**NOVATEUR PUBLICATIONS**
**JournalNX- A Multidisciplinary Peer Reviewed Journal**
**ISSN No: 2581 - 4230**
**VOLUME 6, ISSUE 11, Nov. -2020**

# PATHOMORPHOLOGY IN SUBCLINICAL BRUCELLOSIS IN GUINEA

Z. B. MAMATOVA,
Samarkand veterinary medicine institute (Uzbekistan), State veterinary medicine institute (Dalaba, Guinea), Samarkand state medical institute (Uzbekistan).

YUSUF SIDIME,
Samarkand veterinary medicine institute (Uzbekistan), State veterinary medicine institute (Dalaba, Guinea), Samarkand state medical institute (Uzbekistan).

FORSTER KHABA,
Samarkand veterinary medicine institute (Uzbekistan), State veterinary medicine institute (Dalaba, Guinea), Samarkand state medical institute (Uzbekistan).

M.K.YULDASHEVA,
Samarkand veterinary medicine institute (Uzbekistan), State veterinary medicine institute (Dalaba, Guinea), Samarkand state medical institute (Uzbekistan).

U. K.YULDASHEV.
Samarkand veterinary medicine institute (Uzbekistan), State veterinary medicine institute (Dalaba, Guinea), Samarkand state medical institute (Uzbekistan).

**ABSTRACT:**

**The article presents data from a comparative study of clinical signs, pathoanatomical changes and data from serological analysis of animals with brucellosis.**

**KEYWORDS. Brucellosis, subclinical course, immune background, abortion, barrenness, hygromas, bursitis, abscesses, meningoencephalitis, seropositivity.**

## INTRODUCTION:

Brucellosis is an acute and chronic infectious disease of many animal species and humans. The variety of forms and brucellosis course still amaze researchers studying the problems of this disease. Changing conditions for keeping animals in the intensification direction and concentrated keeping, feeding animals with feed treated with various chemical and bacterial preparations, changes in the ecological atmosphere conditions lead to a change in the resistance and many other properties of pathogenic microorganisms - causative agents of infectious animal diseases, and, accordingly, the clinical manifestation of the disease and its consequences can also change.

Therefore, we set the of path anatomical signs study in the subclinical course of brucellosis in cattle in a herd with a different course and immune background of this disease as the aim of our research.

## MATERIALS AND RESEARCH METHODS:

As study object, we have selected the regions in Guinea by the fact that for study period in Cancan, among the available livestock (94408) of cattle, the brucellosis incidence was 2, 5% according to the State livestock administration of Guinea.

The survey included 86 cows and 14 bulls. The study was carried out on the basis of the epizootological data analysis, clinical signs, pathological changes and serological data. All studies were carried out using generally accepted methods.

**RESEARCH RESULTS:**

The Republic of Guinea is one of the African countries with an equatorial climate, where humidity reaches 5000 mm per year, with an extensive level of cattle breeding. Livestock is kept loose, grazing on its own all year round in the forests and meadows close to the settlements.

The questionnaire and examination results showed the clinical signs presence of the disease in 29 animals out of 206, which made up 14,07%. For our further research, we selected 100 animals (86 cows, 14 bulls), including 29 heads, with obvious brucellosis symptoms (abortion, barrenness, hygroma) and took blood serum from them for serological studies. After that, all 100 head of cattle were subjected to slaughter and pathoanatomical examination.

Table 1. The results of animals' clinical examination and animal owners questionnaires.

| | Number of examined animals | Number of animals with clinical signs | Observed signs of brucellosis | | |
|---|---|---|---|---|---|
| | | | Abortion | Barrenness | Hygroma |
| 1 | 206 | 29 | 17 | 5 | 2 |

The comparative analysis of the observed clinical signs, pathoanatomical changes and serological data results are presented in Table 2. The table shows that in 12 recently (from 3 to 17 days) aborted animals, the uterus was enlarged up to 1.5 times, its walls thickened. The uterus carbuncles in each abortion case were enlarged, with hemorrhages and did not separate from the membranes. In the other 5 cows, a slight increase in the uterus and a slight thickening of the walls were noted, which is explained by the pathology remoteness and the acute transition process to the subclinical form, since these animals showed seropositivity. Among animals with a clinical picture of the disease, 14 positively reacted serologically.

