BOVINE LEPTOSPIROSIS IN TURKEY

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Leptospirosis is an important, word-wide, zoonotic, infectious disease due to pathogenic leptospira serovars in animals and human beings. Clinical sings of bovine leptospirosis characterized with anorexia, fever, icterus, hemoglobinuria, mastitis, petechial hemorrhagie on visceral tissues and organs, hemolytic anemia, infertility, abortion, stillbirth, and septicemia vary with as infecting serovars. And, causative serovars vary between countries and breed (1,2,3).

The genus *Leptospira* is divided into two species; *L. interrogans* (pathogenic) and *L. biflexa* (saprophytic). Although this classification is currently under review and it has been proposed that *L. interrogans* should be divided into six species including *L. borgpetersenii, L. interrogans, L. noguchii, L. santarosai, L. weilii* and *L. kirschneri*, the term of *L. interrogans* is still used when referring to pathogenic leptospires. *L. interrogans* is divided into serogroups and serovars on the basis of antigenic composition. The term of serovar has taxonomic significance and it has more than 200 serovars (4). Serovar hardjo is considered as the host adapted serovar in cattle while many serovars cause bovine leptospirosis (5, 6, 7).

Effected animals shed the agent primarily via urine and aborted fetus, fetal membrans, uterus discharge, semen and infect not only suscepted animals but also farm workers and other peoples by different ways (5,6,8). Subclinically infected animals play an important role in the epidemiology of the disease and the agent remains in kidneys and animal can shed the bacteria upto a year (8).

It has been reportad that, there is a close association between human and dairy cow leptospirosis in rural areas, and the marked reduction in the level of human infection can be occur by control programs including cattle vaccinations (9).

Isolation of leptospires is difficult to perform and time consuming. Therefore serological tests are commonly used for diagnostic purposes. In cattle, most common methods in the diagnosis are Microscopic Agglutination Test (MAT) and ELISA (8, 10, 11, 12, 13). With recent developments on molecular biology, Polymerase Chain Reaction (PCR) tests have been using for the diagnosis of bovine leptospirosis as for human beings. (14,15).

Several studies have been performed on bovine leptospirosis in Turkey.

A study to determine the incidence of leptospirosis in the cattle with jaundice and haematurie in Erzurum province has been performed by Özkan et al. (16). In the study, 8 (18%) of 45 sera were found to be positive by MAT.

Özdemir (10) investigated 15.496 randomly collected cattle sera by MAT in order to determine the prevalance of leptospirosis in Turkey and 1254 (8.04%) of them were found to be positive. 1034 (82.46%) and 220 (17.54%) of the sera gave positive reactions with serovar hardjo and grippotyphosa, respectively. Researcher was determined prevalence of the infection as 3.39% in Trakya district. Özdemir and Erol (17) were tested cattle, sheep and human sera from different regions of Turkey taken from suspected individuals, by MAT. In the study, positive reactions were found in 257 (45%) of 574 cattle, 16 (8%) of 200 sheep and 37 (25%) of 150 human sera. The results of the studies indicated that, the serovar hardjo was dominant in

the seroprevalance study while serovar grippotyphosa was dominant in cattle and sheep which were suspected of having leptospirosis. And it was the first report of showing presence of serovar minisari in cattle of Turkey.

Çetinkaya et al. (18), investigated 385 cattle sera by MAT obtained from Elazığ province and it has been reported that, positive results were obtained from 8 (2.03%) samples, 7 of were agglutinated *L. hardjo* and one with *L. grippotyphosa* antigens. Çetinkaya et al. (19) were also performed a PCR test to investigate the prevalence of leptospirosis in urine of apparently healthy slaughtered cattle in the east of Turkey (Elazığ, Malatya, Diyarbakır). In the study, positive PCR products were obtained from 19 (4.02%) of 473 samples. The proportions of positive samples in Malatya, Diyarbakır and Elazığ were 1.8%, 3.9%, 4.9%, respectively.

A serological study carried out with 990 cattle sera in eastern part (Kars and Ardahan provinces) of Turkey by Şahin et al. (20). Either or both serovars of *L. hardjo* and *L. grippotyphosa* were found to be positive in 333 (33.63%) of sera in MAT while 359 (36.26%) were found to be positive by ELISA. It has been reported that, although 3 strains were isolated from 18 suscepted urine specimens, the serovars could not be determined because of contaminations.

