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# Present Situation of *Hydatidosis* in Animals in the Middle East and Arabic North Africa: A Review

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**Abstract:** Hydatidosis is one of the parasitic diseases in different parts of the world such as middle-east. The most kinds of infected animals are sheep and camels at this region. Infection has geographical distribution in most of countries. So, in central parts, hydatidosis rate is less than frontier bands. Most of the cysts to be found in older animals that hadn't any immunity with age promotion than hydatid cyst. Cysts of the buffaloes and camels are often as fertile but other ones found in small ruminants were as infertile. Recently, statistics has been shown high level of infection in north of the Africa (as especially for the camels), central Asia and middle-east. Due to high rate of hydatidosis in eastern countries of the Europe, most of the geographical distribution of the cyst to be found well. Thus, controlling programs of hydatidosis must be done in care widely.

**Key words:** Hydatidosis, parasitic diseases, middle-east, hydatid cyst

## INTRODUCTION

In some of the developing countries, parasitic diseases are main problem for human healthy. Hydatidosis is one of them so that found in all around of the world such as middle-East. Main factor of hydatidosis is related to *Echinococcus granulosus* parasite in the region (As especially in common regions of animal husbandry) (Angulo and Escribano, 1998; Gıcık *et al*., 2004).

Larva stage of this parasite is in liver and lung of the cattle, sheep, goat, horse, camel, hog and other domestic animals and human (As intermediate host) and, average larva lives in small intestine of a dog and other carnivorous (Kaufmann, 2003). In animal husbandry systems, the base of the free grazing, uncorrected slaughter of animals, no attention to demolish of infectious carcass, many shepherd's dogs and their relation with animals in close are causative factors of hydatid cysts prevalence (Garippa *et al*., 2004).

Hydatidosis is harmful factor in animals' products economically. Studies shows *Echinococcus granulosus* infection in the sheep to be caused in 5% decreasing of the meat, 20 L annual milk and 5% of the wool (Coşkuner, 1971; Umur, 2003). High infection rate of the animals (mostly in sheep) with hydatid cyst to be caused in human's hydatidosis occurring in Middle East regions and Arabic countries of the north of Africa (Such as: Iran, Turkey, Iraq and Tunisia) (Sadjjadi, 2006). At this study, we are seeking to find hydatidosis rates of animals by new studies and infection reports among of them.

Table 1: Hydatidosis in Arabic countries of the north of the Africa (%)

| Country | Sheep | Goat | Cattle | Camel |
|---|---|---|---|---|
| Egypt (Rahman *et al*., 1992) | 1.33 | - | - | 31 |
| Sudan (Elmehdi *et al*., 2004) | 6.90 | - | 3 | 44.60 |
| Morocco (Azlaf and Dakkak, 2006) | 10.58 | 1.88 | 22.98 | 12.03 |
| Total | 6.27 | 1.88 | 12.95 | 29.12 |

Also, hygienic affairs have an importance role for the health and lastly we decided to study this disease in hand as it's a threat for humans healthy.

**Hydatidosis in arabic countries of the north of the Africa:** In north of the Africa, Camels are the most prevalence animals with hydatid cysts (Rahman *et al*., 1992; Ibrahem and Craig, 1998; Elmehdi *et al*., 2004; Azlaf and Dakkak, 2006) (Table 1). According to recent studies, it was known that *hydatid cysts* were often fertile in Camels (In their livers) (Rahman *et al*., 1992; Ibrahim and Craig, 1998; Elmehdi *et al*., 2004) founded cysts in the Sheep were almost infertile against of common type of the cyst in African's camels. As following of Azlaf and Dakkak (2006) study in morocco, it is seen that hydatid cyst in the liver is more than the lung for the cattle. Also, in Libya, the liver of the goats and sheep was infected organs (Ibrahem and Craig, 1998; Azlaf and Dakkak, 2006).