Table 2. A comparative analysis of clinical signs, pathoanatomical changes and serological data results

| - | Pathological changes | Number of animals with clinical signs (29) | Number of animals serologically responding (58) | Number of animals with both clinical signs and serologically responding (71) | Number of animals with no clinical signs and no serological response (29) | The number of animals who has brucellosis culture was isolated in the pathological material |
|---|---|---|---|---|---|---|
| 1 | In the uterus | 12+5 | 16+3 | 14 | - | 33 |
| 2 | In the liver | 1 | 11 | 11 | 1 | 24 |
| 3 | Abscesses | 2 | - | 2 | - | 4 |
| 4 | Fluid in joints | 2 | 2 | - | - | 4 |
| 5 | Pus in the joints | 1 | 1 | - | - | 1 |
| 6 | Scrotal necrosis | - | 1 | - | - | 1 |
| 7 | Pustules in the seed appendages | - | 1 | - | - | - |
| 8 | Meningoencephalitis | - | - | - | 2 | 2 |
| 9 | In the lymph nodes | 17 | - | - | 4 | 15 |
| | Total | 23 | 52 | 27 | 7 | 37 |

In 2 animals, brucellosis of which manifested itself as bursitis and hygromas, a slightly yellowish transparent liquid, a small amount of fibrin (1 animal), and pus (1 animal) were found in them. A large number of plasma cells were noted on the mucous membrane, and leukocytes in case of purulent bursitis.

From 58 cows that reacted serologically but clinically had no disease signs, 16 had a normal-sized uterus without inflammation signs, however, histosections revealed nodules of proliferative reticuloendothelial cells, sclerotic changes and fibroblasts proliferation; 11 animals in the liver - granulomas from lymphoid elements and histiocytes; in 17 out of 58 animals in the lymph nodes, spleen, the cellular elements transformation of lymphocytes into plasma was observed.

In the uterine cavity of 3 cows that did not have disease clinical signs, but reacted positively, delayed afterbirth was found in a grayish, in 1 case brown, turbid liquid.

In one bull that did not have clinical signs of the disease, however, reacted positively serologically during a pathological autopsy, it was noted the scrotal membrane fusion with necrosis foci containing dry, dense masses of yellowish color. In the seminal adnexa it was observed partial necrosis of the tubular epithelium, the 3 abscesses presence, encapsulated 2 nodules and diffuse growth of connective tissue. In histological sections prepared from these organs, were observed layering loss, degeneration, the epithelium disintegration of the seminiferous tubules and leukocytes infiltration.

In addition, in 2 animals, partial brain inflammation and its membranes (meningoencephalitis), the spinal cord membranes (cerebrospinal meningitis), and its substance (poliomyelitis), the nerve nodes lesions and spinal nerves roots (ganglioradiculitis) and the somatic and vegetative systems nerves (poliomyelitis) with a degeneration predominance, although externally and serologically this was not revealed.

In 2 cases, small abscesses were noted under the skin in the joints area of the fore and hind limbs, in 1 case - in the internal organs (liver) and inguinal lymph nodes.

From the data presented in Table 2, it follows that characteristic pathoanatomical changes do not always "accompany" the diagnosis based on abortion and infertility (23 out of 29), as well as seropositivity in Wright's reactions and binding a compliment (52 out of 58). At the same time, the characteristic pathoanatomical signs of brucellosis, such as meningoencephalitis, abscesses under the skin and in the liver, may accompany the subclinical course of the disease, in which neither external signs of the disease nor serological activity are recorded in the animal (7).

According to these studies results, there is a 100% correlation between the bacteriological examination results (37 cultures) either with the serological examination data (23 animals) or with the clinical methods data (29). A brucellosis culture was isolated from 29 animals with both clinical signs and serological positivity, and the diagnosis confirmation of brucellosis in the clinic and serological activity absence was observed in 7 subclinical course cases of the disease (100%), which indicates the importance of bacteriological analysis in this disease in conditions of loose keeping of animals.

**CONCLUSIONS:**

- The clinical manifestation of brucellosis correlated with pathological and anatomical changes and serological indicators in 23 cases out of 29 (79%).
- The pathoanatomical manifestation of the disease correlated with the serological studies rates in 52 cases out of 58 (89.5%).

- The pathoanatomical changes of brucellosis in cattle were expressed in 7 cases, but were not confirmed by serological studies and clinical signs, in a 100% correlation with bacteriological analysis data, which may be the subclinical course indicator of brucellosis in animals herd with different immune background against this disease.

