

EPIDEMIOLOGICAL STUDY OF ANTHRAX AND BRUCELLOSIS IN GJIROKASTRA DISTRICT

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Abstract

Background. Anthrax is primarily zoonotic. There are no reports of direct human-to-human transmission that exist in the literature. Exposure to *Bacillus anthracis* may occur by contact with animals or animal products. Military personnel and civilians may become exposed in biologic warfare situations. Brucellosis is a zoonotic infection caused by the bacterial genus *Brucella*. The bacteria are transmitted from animals to humans by ingestion through infected food products, direct contact with an infected animal, or inhalation of aerosols. The disease is old and is known by various names, including Mediterranean fever, Malta fever, gastric remittent fever, and undulant fever. Humans are accidental hosts, but brucellosis continues to be a major public health concern worldwide and is the most common zoonotic infection. *Aim and the objective of the study:* To develop and evaluate the patient cases in the southern region of Albania (Gjirokastra District). *Methods:* Based on the information gathered from main register of the Gjirokastra’s regional hospital, in years 2011-2013 there were 106 cases diagnosed with Brucellosis and 31 with Anthrax. These also include cases from Permet and Tepelena. These records are compared in order to check the progression of these diseases in our district. *Results:* The study shows that both diseases have decreased but the results are more significant for Anthrax. Cases with Brucellosis continued to have the same incidence despite of all the measures that have been taken from the Directory of Public Health. Two cases with Brucellosis advanced at chronic phase of this disease. Brucellosis at rural areas of Tepelena and Gjirokastra was persistent, but the number of the patients is reduced. Anthrax is manifested only in cutaneous form without any cases with oropharyngeal or intestinal forms. In the most common cutaneous form of anthrax, spores inoculate a host through skin lacerations, abrasions, or biting flies. This form most commonly affects the exposed areas of the upper extremities and less the head and neck. During the year, Brucellosis has had the same prevalence. Meanwhile Anthrax is more common from June to September. Farming is the primary industry in most rural areas. Most people live or work on farms or ranches but they often are irresponsible and do not care for their health.

Conclusion: We should emphasise the work of Public Health specialists towards screening and prevention of these diseases.

Keywords: *Brucellosis, Anthrax, evaluate, prevalence.*

Introduction

Anthrax is an acute infective disease especially of animals, but it may be spread even on people even on people when these have close contact with the sick animals, with their products or when being nipped by hemofag insects. There are two kind of this. The first and more general is cutaneous form and is characterised by necro-hemoragic ulceration and the inner form (pulmonary and gastrointestinal). It's sometimes aggravated to sepsis. It's a professional disease because we can mostly find it in shepherds, vets etc. It's spread with the contact with the sick animals or through aerogene ways through aerosols which can carry anthrax spores. Dermal, primary inhalational, and intestinal anthrax are differentiated based on the pathogen's portal of entry. In dermal anthrax, which accounts for 90–95% of human B. anthraxes infections) the pathogens enter through injuries in the skin. A local infection focus similar to a carbuncle develops within two to three days. A sepsis with a foudroyant (highly acute) course may then develop from this primary focus. Inhalational anthrax (bioterrorist anthrax), with its unfavourable prognosis, results from inhalation of dust containing the pathogen. Ingestion of contaminated foods can result in intestinal anthrax with vomiting and bloody diarrheas. We can rarely face intestinal form which is caused by the usage of undercooked meat. Anthrax toxin, which enters the skin's wounds, is responsible for this disease. Cutaneous anthrax begins as a pruritic papule, which develops within days into an ulcer with surrounding vesicles and edema and then into an enlarging ulcer with a black eschar. Cutaneous anthrax may cause chronic nonhealing ulcers with an overlying dirtygray membrane, although lesions may also mimic psoriasis, eczema, or impetigo. The incubation period varies from 1-10 days. This disease is spread mainly in hot and humid country of Asia, Africa, Mediterranean including Albania and other country as well. In Albania, it's mostly spread in the south and southeast as: Gjirokastra, Tepelena, Vlora and Korca.

