Brucellosis in man and animals in the Middle East Region

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1. Introduction

Brucellosis remains a serious zoonotic disease in most countries of the region. The disease is reported in animals in all countries of the region, except in Cyprus where it has been eradicated since 1932 in cattle and 1984 in sheep and goats. Most countries of the region depend on importation of animals, particularly cattle both for slaughter and breeding from outside the region. With the intensification of the importation of animals and the establishment of big farms in the last few years, the incidence of brucellosis rose sharply in many countries., both in man and animals. A high incidence rate of brucellosis was reported particularly from several modern commercial dairy farms. The infection was found to be caused by Br. abortus in cattle, buffaloes and camels and by Br. melitensis, in sheep and goats. The incidence of reactors in those newly established farms of cattle reached in some countries to more than 30%. This alarming situation led to the enforcement of control policy, mostly in the form of test and slaughter policy . The extensive application of S19 vaccination of young females either with the full dose or the reduced dose together with slaughtering of positive animals has resulted in the reduction of the overall reactors rate drastically. On the other hand , brucellosis in sheep and goats , although reported since many years in almost all countries of the region, the incidence is still high and little is done to control the disease . This situation has resulted in the transmission of Br. melitensis to cattle, and that is why Br. melitensis is now the predominant cause of brucellosis in animals and humans in most countries.

2. Situation of brucellosis in animals and man in different countries of the region

2.1. Brucellosis in animals

2.1.1. In Egypt, brucellosis in animals was reported for the first time in 1939. However , intensive surveillance programmes were initiated after the approval of the National Brucellosis Control Programme in 1981, adopting the test and slaughter policy and vaccination of young female calves with the reduced dose Br. abortus S19 vaccine. The average incidence rate of reactors has dropped drastically in 1997 to 0.85% in cattle and 0.3% in buffaloes. In sheep , the incidence is 1.78 and in goats it is 8.17%. Brucellosis has been reported also in camels, swine and dogs. The bacteriological studies revealed the predominancy of Br. melitensis biovar 3 in cattle. This organism was isolated also from dogs.

2.1.2. In Libya, brucellosis in animals was reported to be particularly widespread among sheep and goat flocks, especially in the west mountain area and west coastal strip. Br. melitensis biovar 1 and 2 were isolated from sheep, goats, cows and camels.

2.1.3. In Tunisia, the year 1991 was the year of expolsive outbreaks of brucellosis in sheep and goats. The first outbreak was reported in Gafsa, where the seropositivity reached 61% in goats and 30% in sheep flocks. In positive flocks, 15-20% of females aborted. Outbreaks were reported in 23 governorates. Br. melitensis biovar 3 was isolated from infected animals. In bovines, the percentage of herds infected was found to be 13.7%. Surveys carried out in 1992 showed that the percentages of reactors were 1.5%, 4% and 18% in bovines, ovines and caprines, respectively.

2.1.4. In Algeria, the examination of sheep and goats in 1986-1989 revealed an overall seropositivity of 2.18% in sheep and 12.0% in goats. The percentages of infected flocks were however 43.5% and 42% in sheep and goat flocks, respectively.

2.1.5. In Morocco, the overall infection rate among sheep and goats flocks was 14.28%. The highest rate of infection was reported in the central region, followed by the north-eastern region. The percentages of infection in flocks were 15% in 1980-83, 7.4% in 1984-87 and 21.34% in 1988-1991.

2.1.6. In Sudan, brucellosis in cattle, sheep and goats is endemic throughout the country. According to recent surveys prevalnce of 14.2% and 16.7% were reported in Khartoum and Central States, respectively.

2.1.7. In Jordan, Br. melitensis infection is probably the most serious zoonosis. The first reported focus of infection in goats was identified in 1971 among an imported herd. Between 1971 and 1973, 7% of goats in the country were diagnosed serologically positive. The rate of positive reactors increased continuously so that it reached 22.8% in sheep, 21.0% in goats and 8.7% in cattle. Br. melitensis biovar 3 was predominantly isolated from positive animals.

2.1.8. In Israel, Br. abortus has been eliminated from dairy and beef herds. Br. melitensis represents the major challenge to the livestock industry as it is endemic in cattle , small ruminants and man. The survey of intensive sheep and goat flocks by solid phase ELISA in 1993-95 revealed a reactor rate of 8.2%. In about 10% of the flocks the percentage of reactors ranged between 19 to 37%. The field strain of Br. melitensis was isolated from the internal organs and milk , while Rev.1 was isolated only from milk of reactor animals..

