**Abstract:** Hydatidosis is an economically important disease of farm animals. The present study was carried out to investigate the *Echinococcus granulosis* in sheep and buffaloes from January to December 2004 at Army abattoir, Vehari Road, Multan. A total of 2170 animals comprising 1908 sheep and 262 buffaloes were examined. The overall prevalence of hydatid cyst of *E. granulosus* during the study was 7% for sheep and 10% for buffaloes were recorded. It indicates that sheep and buffaloes serve as an important intermediate host in this region and help in maintaining its cycle as the people in Pakistan have high dependency on sheep and buffalo meat.

**Key words:** Hydatid cysts · Prevalence · *Echinococcus granulosus* · Sheep · Buffaloes

## INTRODUCTION

Hydatid disease, also known as echinococcosis or hydatidosis, is caused by infection with larva (metacestode) of the tapeworms of the genus *Echinococcus*. *E. granulosus* is a cosmopolitan parasite and has at least six genetically distinct strains [1]. Morphological studies on larvae and adults of different strains of *E. granulosus* of buffalo, cattle, sheep, goats and camels origin reveal no significant difference as regards the total number, shape, arrangement and mean total length of large and small hooks in protoscoleces. However, mean total length of large and small hooks of adult worm differ significantly. In adult worms, there are no significant differences in segmentation, number and distribution of testes, shape of cirrus sac, position of genital pore [2]. Hydatid disease or echinococcosis is an endemic disease in cattle grazing and developing areas, particularly Australia, New-Zealand, Middle East, India, Africa, South America and Turkey [3]. It has a life cycles involving a carnivorous definitive host (usually dog or fox) and an intermediate host like humans, ungulates, or rodents [4]. In the definitive hosts, adult worms are found in their small intestine [3]. The eggs of *E. granulosus* released by the dogs contaminate the environment thus spreading out the disease among the herbivores [5]. It is not pathogenic in the final carnivorous host [6]. In livestock it causes economic losses to veterinary industries due to organ condemnation in most abattoirs [7], increased mortality rates and also weight loss [8], decrease milk production, decrease hide value and low fecundity [9]. The symptoms of hydatid disease depend upon which organs are affected. The most commonly affected organ is the liver. The kidneys, brain and lungs are sometimes affected. In rare cases the hydatid cyst may form in the thyroid gland or heart or within bone [10]. It is considered to be a serious problem for public health as if it spreads to human, it becomes a substantial cause of morbidity and mortality in many parts of the world [11]. Parasite is adapted to a variety of host-assemblages linked by predator–prey relationships. Human populations that are particularly engaged in livestock rearing have the highest prevalence of the hydatidosis particularly if the domestic dogs have access to the viscera of the livestock [12]. National parks, reserves and conservation areas now also provide important tracts of preserved habitat for maintaining populations of wildlife that in turn are also important in the maintaining the transmission of E. granulosus to domestic animals and humans [13]. Despite these, the status of hydatidosis in livestock in Multan has not been studied so far. Therefore the present project was aimed to study the prevalence of hydatidosis in sheep and buffaloes.

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## MATERIALS AND METHODS

The present study was conducted to investigate the prevalence of hydatid cysts of *E. granulosus* from sheep and buffaloes. The study was started from January to December 2004 at army abattoir Vehari Road, Multan. A total of 2170 animals (1908 sheep and 262 buffaloes) were examined for the hydatid cysts. The visceral organs (liver and lungs) of slaughtered animals were dissected and examined for hydatid cysts.

## RESULTS AND DISCUSSION

During the present study, 2170 animals were examined for the prevalence of hydatidosis. From a total of 1908 sheep, 141(7.39%) and 262 buffalos, 28 (10.69%) were found infected and overall percentage of infection was recorded as 7.79%. with hydatidosis. Buffaloes showed significantly ($P<0.05$) higher prevalence than sheep (Table 1).

Table 1: The overall prevalence of *Echinococuss granulosis* in Multan

| Specie | Sheep | Buffaloes |
|---|---|---|
| No. of animals examined | 1908 | 262 |
| No. of animal infected | 141 | 28 |
| Prevalence (%) | 7.39 | 10.68 |

