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**BRIEF COMMUNICATION****BRUCELLOSIS AMONG PATIENTS WITH FEVER OF UNKNOWN ORIGIN IN JIMMA UNIVERSITY HOSPITAL SOUTH WESTERN ETHIOPIA****Tadele Tolosa<sup>1\*</sup>, Fekadu Regassa<sup>2</sup>, Kelay Belihu<sup>2</sup>, Getachew Tizazu<sup>3</sup>****ABSTRACT**

**BACKGROUND:** *Bovine brucellosis is a zoonotic disease of major economic and public health importance in most countries of the world. The objective of this study was to determine the prevalence of Brucella antibodies in patients with fever of unknown origin.*

**METHODS:** *A cross-sectional study was conducted using Rose Bengal plate test and Complement fixation test from January to April 2004. A structured questionnaire was used to collect data on factors that are believed to influence the spread of Brucella infection from 56 subjects selected.*

**RESULTS:** *From 56 subjects, 2 were positive giving a prevalence of 3.6% in cases with fever of unknown origin in the study area.*

**CONCLUSION:** *The study indicates that human Brucellosis could be the cause of fever of unknown origin in the study area. Thus clinicians should consider it as one of the differential diagnoses for fever of unknown origin.*

**KEY WORDS:** *human brucellosis, fever of unknown Origin, Southwest Ethiopia.*

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## INTRODUCTION

Bovine brucellosis is a zoonotic disease of major economic and public health importance in most countries of the world (1, 2). It is a disease of animals in which human being is infected as terminal host. The incidence of the disease in human being is clearly correlated to the degree of incidence in the domestic animals (3). Brucellosis is an occupational disease, occurring most often in veterinarians, farmers, stock inspectors, abattoir workers, laboratory personnel, and butchers (4, 5). Human beings become infected when there is indirect contact with animals at abortion, parturition, or in the post parturition period from splashing of infected droplets into the eyes or drinking un-pasteurized milk or milk products (4,6). The disease in human beings is characterized by a multitude of somatic complaints, such as fever, sweat, anorexia, malaise, weight loss, depression, headache and joint pains and is easily confused with malaria and influenza (4,7). In Africa, brucellosis is considered to be one of the most serious health problems facing the veterinary professionals. Reports show that human brucellosis is prevalent in Africa. The prevalence is often high because of close human-animal contacts and food consumption culture (1,8). In Ethiopia, a number of studies have been done on sero-prevalence of bovine brucellosis in different parts of the country (9-16). However, there are no data on extent of the problem among patients with fever of unknown origin in the study area. Therefore, the objective of this study was to determine the prevalence of *Brucella abortus* antibodies in patients with fever of unknown origin

## MATERIALS AND METHODS

This study was conducted in Jimma University Specialized Hospital located

346 km southwest of Addis Ababa at 7° 13' and 8° 56'N latitude and 35° 52' and 37° 37'E longitudes.

A cross-sectional study was conducted from January to April 2004.

A systematic sampling method was employed to select 56 patients who came to Jimma hospital and diagnosed with fever of unknown origin during the study period. An interviewer administered structured questionnaire was used to collect data on spread, signs and symptoms suggestive of Brucellosis.

Approximately 5 ml of blood was collected from each patient in evacuated plain vacutainer tubes, which was left over night to clot and then the sera was taken and stored at -20 °C until tested. The questionnaire survey and blood sampling was carried out by health professionals from Jimma Specialized Hospital and Jimma Health Center.

The Rose Bengal plate test (RBT) antigen method prescribed by BgVV Service Laboratory was used (17). The test was undertaken at, Department of Microbiology, Faculty of Veterinary Medicine, Addis Ababa University. In the test procedure 30 µl serum was mixed with an equal volume of antigen on a white tile or enamel plate to produce a zone approximately 2 cm in diameter. The antigen and serum were mixed thoroughly using an applicator stick (a stick being used only once) and the plate was rocked by hand for about 4 minutes. Then the mixture was examined for agglutination in a good light. According to the degree of agglutination, the result was visually graded on a scale from 0 to 3 as follows:

0 = no agglutination, + = Barely perceptible, ++ = fine agglutination, some clearing,

+++ = Coarse clumping, definite clearing.