2.1.9. In Lebanon, brucellosis in sheep and goats is very frequent. A mini-serological survey done by the Ministry of Agriculture in some private farms showed that almost all of the farms had infected animals. Br. melitensis is the main agent of infection in all ruminanats. The last screening revealed an incidence of 18% in cattle and 9.2 in sheep and goats. In a last report in 1998, it was mentioned that about 800 cases are reported annually to the Ministry of health.

2.1.10. In Syria, the prevalence of brucellosis in 1988 was reported to be 2.5% in cows and 1.8% in sheep.

2.1.11. In Turkey, a national survey carried out in 1989 estimated the overall rate as 1.26% in sheep and 3.56% in cattle. In 1990 it was 2.08% in sheep and 1.2% in cattle, in 1991 it was 1.83% in sheep and 1.01% in cattle and in 1992 it was 1.48% in sheep and 0.6 in cattle. Data concerning the incidence of brucellosis in the years 1995-97 revealed the occurrence of 7,5 and 7 outbreaks of Br. abortus and 58,53 and 26 out-

breaks of Br. melitensis in the years 1995,1996 and 1997, respectively. Br. melitensis biovar 2 in sheep and Br. abortus biovar 3 in cattle were most predominant. Other biovars determined were 1,2,4 and 6 for Br. abortus and biovar 1 for Br. melitensis.

2.1.12. In Iran, the prevalence of brucellosis reached 44% in 1956 and dropped to 5% following control programme that started in 1958. Because of relactancy in control, the reactor rate increased again to 17.4% in 1977. A control programme started again in 1983 with consequent decrease of the prevalence to 1.25% in 1987. In 1991, the prevalence rate was 0.85%. Similarly, the prevalence rate in sheep and goats went up and down. It was 13.7% in 1970, 6.4% in 1980 and 10.18% in 1991.

2.1.13. In Iraq, the disease was reported in sheep (15%) due to Br. melitensis and in cattle (3%) due to Br. abortus.

2.1.14. In Saudi Arabia, the incidence of brucellosis increased in the years 1986-1988 from 5.7% to 26.0% in sheep and goats and from 0.7% to 7.0% in cattle. During the last 10 years, all Brucella species isolated from sheep, goats, cattle and camels were Br. melitensis biovar 2.

2.1.15. In Kuwait, the percentages of reactors in cattle increased from 3.0% in 1984 to 5.2% in 1989 . In sheep and goats the incidence was 11.1% in 1986 and 6.6% in 1989. In camels, seropositivity rate was reported to be 14.6% in 1985, 14.8% in 1988 and 7.7% in 1989. Serological test done on a flock of sheep in 1993 showed a seropositivity of 9.4%. In 1994, serum samples collected from animals suspected to have brucellosis revealed a positive test in 14% in sheep and 7% in goats. Br. melitensis was isolated from sheep, goats and cows.

2.1.16. In Oman, the serological studies undertaken in 1989 showed that the percentages of reactors were 0-8% in camels, 0.3-6.4% in goats and 0.9-3.3% in cattle.

2.1.17. In the United Arab Emirat, a survey done in 1989 revealed an average incidence of 6.4% in goats, 5.4% in sheep, 14.4% in cattle and 1.5% in camels. A survey conducted in 1990 showed prevalence rates of 3.4%., 2.0%, 1.3% and 02% in goats, sheep, cattle and camels, respectively.

2.2. Brucellosis in man

Although brucellosis is a notifiable disease in some countries of the region, it is often unrecognized and unreported. In many countries, the awareness of medical specialists in relation to brucellosis is very weak and in most of the cases , public health laboratories are not carrying out diagnostic tests. Cases of brucellosis very often remain unrecognized and are treated as other diseases. They are often labeled " Fever of unknown causes". For these reasons, the actual number of cases of brucellosis is unknown and is believed to be far more than the officially reported figures.
The age distribution of reported brucellosis cases from several countries of the region indicates that children are particularly at risk. The incidence has a seasonal pattern with a maximum number of cases during the spring and early summer period.
Infection is transmitted from infected animals by ingestion of raw milk or dairy products, especially cheese made from raw or lightly heated milk. Transmission also occurs through contact with farmers and veterinarian coming in contact with infected animals and frequent infection has been reported in laboratory personnel dealing with

diagnostic works, as in most laboratories, Brucella diagnostic is done in the general laboratory and not in a separate one. The incidence of brucellosis in man in different countries according to the available date is as follows:

2.2.1. In Egypt, human brucellosis has received little attention until the WHO strenghthened the Zoonosis Centre in Imbaba Fever Hospital in 1990. Before this date only few cases of brucellosis were recorded although the disease is notifiable, e.g. in 1988 only 45 cases were reported. In 1991, a survey was done in 4 governorates with a total population of 6.34 million. The serological examination of 2720 serum samples revealed positive reactors in 10.5% of the samples. The examination of serum samples from 747 cases admitted to the Imbaba Fever Hospital and diagnosed as cases of fever of unknown causes were positive for brucellosis in 323 cases (43.23%). In 1994, 309 cases were confirmed by isolation in Imbaba hospital.

