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BRUCELLOSIS

(Undulant Fever)

by

Dr. James H. Steele
Food and Agriculture Organization Consultant*

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* Chief, Veterinary Public Health Section, Epidemiology Branch, Communicable Disease Centre, Public Health Service, United States Department of Public Health, Education and Welfare, Atlanta, Georgia

BRUCELLOSIS
(Undulant Fever)

Brucellosis is a disease of antiquity if one can accept the findings of Greek and Roman physicians. They described fevers which undulated and persisted for many months. These fevers were especially common among shepherds and those who attended the goats and sheep flocks, and left those affected with little strength with various manifestations.

The disease even today has many variations and the signs and symptoms are such that it is difficult to diagnose unless one has previous experience and a competent laboratory to rely upon. In man the disease is described as a systemic infection with an acute although often an insidious onset with intermittent or irregular fever, sometimes continuous for many days. Concurrently the patient will often suffer from headache, weakness, chills, joint pains and generalized aching, and often profuse night sweating occurs. The disease may be peracute and not recognized unless a post-mortem is performed and tissues examined bacteriologically. These instances are rare but have been reported among rural residents. Acute disease is probably the most commonly diagnosed form of the infection in man. In these cases the blood either yields a Brucella or reveals a rising agglutination titer. A paired blood serum which demonstrates a rising agglutination titer which remains high, is almost conclusive evidence of brucellosis. Naturally the isolation of the Brucella from the blood or any other tissues is confirmatory. The subacute disease may vary in its manifestation according to the site of localization. It has been stated by competent clinicians that brucellosis is the great imitator and can affect any part of the body. Human infections have been described that localized in the oral cavity involving the dental alveoli, tonsils or parotid glands. The thorax has been commonly involved with lesions in the lungs,heart and mediastinal lymph nodes. Heart lesions are rare; they mainly involve the pericardium. The peritoneal cavity is more frequently affected than any other area. Here the spleen or liver may have a localized infection which persists for long periods. Frequently the mesenteric lymph nodes may be the site of disease and occasionally the kidneys. Fortunately, in humans

the reproductive organs are seldom affected although abortions or sterility may follow an infection in women, or sterility or orchitis in men. Acute infections may also involve the skeletal structure causing spondylitis or osteomyelitis, the musculature with severe myositis leading to degeneration and atrophy.

Chronic or subchronic disease is frequently a sequellae to the above conditions. The persistence of acute conditions which lead to the latter stage is well recognized in regions where brucellosis is widespread. One of the characteristic signs of the chronic or transitional stage is depression and loss of confidence that anyone can help the patient. Lassitude is commonplace.

An allergic state or condition is often encountered among persons who have had a previous infection. This is especially true of veterinarians, animal handlers, butchers and those handling products which may contain brucella whether viable or inert. In these cases patients have been sensitized earlier due to infection or disease, and when they encountered the bacterial agent whether dead or alive have an allergic response which simulates an acute infection. The signs and symptoms associated with an allergic response subside as soon as the patient is removed from the contaminated environment. This is especially true of farmers or veterinarians, or if patient is no longer consuming food products containing brucella organisms. Such instances are rare as the disease disappears in the animals and the agent is no longer present in milk, dairy products or meat and meat products.

The causal agents of brucellosis in the United States today are Brucella abortus and Br. suis, occasionally Br. melitensis is encountered. Formerly Br. abortus, the bacteria associated with bovine abortion, was the most common cause of human disease, but with the successful control of bovine brucellosis, swine have become the principal reservoir of disease for man. Outside the United States brucellosis is a major problem in nearly every country. Mexico estimates that more than 25,000 human cases occur annually. Most of these are due to the goat type of infection caused by Br. melitensis. There is also some bovine and swine disease which can be transmitted to man. All through South America the disease is encountered in man and animals. The disease is widespread in the Mediterranean

countries, especially Spain, southern France, Italy, Malta, Jugoslavia, Greece and northern Africa. Russia admits to having a sizeable problem in sheep and goats, and less so in cattle and swine. The Russians are the only country which practises human immunization with brucella vaccine. They clain to vaccinate more than 4,000,000 people annually. Brucellosis has also been reported across Asia, in Australia and New Zealand as well as Africa below the Sahara. The only countries free of the disease are those of northern Europe; Sweden, Finland, Norway, Denmark and Holland.

The United States has had a national eradication programme which now covers more than 75% of the country. Thirty-nine states and 80% of the counties are now described as having bovine brucellosis under control. The target date for bringing all the states up to this point is 1965. The states having the most difficulty in meeting the criteria of having the disease under control are those with extensive range cattle operations where it is difficult to round up the cattle for testing and removal of reactor animals. Animals that have a blood agglutination titer are considered infected if the titer is 1:100 or higher. The eventual goal is the eradication of all brucellosis in all animals in the United States. A swine eradication programme is now under way in thirty-nine states and should move along rapidly. The goat problem is small and exists principally among the mohair goats of west Texas. The target date of a brucella free country is 1975. Human brucellosis is declining so rapidly that the disease will disappear in man in the next decade except for relapses and imported cases. As recently as 1947 it was estimated that more than 12,000 cases occurred annually. Huddleson, a world authority, thought that this was a low estimate and stated that 40 - 50,000 cases was a more realistic figure. In 1962 slightly over 400 human cases were reported, and in 1963 under 400. Most human infection occurs in the states with the largest animal populations - Iowa, Illinois, Texas and California.

Farmers have the highest rate of infection except for veterinarians who handle diseased animals. Packing-house workers are second to the farmers. Most infection in these two groups are of swine origin. Sporadic cases are encountered among persons with family cows which are overlooked and not tested in state programmes. Milk and its

derivatives consumed raw from infected animals are the cause of the few remaining cases in this category. There are always a few cases in which the source of disease is not ascertained. Accidental infection is seen among veterinarians and their assistants who may inject themselves with the bovine (strain 19) vaccine accidentally. Similar accidents may occur in the laboratory and it is thought that the Brucella may be airborne in laboratories and in plants handling diseased animals.

The diagnosis of human brucellosis will be increasingly difficult in the future with the widespread use of antibiotics which arrest the multiplication of the Brucella and the development of recognizable titers. In these cases only a history of working with diseased animals will provide a clue to a possible diagnosis of brucellosis.

The treatment of brucellosis is generally with the tetracycline antibiotics except in areas where these drugs are not available in quantity. These antibiotics usually are quite effective, terminating fever and symptoms within days, except in unusual cases involving many parts of the body. Relapses are frequent and for this reason patients should be watched for some weeks after their apparent recovery. As pointed out earlier they should avoid contact with diseased animals, contaminated environments and food products of animal origin, so as not to become reinfected or have an allergic response.