## HYDATIDOSIS IN IRAN'S ANIMALS

According to the studies, Iranian's sheep are also infected with hydatid cyst. So, it is main factor for

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Table 2: Animal hidatidosis in west and northwest of Iran (%) (2005-2007)

| Abattior | Sheep | Goat | Cattle |
|---|---|---|---|
| Ardabil (Daryani *et al*., 2006) | 74.4 | 20 | 38.30 |
| Sanandaj (Akhlagi *et al*., 2005) | 51.9 | - | 28.02 |

Table 3: Hydatidosis in Indian's animals (%)

| Reference and Year | Sheep | Cattle |
|---|---|---|
| Dhote *et al*., 1992 | - | 12.40 |
| Reddy *et al*., 1993 | 4.74 | 1.74 |
| Hafeez *et al*., 1994 | 6.37 | 7.05 |
| Total | 5.55 | 7.06 |

Table 4: Hydatidosis in Turkey's animals (%), (Değer, 2005; Ulutas Estatgil, 2007)

| Region | Sheep | Cattle |
|---|---|---|
| Thrace | 3.50 | 11.60 |
| kirikkale | - | 14.16 |
| Kars (Asian part of Turkey) | 63.85 | 31.25 |
| Van (Asian part of Turkey) | 77.30 | 38.63 |

transferring the infection into the human) Hosseini and Eslami, 1998; Sajjadi, 2006). Hydatid cyst prevalence is high in different regions of Iran so that infection reporting has a considerable difference together i.e., infections rate is low in central regions (Table 2) (Akhlagi *et al*., 2005; Lotfi *et al*., 2007).

For an example, hydatid cyst reported in 74.4 and 51.9% rates for Ardabil and Kordestan provinces, respectively whereas infection rate was 2.4% for kashan's sheep (central region of Iran) (Akhlagi *et al*., 2005; Daryani *et al*., 2006; Arbabi and Hooshyar, 2006).

Due to traditional rearing of sheep, number of dogs also be kept beside of the herd (Ansari and Lari, 2005; Lotfi *et al*., 2007). Thus, this is one of the causative factors in high hydatidosis rates. Most of the hydatid cysts are fertile in Iran (Hosseini and Eslami, 1998). Recently, it is shown high infection rates in the west and north-west of Iran (Akhlagi *et al*., 2005; Daryani *et al*., 2006; Lotfi *et al*., 2007) (Table 2).

## HYDATIDOSIS IN PAKISTAN'S ANIMALS

By Ahmed's study in 2006 A.D (Quetta region), *hydatidosis* of the sheep and goats was reported more than other regions such as Faisalabad (Ahmed *et al*., 2006). Results showed that hydatidosis is in high rates for Pakistan's animals, too (Khan *et al*., 1990; Ahmed *et al*., 2006). Before reported of 1990, high rate of infection (cattle 38.90%, buffaloes 33.06% and camels 58.9%) was considerable in Pakistan (Khan *et al*., 1990). According to studies on Larcana region, infection of the buffalos estimated in 24.4 % (it was less than Khan *et al*., 1990 results) (Mirani *et al*., 2000).

## HYDATIDOSIS IN INDIAN'S ANIMALS

Due to 1988 studies in north of India, *hydatid* cyst to be reported in 48.1, 30.5 and 21.0% for buffalos, sheep and goats, respectively (Singh and Dhar, 1988). In following studies, it is shown that buffalos' cysts are fertile but infertile in other ones (Such as small ruminants and dog). Cattle are main hosts of *Echinococcus* in India (Irshadullah *et al*., 1989). There is a significant decreasing in hydatid cyst prevalence in India (Reddy *et al*., 1993; Hafeez *et al*., 1994) (Table 3).