Those samples identified with no agglutination were recorded as negative whereas, those with +, and above were

recorded as positive. All the RBT positive samples were re-tested by Complement Fixation Test (CFT). The methods of CFT test and preparation of reagents were according to the protocol of BgVV Service Laboratory. The CFT test was conducted at the National Veterinary Institute, Department of Immunology, Debre Zeit. Sera with at least 50 % fixation of the complement at a dilution of 1:10 were taken as positive. A hemolytic reaction of 50 % or less at a dilution of 1: 5 was considered as the minimum sero-positive threshold (18). The total prevalence was calculated by dividing RBT+CFT positive results by the total number of samples tested (19, 20). The proposal was approved by Faculty of Veterinary Medicine of Addis Ababa University Ethical review committee. Permission was obtained from Jimma University Specialized hospital to

undertake the study and consent of the patients was obtained.

Fever of unknown origin (FUO) was defined as a temperature of  $\geq 38.3^{\circ}\text{C}$  develops on several occasions' failure to reach a diagnosis despite 1 week of inpatient investigation (21)

## RESULTS

Out of the 56-screened cases, 33 were males and 23 females giving a sex ratio of 1.4:1. Two (3.6%) cases were positive for *B. abortus* antibodies by RBT and CFT (Table 1 and Fig.1). Both positive cases were males above 39-years of age, farmers who had history of contact with animals in general and handling of parturient animals in particular.

**Table 1:** Age and sex category of cases with fever of unknown origin who had history of contact with animals in the study area.

Age Category	Sex.		Frequency
	Male	Female	
15-26	11	9	20
27-38	6	11	17
39-50	8	2	10
51-62	6	0	6
63-74	2	1	3
<b>Total</b>	<b>33</b>	<b>23</b>	<b>56</b>

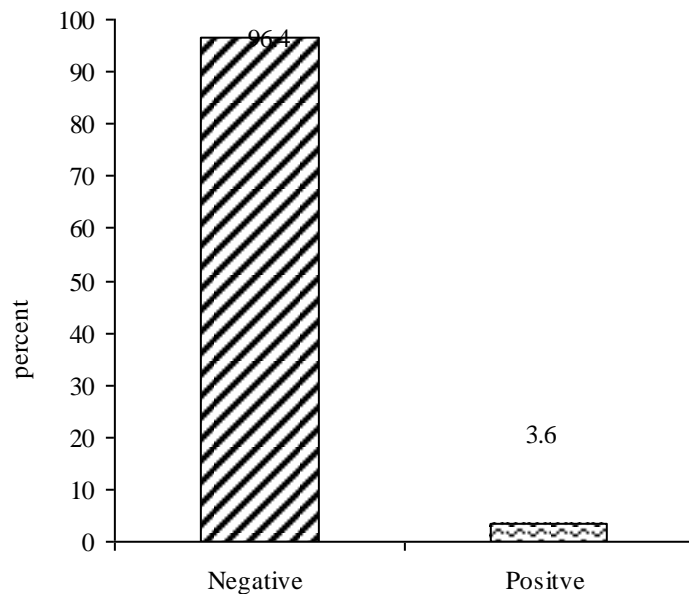


Fig 1. Seroprevalence of Brucellosis in cases with fever of unknown origin who had history of contact with animals, Jimma Zone southwest Ethiopia

## DISCUSSION

An overall brucellosis prevalence of 3.6 % was found in study population. It is not surprising to get people infected with brucellosis in an area where there are infected animals since the prevalence of brucellosis in human being is largely influenced by the prevalence of the disease among domestic animals (3, 16, 22). Brucellosis is known to affect human beings who are in contact with animals and their products (4,5,6,23). The disease is often treated as fever of unknown origin, and frequently misdiagnosed as other common febrile diseases such as malaria and typhoid fever. In the present study, both cases of brucellosis had history of contact with animals. A report from Saudi Arabia indicated that more cases of human brucellosis occurred in rural areas where

most of the people are farmers or live in close contact with animals (24). There was a report showing a prevalence of 12.5% human brucellosis on herdsmen at Abernosa, Ethiopia using CFT (25). The possible explanation for the differences in the prevalence could be in the differences one of sampling method used in which the former study is as solely focused on herdsmen..

It is concluded from this study that human Brucellosis could be the cause of fever of unknown origin in the study area. Thus clinicians should consider it as one of the differential diagnoses for fever of unknown origin.

## ACKNOWLEDGMENTS

The authors thank the staff of Department of Immunology of the National Veterinary Institute and Microbiology Laboratory of Faculty of Veterinary Medicine of Addis Ababa University for their technical assistance. We would like to express our deep appreciation to the Oromia Regional State and Faculty of Veterinary Medicine of Addis Ababa University for financial support during the study period. Those who gave their blood samples were also appreciated

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