



Risk factors for occupational brucellosis among veterinary personnel in Turkey



Murat Kutlu^{a,*}, Onder Ergonul^b, Selda Sayin-Kutlu^a, Tumer Guven^c, Cemal Ustun^d, Sema Alp-Cavus^e, Serife Barcin Ozturk^f, Ozlem Acicbe^g, Serife Akalin^a, Recep Tekin^h, Suda Tekin-Korukⁱ, Yusuf Ziya Demiroglu^j, Ramazan Keskiner^k, Ibak Gonen^l, Sevil Sapmaz-Karabag^m, Vuslat Bosnakⁿ, Esra Kazak^o

^a Department of Infectious Diseases and Clinical Microbiology (IDCM), Pamukkale University, Faculty of Medicine, Denizli, Turkey

^b Department of Infectious Diseases, Koc University, School of Medicine, Istanbul, Turkey

^c IDCM, Atatürk Training and Research Hospital, Ankara, Turkey

^d IDCM, Abant Izzet Baysal University, Faculty of Medicine, Bolu, Turkey

^e Department of IDCM, Dokuz Eylul University, Faculty of Medicine, Izmir, Turkey

^f Department of IDCM, Adnan Menderes University, Faculty of Medicine, Aydin, Turkey

^g Department of IDCM, Ondokuz Mayıs University, Faculty of Medicine, Samsun, Turkey

^h Department of IDCM, Dicle University, Faculty of Medicine, Diyarbakir, Turkey

ⁱ Department of IDCM, Harran University, Faculty of Medicine, Sanliurfa, Turkey

^j Department of IDCM, Baskent University Adana Hospital, Adana, Turkey

^k Department of IDCM, Ahi Evran University, Training and Research Hospital, Kirsehir, Turkey

^l Department of IDCM, Suleyman Demirel University, Faculty of Medicine, Isparta, Turkey

^m IDCM, Training and Research Hospital, Erzurum, Turkey

ⁿ Department of IDCM, Gaziantep University, Faculty of Medicine, Gaziantep, Turkey

^o Department of IDCM, Uludag University, Faculty of Medicine, Bursa, Turkey

ARTICLE INFO

Article history:

Received 28 September 2013

Received in revised form 18 July 2014

Accepted 20 July 2014

Keywords:

Brucella

Occupational health

Retrospective cohort study

Risk analysis

Vaccine related brucellosis

Veterinarians

Zoonotic infections

ABSTRACT

Veterinarians and veterinary technicians are at risk for occupational brucellosis. We described the risk factors of occupational brucellosis among veterinary personnel in Turkey. A multicenter retrospective survey was performed among veterinary personnel who were actively working in the field. Of 712 veterinary personnel, 84 (11.8%) had occupational brucellosis. The median number of years since graduation was 7 (interquartile ranges [IQR], 4–11) years in the occupational brucellosis group, whereas this number was 9 (IQR, 4–16) years in the non-brucellosis group ($p < 0.001$). In multivariable analysis, working in the private sector (odds ratio [OR], 2.8; 95% confidence interval [95% CI], 1.55–5.28, $p = 0.001$), being male (OR, 4.5; 95% CI, 1.05–18.84, $p = 0.041$), number of performed deliveries (OR, 1.01; 95% CI, 1.002–1.02, $p = 0.014$), and injury during *Brucella* vaccine administration (OR, 5.4; 95% CI, 3.16–9.3, $p < 0.001$) were found to be risk factors for occupational brucellosis. We suggest that all veterinary personnel should be trained on brucellosis and the importance of using personal protective equipment in order to avoid this infection.

© 2014 Elsevier B.V. All rights reserved.

1. Introduction

Brucellosis is one of the most important zoonotic diseases worldwide, and it is still endemic in some areas

* Corresponding author. Tel.: +90 05363438271;

fax: +90 0258 2134922.

E-mail address: muratkutlu72@yahoo.com (M. Kutlu).

including Central Asia, the Middle East, Latin America, and the Mediterranean countries (Seleem et al., 2010; Godfroid et al., 2011). *Brucella melitensis*, *B. abortus*, and *B. suis* are well-known causative agents of brucellosis in humans (Franco et al., 2007). Human brucellosis is an important indicator of disease in animal populations and humans are usually infected with *Brucella* spp. originating from animals (World Health Organization, 2006).