2.2.2. In Libya, brucellosis was diagnosed in man in 150 cases in Nalut Hospital in the mountains area in 1988. In the following year, more than 200 cases were reported out of a population of about 30 000. Br. melitensis biovar 2 was isolated from 2 cases.

2.2.3. In Tunisia, the first case of brucellosis was diagnosed in 1909. The official cases of brucellosis were 59 in 1989, 55 in 1990 and 344 in 1991. On October 1991, an explosive outbreak was reported in the southern governorates, particularly in Gafsa, where 407 cases were diagnosed and 85% of the patients had a history of consuming raw milk. The highest rate of infection was registered in May, June and July. The age group mostly affected was 25-34 years, particularly in males.

2.2.4. In Algeria, human brucellosis was discovered as early as 1895 in the Pasteur Institute d' Algeria. Recently, attention has been given to the disease following the serious epidemic reported in 1984 in Ghardaia, where 600 cases were diagnosed. The disease was then reported in other regions. The analysis of data obtained in the years 1988-1990 revealed that the infection rate varied from 0.36-0.67 per 100 000.The highest rate was recorded in May and August which corresponds to the period of parturition and lactation of sheep and goats..

2.2.5. In Morocco, although the first case of human brucellosis was reported in 1916, there no available data on human cases in the recent years.

2.2.6. In Jordan, the infection in man was rarely diagnosed before 1984. During 1984-1985, 69 cases were reported. The number of cases during 1986-1991 in the various districts were 730. 42% of the cases were reported in the capitol region, 9% in Irbid and 7% in the southern regions. On the other hand, the Mafraq area (nomadic) delivered 13% of the cases. 60% of the patients were under the age of 24 years. The peak of infection was in the Spring, which corresponds to the peak of lambing, the maximum production and consumption of fresh cheese products and period of maximum flock movement toward open range.

2.2.7. In Israel, most human cases of brucellosis are reported to be among livestock owners of extensively raised small ruminants.

2.2.8. In Lebanon, human brucellosis is undoubtedly frequent and it occurs throughout the year. During the years 1984-1986, the limited survey done in the country indicates a prevalence rate of 69.6/100 000.

2.2.9. In Syria, human brucellosis is found in most of the provinces. About 220 cases are reported every year, although the estimated number is around 1000. Consumption of fresh cheese is considered the main source of infection.

2.2.10. In Turkey, brucellosis was reported for the first time in 1915. A survey carried out among workers at slaughterhouses in Ankara in 1947 indicated that 10% were infected. Various serological surveys conducted by the Faculty of Medicine in Ankara revealed positive reactor rates between 5.5 and 7%. The largest survey covering different regions of the country was carried out between 1984-1987, where 70 000 serum samples were tested. The prevalence varied between 1.8 - 6%. It was calculated that about 1,75 million person had contracted brucellosis in Turkey. The number of outbreaks increased from 3145 in 1989 (5.48/100 000) to 8383 in 1994 (13.88/100 000). Both Br. abortus and Br, melitensis were isolated from human cases, but Br. melitensis was predominant.

2.2.11. In Iran, human brucellosis is endemic in all parts of the country. Patients recorded in 1988 were 71 051 (132.4/100 000).

2.2.12. In Iraq, the incidence is high in the northern governorates. In 1985, 369 cases (2.3/100 000) and in 1988, 1187 cases (7.2/100 000) were diagnosed.

2.2.13. In Saudi Arabia, the human brucellosis cases increased sharply during the period 1985-1990 from 4.9-69.5/100 000. The highest rate was recorded in 1988 (79.6/100 000).The infection was reported all over the kingdom, but with marked increase at Al-Jouf, Aser and Qasiem. The highest incidence was seen in the Spring and Summer.

2.2.14. In Kuwait, there was an epidemic increase in brucellosis beginning in 1983 with an annual infection rate of 26.8/100 000 which reached its peak in 1985, with a rate of 68.9/100 000. After that the rate began to fall, where it reached 20.1/100 000. Epidemiological investigations of the reported cases have repeatedly confirmed that the traditional habit of drinking raw milk and the consumption of raw dairy products were the main means of transmission. This was especially true among Bedouins where the infection rate among them reached 545.7/100 000.

2.2.15. In Oman, brucellosis is considered, after rabies, the most serious disease.Most of the cases were reported among livestock owners, their families and veterinarians.In 1985, 260 cases were reported, in 1986, 186 cases, in 1987 and 1988 the number increased to 292, in 1989 there were 224 and in 1990 only 184 cases were reported.

References

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