The current findings of hydatidosis in sheep are in agreement with the research of Cavagion *et al*. [14] who reported 7.09% prevalence of hydatidosis in sheep farms of the Patagonia, South of Argentina and to the findings of Rahimi *et al*. [15] who reported 7.3% prevalence in slaughterhouse of Mazandran province, Northern Iran. Moreover, a very high prevalence in sheep has also been reported from various region of the world, out of 771 regularly slaughtered Sardinian breed sheep, Italy, 580 (75%) were infected Scala *et al*. [16]. Paykari *et al*. [17] found that 32.4% of the serum samples from Center of Buffalo Sperm Preparation in Orumia, West Azarbayjan province, Iran, were positive for hydatidosis by using Enzyme Linked Immunosorbent Assay. A prevalence value of 19.1% is reported in an abbatoir based study in Sarab city, Northwest of Iran [10]. Ziaei *et al*. [18] reported that 65.2% of sheep out of 1,799 sheep slaughtered at Sari industrial slaughter house were infected with hydatid cyst infection in Mazandaran Province, Northern Iran There are findings that reveal the presence of very low prevalence. Arbabi and Hooshyar, [19] indicated the infection rate of 2.25% in 170510 slaughtered sheep in Kashan area, central Iran and Magaji *et al*. [20] determined 0.14% incidence of hydatid disease in an abattoir based study in Sokoto State, Nigeria.

In buffaloes, prevalence values similar to current finding have been reported from other regions of the world. Capuano *et al*. [21] reported 76 (10.5%) buffaloes infected with hydatidosis out of 722 examined during a survey of cystic echinococcosis in the water buffalo (*Bubalus bubalis*) in the Italian Mediterranean breed in Campania, a region of southern Italy. Kabir *et al*. [22] investigated 57(9.19%) hydatidosis in water buffalo in different abattoirs in various area of Bangladesh such as Comilla and Brahmon Baria districts.

Higher prevalence values in water buffalos have also been reported from certain regions of the world. Paykari *et al*. [17] indicated 32.4% of serum samples positive for hydatidosis out of 111 buffaloes sera examined by Enzyme Linked Immunosorbent Assay from Centre of Buffalo Sperm Preparation, Orumia (West Azarbayjan province, Iran). Dadkhah *et al*. [10] found the hydatidosis infection rate of 17.5% in an abattoir based study. Low prevalence value of hydatidosis has also been reported by various researchers. Cringoli *et al*. [23] found 43 (8.7%) cases of cystic echinococcosis out of a total of 494 water buffaloes at two slaughter houses located in the Caserta province (Campania region, southern Italy). Pednekar *et al*. [24] has reported the 3.81% prevalence in India.

High prevalence of hydatidosis in slaughtered animal in Pakistan may be due to the reason that the number of stray dogs is relatively high and there seems no legislative mechanism to control such dogs. These dogs, being homeless rely entirely on scavenging. Another grave factor contributing to high prevalence is the home slaughtering practices and the disposal of carcass material in streets and roads and stray dogs have access to and feed on discarded material which is not inspected for infection.

The different prevalence values from other geographical regions of the world may be attributed to various factors. In some parts, the distribution of the parasite is related to rainfall [13]. Behaviour of hunters also makes infection spread to herbivores as they hunt on wildlife which harbours a great biomass of *E. granulosus*. Some hunters and farmers feed hydatid infected offal to wild and domestic dogs. These *E. granulosus*-infected wild dogs defecate on pasture and transmit infection to livestock [25]. The number of owned dogs also poses an important risk factor associated with infection. If the number of owned dogs is high they may release large number of eggs per day in the region [26]. Reluctance by the dog owner to administer the numerous pills required at each deorming of dog is also important reason.

Similarly sheep farmers also resist for the same and do not acknowledge an echinococcosis problem in their flock and are not accustomed to vaccinating sheep [27]. In some parts, there is no adequate system of disposing off the carcasses of the animals which die in the field. For example, in mountainous regions, pasturage is the major agricultural activity and many grazing animals die due to harsh climate particularly at the end of the hard winter. Some parts of the carcass like skin and some meat are taken and rest of the animal is used by the scavenger birds and animals. Sometimes post slaughter viscera are not disposed off properly and lead to spread of parasite also [28]. It also depends on the presence of large numbers of nomadic or semi-nomadic sheep and goat flocks in the country and their close contact with the dogs [29]. Age of slaughtered animals is also important. Most of the times the animals used for slaughter are adults, which are culled mostly due to their inefficiency for draught purpose. Old animals are likely to have a higher possibility of acquiring infection due to their longer exposure to infection and to lower immunity to overcome most infection [30]. Moreover, it is such a complex pathogens that, despite being under constant barrage by the immune system, are able to modify antiparasite immune responses and persist and flourish in their mammalian hosts [4]. Sometimes animals are imported for slaughter from other parts of the world through border and villages and are not examined for health status by a veterinarian may have infection [22].

## CONCLUSION

There should be improved government legislation of abattoirs, feeding in pastures that do not have contact with dogs, limiting the transport of animals across borders, proper disposal of offal, termination of home slaughter and control of stray dogs, of farm dogs should be practiced.

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