**REFERENCES:**

1) Kerem E, Diav O, Navon P, Branski D. Pleural fluid characteristics in pulmonary brucellosis. Thorax. 1994 Jan; 49(1):89–90. https://doi.org/10.1136/thx.49.1.89 PMID: 8153949
2) Byndloss MX, Tsolis RM. Brucella spp. Virulence factors and immunity. Annu Rev AnimBiosci. 2016; 4: 111–127. https://doi.org/10.1146/annurev-animal-021815-111326 PMID: 26734887
3) Ko J, Splitter GA. Molecular host-pathogen interaction in brucellosis: current understanding and future approaches to vaccine development for mice and humans. Clin Microbiol Rev. 2003 Jan; 16(1):65–78. https://doi.org/10.1128/CMR.16.1.65-78. 2003 PMID: 12525425
4) de Figueiredo P, Ficht TA, Rice-Ficht A, Rossetti CA, Adams LG. Pathogenesis and immunobiology of brucellosis review of Brucella–host interactions. Am J Pathol. 2015 Jun; 185(6):1505–17. https://doi. org/10.1016/j.ajpath.2015.03.003 PMID: 25892682
5) Challoner KR, Riley KB, Larsen RA. Brucella meningitis. Am J Emerg Med. 1990; 8: 40–42. https://doi. org/10.1016/0735-6757(90)90293-9 PMID: 2293833
6) Demiraslan H, Metan G, Mese EA, Yildiz O, Aygen B, Sumerkan B, et al. Neurobrucellosis: an evaluation of a rare presentation of brucellosis from a tertiary care centre in Central Anatolia, Turkey. Trop Doct. 2009 Oct; 39(4):233–5. https://doi.org/10.1258/td.2009.080430 PMID: 19762578
7) McDermott J, Grace D, Zinsstag J. Economics of brucellosis impact and control in low-income countries. Rev Sci Tech. 2013 Apr; 32(1):249–61. https://doi.org/10.20506/rst.32.1.2197 PMID: 23837382
8) Golding B, Scott DE, Scharf O, Huang LY. Immunity and protection against Brucella abortus. Microbes Infect. 2001 Jan; 3(1):43–8. https://doi.org/10.1016/s1286-4579(00)01350-2 PMID: 11226853
9) SvetićA, Jian YC, Lu P, Finkelman FD, Gause WC. Brucella abortus induces a novel cytokine gene expression pattern characterized by elevated IL-10 and IFN-gamma in CD4+ T cells. Int Immunol. 1993 Aug; 5(8):877–83. https:// doi.org/ 10.1093/intimm/5.8.877 PMID: 8104472
10) Fernandes DM, Jiang X, Jung JH, Baldwin CL. Comparison of T cell cytokines in resistant and susceptible mice infected with virulent Brucella abortus strain 2308. FEMS Immunol Med Microbiol. 1996 Dec 31; 16(3–4):193–203. https:// doi.org/ 10.1111/j.1574-695X.1996.tb00136.x PMID: 9116636
11) Vitry MA, De Trez C, Goriely S, Dumoutier L, Akira S, Ryffel B, et al. Crucial role of gamma interferonproducing CD4+ Th1 cells but dispensable function of CD8+ T cell, B cell, Th2, and Th17 responses in the control of Brucella melitensis infection in mice. Infect Immun. 2012 Dec; 80(12):4271–80. https:// doi.org/10.1128/IAI.00761-12 PMID: 23006848
12) Vitry MA, HanotMambres D, De Trez C, Akira S, Ryffel B, Letesson JJ, et al. Humoral immunity and CD4+ Th1 cells are both necessary for a fully protective immune response upon secondary infection with Brucella melitensis. J Immunol. 2014 Apr 15; 192(8):3740–52. https: //doi. org/

10.4049/jimmunol. 1302561 PMID: 24646742

13) Oliveira SC, Harms JS, Banai M, Splitter GA. Recombinant Brucella abortus proteins that induce proliferation and gamma-interferon secretion by CD4+ T cells from Brucella-vaccinated mice and delayedtype hypersensitivity in sensitized guinea pigs. Cell Immunol. 1996 Sep 15; 172(2):262–8. https://doi. org/10.1006/cimm.1996.0241 PMID: 8964089
14) Zhan Y, Kelso A, Cheers C. Differential activation of Brucella-reactive CD4+ T cells by Brucella infection or immunization with antigenic extracts. Infect Immun. 1995 Mar; 63(3):969–75. PMID: 7868269
15) He Y, Vemulapalli R, Zeytun A, Schurig GG. Induction of specific cytotoxic lymphocytes in mice vaccinated with Brucella abortus RB51. Infect Immun. 2001 Sep; 69(9):5502–8. https://doi.org/10.1128/IAI. 69.9.5502-5508.2001 PMID: 11500423
16) Mackay LK, Carbone FR. CD4 helpers put tissue-resident memory cells in their place. Immunity. 2014; 41: 514–515. https://doi.org/10.1016/j.immuni.2014.09.018 PMID: 25367567
17) Mucosal CD8+ TRM cells protect against virulent Brucella challenge
18) PLOS Pathogens | https://doi.org /10.1371/ journal.ppat.1008176 January 17, 2020 31 / 31.