BRUCELLA ANTIBODIES IN HEALTHY AND FEBRILE PERSONS

THESIS

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BY

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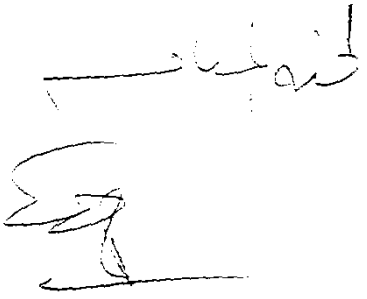

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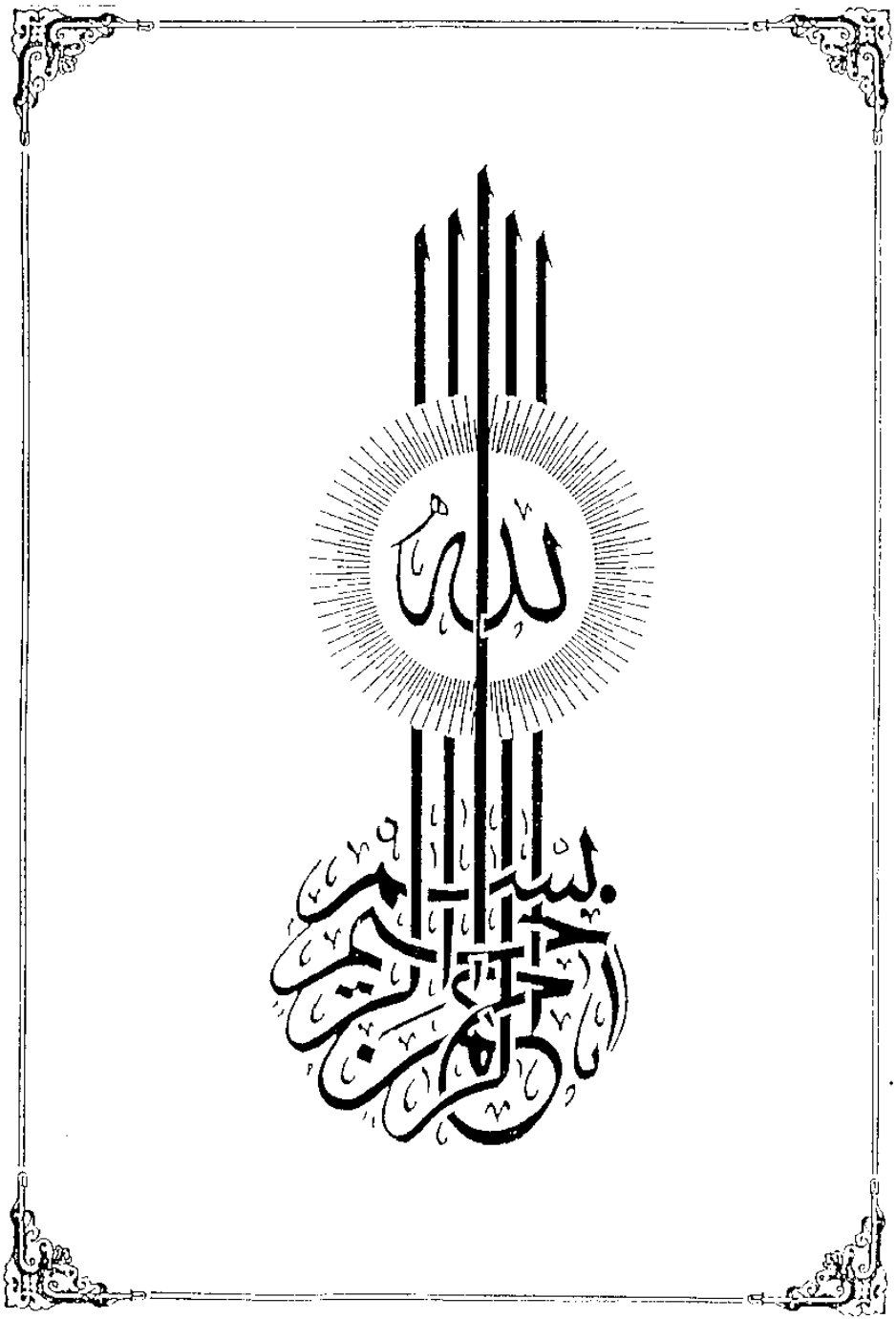

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INTRODUCTION

Brucellosis is also known as undulant fever (melitensis type), febris undulans, Malta fever, Mediterranean fever or gastric remittant. The genus Brucella comprises intracellular parasitis that induce abortion in a variety of animal and febrile illness in human (Moreno et al., 1984).

Brucellosis is an infectious disease caused by organisms of the genus brucella. It is primarily an infection of animals, man usually acquires the disease by ingestion of the infected milk or milk products and by contact with tissues or secretions and excretions of infected animals (Farrell, 1983).

Brucellosis has existed for centuries in the Medieterranean countries. In Egypt the first case was reported in 1929. Hassan and Farid (1974) stated that brucellosis come after salmonellosis and tuberculosis as the most important systemic infections causing fever of unknown orgin "FUO" in Cairo. However due to clinical similarity and difficulty in isolation of brucella organisms prolonged fevers were almost always diagnosed as enteric fever (Gohar et al., 1940).