## HYDATIDOSIS IN TURKEY'S ANIMALS

First study of *Echinococcus* was seen in Turkey, 1872 (Altintas, 1998). Recently, it had been studied on Turkey's animals with hydatidosis mostly. This infection to be shown with high rates particularly in east of Anatolia. But, it is reported it in low rates for central and European regions (Like kirikkale) (Altintas, 1998; Gicik *et al*., 2004; Değer and Bicek, 2005). European regions of Turkey have a low rate of infection rather than other ones (Yildiz and Tuncer, 2005; Ulutas Estatgil and Tuzer, 2007) (Table 4). While Kars region has the most rate of infection with 63.83% rate (Gicik *et al*., 2004). Liver is an involved organ for them (Umur, 2003; Yildiz and Tuncer, 2005; Ulutas Estatgil and Tuzer, 2007). Hydatidosis is variable in different regions (Altintas, 1998). In Turkey, main host of hydatid cyst and most infected animal with hydatidosis is the sheep (Umur, 2003; Ulutas Estatgil and Tuzer, 2007).

## HYDATIDOSIS IN ARABIC COUNTRIES OF THE ASIA

Available data are limited at this case. But, most infection is concerned about camels (Ibrahem and Graig, 1998). Due to Jordan investigations, 1989, rate of 71.1% of the sheep were infected with hydatid cyst (Abdel-Hafez and Al- Yaman, 1989). But, it was reported a little rates in next years (Abo-shehada, 1993). Due to 1997 studies, it was observed 16.9% of the donkeys were infected with the related cyst (Mukbel *et al*., 2000).

However, there is no extensive infection in these Arabic countries. High rate of infection to be found in Syria, Jordan and Iraq (Ansari and Lari, 2005; Sajjadi, 2006).

## HYDATIDOSIS IN CENTRAL ASIA

Hydatidosis has been always common between central Asian countries. As an average, 25% of the dogs

of this region have hydatid cyst (Torgerson *et al*., 2006). Hydatidosis has geographical distribution such as difference between north and central or south parts of Kazakhstan. Sheep of the south regions have high rate of infection (Torgerson *et al*., 2003). Human's and animal's hydatidosis were in low levels before the soviet Republics annihilating until 1991 (Torgerson *et al*., 2006). In Azerbaijan, 34-38% and 63-67% of the cattle and sheep are infection with hydatid cyst (Chobanov *et al*., 1991). Due to Central Asian countries reporting, this region is one of the infectious regions from hydatidosis (Chobanov *et al*., 1991; Torgerson *et al*., 2006).

## DISCUSSION

By comparing of differences and similar results, we can observe geographical distribution between infected animals with hydatid cysts well. In some of countries, central regions have low rate of infection rather than frontier ones (Torgerson *et al*., 2003; Ulutas Estatgil and Tuzer, 2007; Lotfi *et al*., 2007) .While there is a wide program for removing of hydatid cyst, then considerable decreasing will be observed for involved animals in hydatidosis (Torgerson *et al*., 2006). At this case, socio-economical conditions of the region, animal-husbandry systems, techniques and slaughter process, number of the shepherd dogs are important factors for infection. Shepherd dogs are dangerous and serious factors for transferring of the cyst (Specially, in near of slaughterhouse) (Singh and Dhar, 1998; Gicik *et al*., 2003; Garippa *et al*., 2004). However, Middle East is one of the infectious regions of hydatidosis, but we can't say European countries have a low rate for it. According to an investigation in the Greece, 100% rate of the sheep had hydatid cyst. Also, 70.6-92.8% rate of the sheep had the cyst in Sardino, Italy (Himonas *et al*., 1994; Garippa *et al*., 2004). In recent studies, infection to be reported in different kinds of animals, too. Dogs, wild hogs and foxes are intermediate hosts and carriers in European regions (Eckert, 1997). Almost, in all of the studies, older animals had high infection rate rather than young ones (Mukbel *et al*., 2000; Torgerson *et al*., 2006; Ulutas Estatgil and Tuzer, 2007). Hydatidosis had linear relation towards animals' age (Torgerson *et al*., 2006).

## CONCLUSION

In Middle-East, infection rate in great rate as especially in sheep and camel. With age growing, there is no good immunity for hydatid cyst. Generally, hydatidosis prevalence rate must be controlled regularly in Middle-East and Eastern European countries widely.

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