Veterinarians and veterinary technicians have a higher risk of becoming infected with brucellosis due to repeated contact with infected animals. Contact with excretions from infected animals, particularly milk and abortive materials, and inhalation of droplets in the air are the primary transmission routes for occupational brucellosis. Practices that involve handling sharp objects (needles, knives) and needle-stick injuries are common in veterinary practice (Leggat et al., 2009; van Soest and Fritschi, 2004; Weese and Faires, 2009), and veterinary personnel are at risk of accidental exposure to livestock *Brucella* vaccines (Ashford et al., 2004; Berkelman, 2003). The animal vaccine strains are defined among possible pathogens for occupational brucellosis in veterinarians (Young, 1995). In non-occupational brucellosis, the major transmission routes are consumption of raw or unpasteurized milk and other dairy products.

The Animal Brucellosis Control and Eradication Project was initiated in Turkey in 1984. The strains S19 and Rev. 1 vaccines are used for control of brucellosis in cattle and small ruminants; however, brucellosis is still endemic in Turkey (Yumuk and O'Callaghan, 2012). The incidence of human brucellosis in Turkey is 26 per 100,000 (Ministry of Health of Turkey, 2004). The risk factors for laboratory-acquired brucellosis among medical health care workers have been described previously (Ergönül et al., 2004; Sayin-Kutlu et al., 2012). Some case series including veterinary personnel (Ataman-Hatipoglu et al., 2005; Buzgan et al., 2010; Demiroglu et al., 2007; Kaya et al., 2006; Yuce et al., 2006), and *Brucella* serologic prevalence among veterinarians were reported previously (Ergönül et al., 2006; Otlu et al., 2008). However, the risk factors for occupational brucellosis among veterinary personnel were not described in detail. In this retrospective study, we describe the risk factors of occupational brucellosis among veterinarians and veterinary technicians who were actively working in the field.

2. Materials and methods

2.1. Study setting and subjects

The study was conducted between July 2011 and December 2011 among veterinary personnel in 24 out of 81 provinces of Turkey where brucellosis was known to be endemic (Fig. 1). In Turkey, there are about 15,000 veterinarians, of whom about 4000 take place in our study area. The number of veterinarians is equally distributed between the public and private sector, and 15% to 20% of the veterinarians are female. We aimed to contact 15% of the actively working veterinarians in these provinces. The planned sample size of 600 was a minimal sample based on previous studies on the *Brucella* serologic prevalence in professionals

in Turkey. In our study we contacted to 595 veterinarians, which is almost 15% of the veterinarians working in 24 out of the 81 provinces of Turkey. Because of the fact that veterinarians and veterinary technicians are equally at risk in their professional activities, the both groups were included in the study. The study was conducted by the members of an occupational infectious diseases study group. The questionnaire was prepared by the group members who were working in different provinces of Turkey and administered in their own provinces. The group members visited the veterinarians and veterinary technicians in their workplaces. The workplaces were randomly selected and enrollment was ended as the target sample size was reached. During their visits group members administered the questionnaire to the veterinary personnel who were present at that time. The study was approved by the Medical Ethics Committee of Pamukkale University.

2.2. Surveying the risk factors for brucellosis

Data was collected through a structured questionnaire that was conducted by face-to-face communication in the offices of the veterinary personnel who were working in food, agriculture, and livestock provincial directorates, veterinary control and research institutes, veterinary faculties, and the private sector. A questionnaire form that was used in our previous studies was modified for use in this study (Ergönül et al., 2006; Sayin-Kutlu et al., 2012). The questionnaire included questions about demographic details, profession, duration of work, department, working with cattle or sheep, use of personal protective equipment (gloves, gowns or other protective wear and masks or goggles), and compliance with safety precautions. We asked about risky practices (vaccine administration, assistance in calving or lambing, and intervention in abortion, preterm delivery, and manual removal of retained placentas) within the last six months. If the respondent had brucellosis, we asked about the risk factors 6 months before the diagnosis. Questions related to the possible source of infection and the possible reasons for development of brucellosis; its signs, symptoms, and their durations; prophylaxis; final outcomes; complications; long-term complaints; and treatment schedules were asked. Questions about exposure to *Brucella* vaccines by needle-stick injuries or splashes to skin or mucosal surfaces among veterinary personnel were included. Infectious disease specialists, who were members of an occupational infectious diseases study group, administered the questionnaires.

2.3. Definitions

The diagnosis of brucellosis which occurred during professional career was based on the self-report of the veterinary personnel. In addition to this, a case of brucellosis was defined as an individual having clinical symptoms and isolation of *Brucella* spp. or *Brucella* agglutination titre >1:160 or at least a fourfold increase in titre within 10 to 14 days. The responder who did not recall or have their details of laboratory investigations referring to brucellosis was excluded from the study. Occupational brucellosis was defined among veterinarians or veterinary technicians who

Download English Version:

<https://daneshyari.com/en/article/5793425>

Download Persian Version:

<https://daneshyari.com/article/5793425>

[Daneshyari.com](https://daneshyari.com)