Ikiz (21) investigated *L. interrogans* antibodies by ELISA and MAT in cattle in Trakya district (Istanbul, Edirne, Kırklareli, Tekirdağ). In the study, 7 (3.65%) of 192 sera (sera of 96 slaughtered cattle and sera of 96 cattle raised in differen farms) were positive by MAT while 12 (6.25%) of by ELISA. When the prevalence was calculated in different provinces, the highest proportion was obtained in Edirne where is the rice centre of the region and specific antibodies were not detected in the sera obtained from İstanbul. Recently, presence of leptospires in 89 urine samples of the slaughtered cattle in which matching blood sera had been used in the previous study were investigated using PCR test by İkiz at al. and 3 (3.37%) of samples were found to be positive (unpublished data).

In conclusion, prevalence of bovine leptospirosis in Turkey has been reported to vary between 3.37 % and 36.26 % in different regions and locations. The dominant serovars are hardjo and grippotyphosa. Further investigations should be performed in other provinces and effective control programs are needed in where the prevalence is high.

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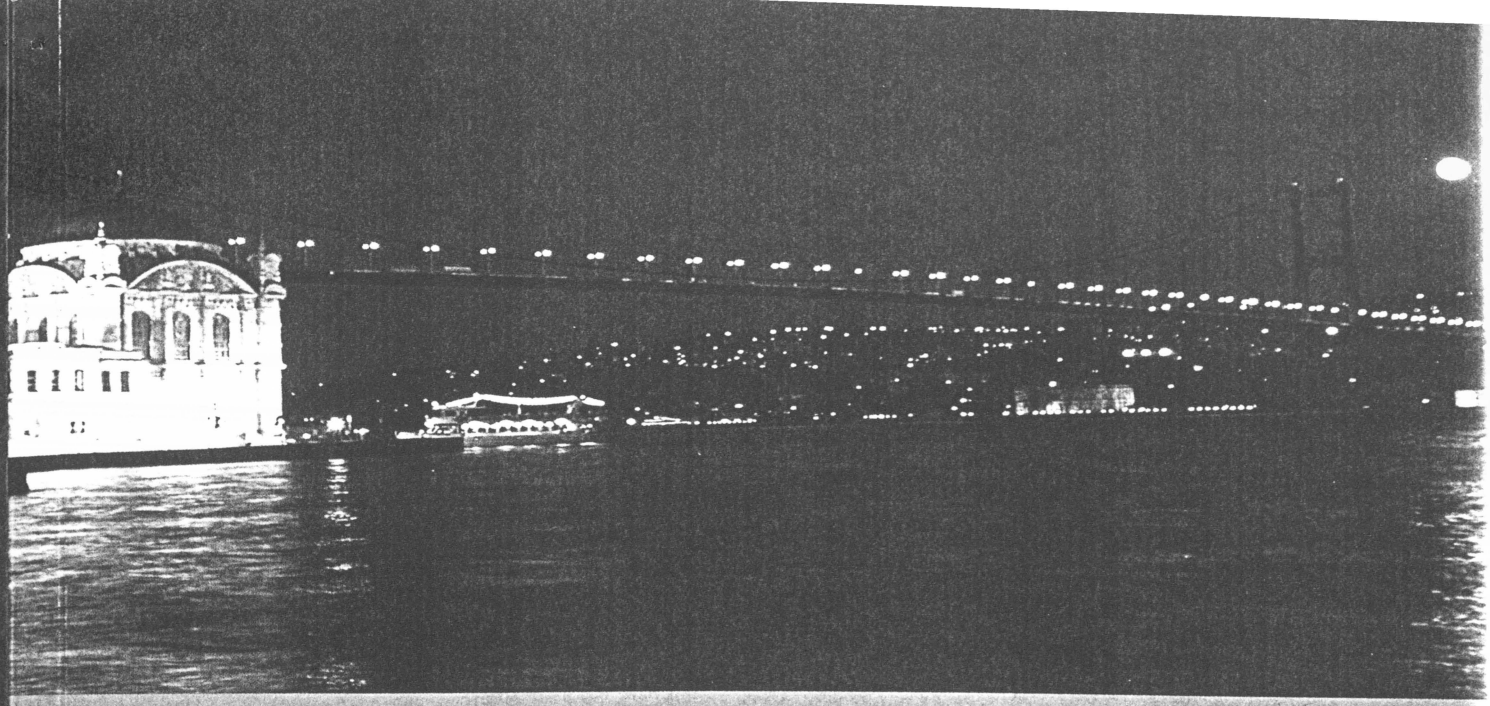

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