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RESEARCH ARTICLE

The Problem of Cystic Echinococcosis in Van Province

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Summary

This study was carried out prospectively in Van Meat Company and Van Municipality Slaughterhouse, Eastern Anatolian Region of Turkey. In the study, liver, lungs, spleen, hearth and other internal organs of 552 cattle and 1613 sheep slaughtered were inspected for cystic echinococcosis (CE). The organs were examined carefully with hands and the organs and cysts were cut with knife for confirmation of diagnose. It has been detected that 486 cattle and 1150 sheep slaughtered were entered to Van province from the Eastern border of Turkey, and 66 cattle and 463 sheep were breed in Van. Z test was used to evaluate the relationship of the CE's prevalence between the animals entered to Van province from the Eastern border of Turkey and breed in Van. CE was found in 22.63% of 486 cattle and 67.57% of 1150 sheep entered to Van province from Eastern border of the Country. The infection was determined in 6.06% of 66 cattle and in 28.94% of 463 sheep breed in Van. CE was totally detected in 20.65% of 552 cattle and in 56.48% of 1613 sheep. A significant independent relationship was found between the animals entered from the Eastern border of Turkey and breed in Van for CE's prevalence (P<0.001).

Keywords: *Cystic echinococcosis, Prevalence, Cattle, Sheep, Van, Turkey*

Van Yöresinde Kistik Ekinokokkoz Sorunu

Özet

Bu çalışma, Van'da (Doğu Anadolu Bölgesi, Türkiye) Van Et Kombinası ve Van Belediye Mezbahasında prospektif olarak gerçekleştirildi. Çalışmada kesimi yapılan 552 sığır ve 1613 koyunun karaciğer, akciğer, dalak, kalp ve diğer iç organları cystic echinococcosis (CE) yönünden incelendi. Ayrıca teşhisi doğrulamak için organlar elle dikkatli bir şekilde incelendi ve organlar ve kistler bıçakla kesildi. Kesimi yapılan 486 sığır ve 1150 koyunun Türkiye'nin doğu sınırından Van yöresine giriş yaptığı, 66 sığır ve 463 koyunun Van'da yetiştirildiği saptandı. Van yöresine Türkiye'nin doğu sınırından giriş yapan hayvanlar ile Van'da yetiştirilen hayvanlarda saptanan CE'in prevalansını karşılaştırmada Z Testi kullanıldı. Ülkenin doğu sınırından Van yöresine geçirilen 486 sığırın %22.63'ünde ve 1150 koyunun %67.57'sinde CE bulundu. Enfeksiyon, Van'da yetiştirilen 66 sığırın %6.06'sında ve 463 koyunun %28.94'ünde belirlendi. Toplam 552 sığırın %20.65'inde ve 1613 koyunun %56.48'inde CE saptandı. Türkiye'nin doğu sınırından Van yöresine geçirilen hayvanlar ile Van'da yetiştirilen hayvanlar arasında CE'in prevalansı yönünden ayrı ayrı anlamlı ilişki bulundu (P<0.001).

Anahtar sözcükler: *Cystic echinococcosis, Prevalans, Sığır, Koyun, Van, Türkiye*

INTRODUCTION

Cystic echinococcosis (CE) caused by the larval stage (hydatid cyst) of *Echinococcus granulosus* is one of the most widespread zoonose diseases. The disease is also considered to be a serious problem for both public health and the livestock economy in Turkey as well as in many settlement areas of the World. Recently, although major improvements have been achieved at the service of Medicine and Veterinary Medicine in Turkey, the incidence of CE is still at high rates in the Country, and the rates changes according to years and the regions. Many studies have been performed concerning with CE in cattle and sheep since 1950's, and different rates of the incidence have been reported in Turkey [1-11]. The most of these reports have been retrospectively collected from records of slaughterhouses, and we think that these reports do not show the actual prevalence in Turkey, because only internal organs having intensive CE are annihilated and recorded in slaughterhouses in Turkey.

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It has been reported that the prevalence of *E. granulosus* was high in stray dogs, and CE was high in sheep and cattle in Iran [12] and the Arab countries [13]. The prevalence of the infection was very high until 1999 in both human and livestock species in Greece. Surveillance in livestock species since 1998, which was carried out as a part of European Union project, demonstrated that the prevalence of CE in sheep and cattle decreased to a great extent, but the disease is still present in this country [14].

The aim of this investigation was to determine the prevalence of CE of cattle and sheep in Van province that the animals were entered to this place from the Eastern border of the Country time to time. It was also aimed to detect the difference of CE's prevalence between the animals entered from the Eastern border of Turkey and breed in Van.

MATERIAL and METHODS

This study was carried out prospectively in Van Meat Company and Van Municipality Slaughterhouse, Eastern Anatolian Region of Turkey. Totally, 552 cattle (between 2-5 years old) and 1613 sheep (between 1-4 years old) slaughtered were examined for CE. In the study, liver, lungs, spleen, hearth, kidneys, urinary bladder, uterus and other internal organs of the animals were inspected for CE after their slaughtering. Then, the organs were examined carefully with hands, and the organs and cysts were cut with knife for confirmation of diagnose. It has been detected that 486 of 552 cattle and 1150 of 1613 sheep slaughtered were entered to Van province from the Eastern border of Turkey with purpose of border trading, and 66 cattle and 463 sheep were breed in Van.