Research

Brucellosis is a zoonosis which is transmitted to the humans through direct or indirect ways from animals and their products. It has four main pathogen species: B.Militensis, B.Abortus, B.Suis and B.Canis. It may be an acute, sub-acute or chronic disease. Exposure to brucellosis elicits both humoral and cell-mediated immune responses. Human brucellosis infections result from direct contact with diseased animals or indirectly by way of contaminated foods, in particular unpasteurized milk and dairy products. The bacteria invade the body either

through the mucosa of the upper intestinal and respiratory tracts or through lesions in the skin, then enter the subserosa or subcutis. From there they are transported by microphages or macrophages, in which they can survive, to the lymph nodes, where a lymphadenitis develops. The pathogens then disseminate from the affected lymph nodes, at first lymphogenously and then hematogenously, finally reaching the liver, spleen, bone marrow, and other RES tissues, in the cells of which they can survive and even multiply. The granulomas typical of intracellular bacteria develop. From these inflammatory foci, the brucella can enter the bloodstream intermittently, each time causing one of the typical febrile episodes, which usually occur in the evening and are accompanied by chills. The incubation period is one to four weeks. *B. melitensis* infections are characterized by more severe clinical symptoms than the other brucellosis. Farmers, shepherds, goatherds, veterinarians, and employees in slaughterhouses and meat-processing plants in endemic areas are occupationally exposed to infection. Family members of individuals involved in animal husbandry may be at risk, although it is often difficult to differentiate food-borne infection from environmental contamination under these circumstances. Laboratory workers who handle cultures or infected samples are also at risk. Responsible for the disease is endotoxin, which cause granulomatous process the same which that form in sarcoidosis and tuberculosis.

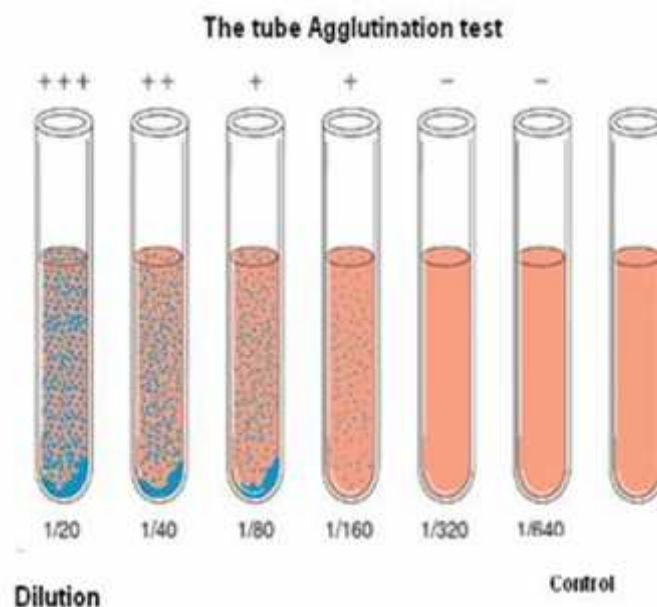
The material and methods

Anthrax: the diagnosed cases with anthrax are in cutaneous form, 31 cases in all and are found during the period January 2011-December 2013. All these cases are found in Regional hospital of Gjirokastra. The diagnose was set based on the discovery of the bacteria in the materials prevailed from wound of skin. This material is treated with blue methylene or Giemsa. The diagnostic procedure involves detection of the pathogen in dermal lesions, sputum, and/or blood cultures using microscopic and culturing methods.