The acute form is a febrile illness that mimics many other diseases and is characterized by few or no localizing signs, also, chronic illness occurs with and without localized findings (Spink , 1982).

Some of the synonyms given for the illness included Malta fever, Mediterranean fever Rock fever, Gibralter fever, Neapolitan fever, Cyprus fever, Undulant fever and Goats milk fever (Spink, 1982).

AIM OF THE WORK

1- Evaluation of the tube agglutination techniques for determining Brucella antibodies in case of prolonged fever clinically suggestive of chronic brucellosis.

2- If there is false positive tube agglutination for brucella in other specific fevers.

3- Screening of healthy population for antibodies to brucella, as 1% of general population have agglutinins in their blood from drinking unpasteurised milk (Bartram, 1963).

REVIEW OF LITERATURE

HISTORICAL REVIEW

Throughout recorded history there have been epidemics of abortion in animals which may represent brucellosis. In 1863 Dr. Marston, gave an account of the disease in man previously called continued fever which he called Mediterranean remittant fever, also known as Malta-fever and Rock of Gibraltar fever. In 1886 David Bruce grew from spleens at autopsy and later from patient's blood or spleen, a very small, round organism that reproduced the disease in monkeys. He called this micrococcus melitensis (Smith, 1981).

It was renamed brucella melitensis in Beruce's honor. Sir Almroth Wright showed the presence of the agglutinins for Br. melitensis in the blood of infected animals and man. A commission was set up to study brucellosis because it occurred often in British Mediterranean forces. Dr. Horrocks found that sera from 40 percent of the goats on the island of Malta agglutinated the organism. Drinking unboiled goat's milk was forbidden, and Malta fever practically disappeared. In the period 1912-1914 the organism was also found in cow's milk.

In 1897 Bang of Copenhagen isolated an organism of contagious abortion which he named Brucella abortus. In 1921 agglutinins for Brucella abortus were found in man in Rhodesia (Smith, 1981).

In 1914 Brucella suis was isolated in the U.S.A. from the placenta of an aborting sow, and A.V. Hardy and his colleagues defined the disease in man as seen in Lowa (Smith, 1981).

Bothwell and Williamson (1962), suggested the use of the term (Brucellosis) in preference to undulant fever.

DEFINITION

Brucellosis is a febrile illness transmitted to man from animal reservoirs and caused by different species of the Brucella group of organisms. It is characterized by a series of febrile attacks accompanied by sweating muscular pains, arthritis, and often, an enlarged spleen (Strickland, 1984).

Etiology:

The genus brucella is considered to contain 6 species of bacteria:

Brucella melitensis, Brucella abortus, Brucella suis, Brucella neotomae, Brucella ovis and Brucella canis.

Brucella melitensis typically causes brucellosis of sheep and goats but also causes active disease in cattle and is a most important zoonosis in man. There are 3 biotype of Brucella melitensis differ only in their behaviour with monospecific sera (Alton et al., 1975).

Brucella abortus the cause of contagious abortion in cattle has 9 biotypes differing from one another in biochemical and serological reactions and troublesome human infections occur quite frequently.

Brucella suis has 4 biotype the first 3 mainly pathogens of pigs, though biotype 2 the European hare is involved in the epidemiology. Biotype 4 causes brucellosis in reindeer. Brucella suis is highly pathogenic for man (Alton et al., 1975).

All three types grow intracellularly (Smith, 1981). Brucella neotomae was isolated from the desert wood rat (Neotoma lepida) an animal of western regions of the USA. The importance of Br. neotoma as a pathogen is unknown.

Br.ovis causes the widespread disease known on as ram epididymitis, (disease of sheep) which of great economic importance in most of the major sheep raising area of the world. (Alton et al., 1975).

Brucella canis causes severe brucellosis infections in dogs no infections of other species except a few cases in man (Alton et al., 1975).

The first 4 species brucella melitensis, brucella abortus, brucella suis, brucella neotomae, occur usually in smooth forms, where brucella ovis and brucella canis existed as rough forms (Moreno et al., 1984).

Brucella organisms are gram negative bacilli that are mostly so short as to appear more like cocci "cocco-bacilli" about 0.4 micrometer in diameter. They occur singly and in groups and are non-motile, non capsulated and non spore forming and they are aerobic. However brucella abortus unable to grow without the addition of five to ten percent carbon dioxide to the atmosphere (Coghlan and Longmore, 1973).

Solid media are preferred for the insolation of brucella organisms. Some strains of brucella require the presence of serum in the medium of their growth (Alton et al., 1975). A selective media may be prepared by addition to the preferred basal medium the antibiotics

suggested by Kuzdas and Morse (1953). Addition of the dye ethyl vilot (Renoux, 1954). the optimum temperature is 37°C. The colonies become visible after the cultures have been incubated for 3 days when the colonies are round with smooth margins and 2-4 mm in diameter, translucent and of a pale honey colour. When viewed from above the colony is convex and pearly white (Alton et al., 1975).

Perhapse the most widely used culture method has been the double broth-agar medium of castaneda (Castaneda, 1947).