Z test -Minitab version 14- was used to evaluate the relationship of the CE's prevalence between the animals entered to Van province from the Eastern border of Turkey and breed in Van.

RESULTS

In the study, CE was totally detected in 114 (20.65%) of 552 cattle and in 911 (56.48%) of 1613 sheep. The infection was observed only in 5 (4.4%) of liver, 15 (13.16%) of lungs and 94 (82.46%) of both liver and lungs of the cattle. In the sheep, the infection was detected only in 101 (11.09%) of liver, 88 (9.66%) of lungs and 720 (79.03%) of both liver and lungs. In one sheep (0.11%), liver, lungs and hearth, in another sheep (0.11%), liver, lungs and spleen were found infected together.

CE was detected in 110 (22.63%) of 486 cattle and 777 (67.57%) of 1150 sheep entered to Van province from Eastern border of the Country. The infection was intensive in 370 (47.62%) of the infected sheep and in 32 (29.1%) of the infected cattle entered from Eastern border of Turkey. The infection was determined in four (6.06%) of 66 cattle and in 134 (28.94%) of 463 sheep breed in the Country.

A significant independent relationship found between the animals entered from the Eastern border of Turkey and breed in Van for CE's prevalence ($P<0.001$).

DISCUSSION

Many studies were performed on CE in cattle and sheep in Turkey, and various rates of related prevalence of the disease were detected in these researches. In this studies, CE was detected in cattle and sheep with the rates of 2.8-47.4% and 3.5-52.3%, respectively [2,3,8,10,11,15-19]. Results of many studies concerning with the disease have been taken from slaughterhouse records. We think that only intensive infected internal organs of slaughtered sheep and cattle have been taken into consideration in many slaughterhouses in Turkey, consequently only the annihilated organs have been recorded as CE cases. On the other hand, the organs with small CE and/or contain a small number of CE are not annihilated and are not recorded in many slaughterhouses, and we also observed this state in Van Municipality Slaughterhouse. Therefore, the prevalence rates of previously researches performed in slaughterhouses of Turkey are very low and do not show the actual rates.

The rates of *E. granulosus* infection in dogs vary widely between 0.32-40% according to some local studies [7,15,20,21] in different areas of Turkey. The reasons for high prevalence of CE in the Country are due to the animals entered from the eastern border, very high prevalence of *E. granulosus* in stray dogs and low socioeconomic status of the region people.

The prevalence of CE in sheep has been found in Egypt, Iraq, Jordan, Libya and Saudi Arabia as 1.3%, 4.5%, 12.7%, 3.3% and 4.6%, respectively. However, the prevalence in cattle has been determined in Iraq,

Jordan, Libya and Saudi Arabia as 4.3%, 13.1%, 13.9% and 7.3%, respectively [13]. In Arbil province of Iraq, CE rates in sheep and cattle have been reported as 15.0% and 20.6%, respectively [22]. Studies in the western parts of Iran have showed that CE was encountered in 11.1% of sheep and 16.4% of cattle [23]. In an abattoir study, 367 sheep have been examined for the presence of CE in different areas of northern Libya, and the prevalence of infection have been determined as 15.8% [24]. In Greece, the prevalence of infection has been found as 82% in 1984 and 56.6% in 1994 in cattle, 80% in 1984 and 100% in 1994 in sheep. Surveillance in livestock species since 1998, carried out as part of a European Union project, has documented the prevalence of CE in sheep (31.3%) and in cattle (0%). However, it has been reported that the disease is still present in this Country [14]. In Central Greece during 2002–2006, 1500 adult sheep have been examined randomly at an abattoir survey, and the prevalence of CE has been found in 39.32% rate [25]. CE has been found in 75% of Sardinian breed sheep regularly slaughtered in different slaughterhouses in Sardinia (Italy) [26]. As seen in the examples, CE is encountered still in high rates in animals in many countries as well as in Turkey.

It was observed that a lot of sheep and cattle slaughtered in Van were entered from the Eastern border of Turkey because of border trade. A large number of these animals entered to the Country are also transported to other regions of Turkey. It was observed that the internal organs of the slaughtered animals were not carefully examined by veterinarians in Van Municipality Slaughterhouse as well as in many other slaughterhouses in Turkey, and the internal organs having a few or small CE were also available for consumption together with carcasses of the slaughtered animals. Besides, it was observed that the intensive infected organs were randomly left surroundings of the Slaughterhouse, and these organs were also eaten by stray dogs. In this study, the prevalence of CE detected in the sheep entered from the Eastern border of Turkey is higher (67.57%) than the all studies performed so far from 1950s in Turkey.

The low socioeconomic status and non-hygienic conditions such as putting haphazardly out of internal organs with CE are important reasons at the spreading of hydatidosis. These factors are obviously observed in Van province. We think that CE will cause serious problems in Turkey and the neighbor countries if radical preventive measures are not taken related to the control of the disease.

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