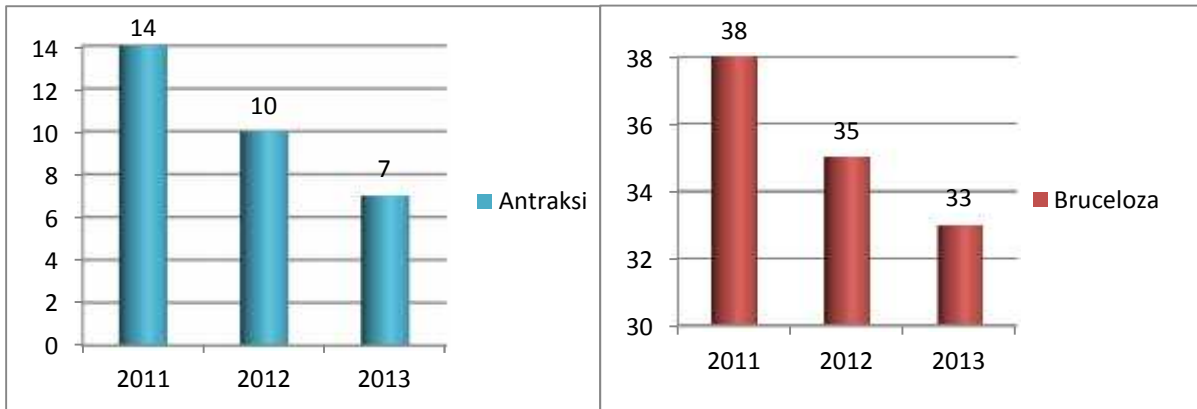


Blue methylene reaction

Brucellosis during the period January 2011-December 2013 is found 106 cases diagnosed in Regional Hospital of Gjirokastra. We were face with acute form mostly. There are two complicated cases with endocarditis evaluated to chronic form of Brucellosis. This is best achieved by isolating the pathogen from blood or biopsies in cultures, which must be incubated for up to four weeks. The laboratory must therefore be informed of the tentative diagnosis. Brucella are identified based on various metabolic properties and the presence of surface antigens, which are detected using a polyvalent Brucella-antiserum in a slide agglutination reaction. Special laboratories are also equipped to differentiate the three Brucella species. Antibody detection is done using the agglutination reaction according to Gruber-Widal in a standardized method. In doubtful cases, the complementbinding reaction and direct Coombs test can be applied to obtain a serological diagnosis. Serologic testing is the most commonly used method of diagnosing brucellosis. Serologic diagnosis is based on titers of antibody. IgM is growing from the first week of the disease, aiming the peak on the third month. These antibodies are high even during the chronic phase of the disease. IgG antibody titer is going higher in the third week, reaching the top in the sixth week up to the eight week and its same during the chronic phase. The dynamic of antibody IgA is the same as IgG. According to Wright agglutination is the main method used. In almost 90% of all cases which are in acute in subacute form. Titers higher than 1:160 in conjunction with a compatible clinical presentation are considered highly suggestive of infection. Titers higher than 1:320 are considered to be more specific, especially in endemic areas. Seroconversion and evolution of the titers can also be used for diagnosis. But there are false positive results after vaccination against cholera.

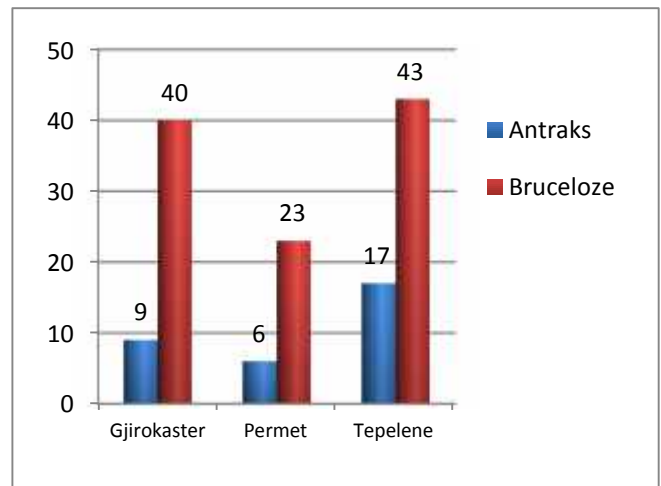
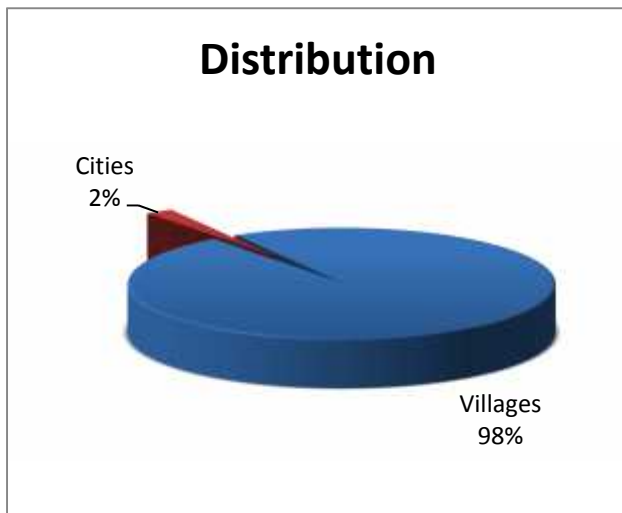


The result: During our survey we came to a conclusion that there was a reduction of the patient's number affected by anthrax. Brucellosis had a small decrease from one year to another.

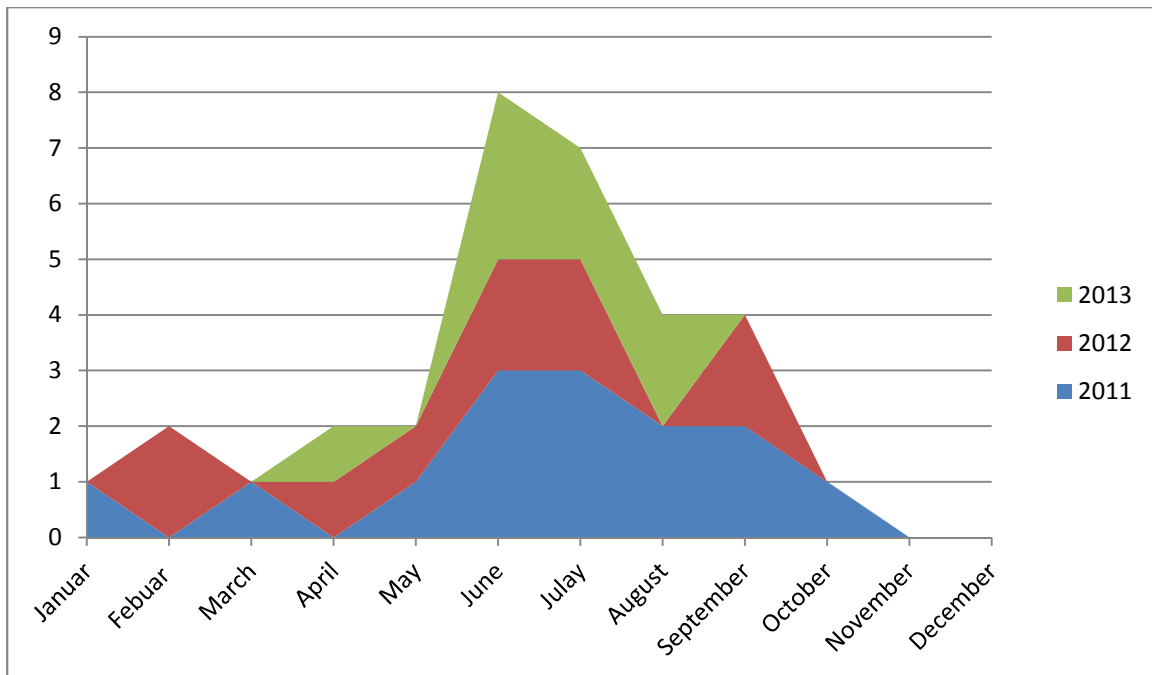


Dissipation of these diseases in the category of population was such that 98% of them belonged to that part of community who lived in rural areas. The dissipation according to cities is given below.

Villages in Tepelena and Gjirokastra are the areas where most of these cases can be found.



It's important to say that: Anthrax simply appears during the period September - October, while brucellosis is dispersed through all year.



Conclusions:

Coming to the end of our statistical survey, we noticed that cases with anthrax have been reducing even coming to half. Cases with brucellosis have been not significantly reducing. We have noticed that there were two complicated cases with endocarditis and have evaluated to chronic phase. In rural areas of Tepelena and Gjirokastra it's still persistent. Other cases with anthrax were only in cutaneous form without showing gastrointestinal manifestation. This has mostly damaged shepherds and sheepman. Brucellosis has the same prevalence all year long while anthrax during June-September. Another factor which influences in quality and condition where these people work is social and economical level. It's important to mention the good job that specialists of Public Health have done in the prevention of the disease. Based on the people's mentality, having no information but Public Health has done utmost to give them the right information.

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