PATHOMORPHOLOGY OF ATYPICAL MYCOBACTERIOSIS OF RABBITS

***O.A.Djuraev**, Ph.D., Senior Researcher,*
Head of the VSRI laboratory.

Annotation: The article highlights the results of scientific research on the pathoanatomical and histological study of experimental rabbits infected with atypical mycobacteria. It has been established that the latter are able to cause rather deep pathological processes in their body. These processes are characterized, in addition to general hemodynamic disorders, by the development of necrotic foci of various sizes in the liver.

***Key words:** atypical mycobacteria, rabbits, autopsy, morphology, histoexamination, histosections, internal organs.*

ПАТОМОРФОЛОГИЯ АТИПИЧНОГО МИКОБАКТЕРИОЗА КРОЛИКОВ

***О.А.Джураев,** к.в.н., с.н.с.,*
зав. лабораторией НИВИ.

Аннотация: В статье освещены результаты научных исследований по патологоанатомическому и гистологическому изучению подопытных кро-ликов, зараженных атипичными микобактериями. Установлено, что послед-ние способны вызывать довольно глубокие патологические процессы в их организме. Эти процессы характеризуются, помимо общих гемодинамичес-ких расстройств, развитием некротических очагов различных размеров в печени.

***Ключевые слова:** атипичные микобактерии, кролики, патвскрытие, морфология, гистоисследование, гистосрезы, внутренние органы.*

ҚУЁНЛАР НОТИПИК МИКОБАКТЕРИОЗИНИНГ ПАТОМОРФОЛОГИЯСИ

***O.A.Djurayev,** v.f.n., katta ilmiy xodim,*
VITI laboratoroya mudiri.

Аннотация: Мақолада туберкулёзнинг нотипик микобактериялари юқтирилган қуёнлар организмининг патологоанатомик ва гистологик текши-ришлар натижалари ёритилган. Тажриба қуёнлари организмида нотипик микобактериялар анча чуқур патологик жараёнлар келтириб чиқариши аниқ-ланган. Мазкур жараёнлар, умумий гемодинамик бузилишлардан ташқари, жигарда турли ўлчамлардаги некроз ўчоқларининг ривожланиши билан ифодаланади.

***Калит сўзлар:** нотипик микобактериялар, қуёнлар, патологоанатомик ёриш, морфология, гистотекшириш, гистокесмалар, ички аъзолар.*

Relevance of the problem. It is known that livestock breeding is of great importance in improving the agricultural production of the republic, the development of which is impossible without reliable protection of animals from various diseases. However, the increase in the production of livestock products is hampered by various infectious diseases, among which tuberculosis occupies a special place. And this problem is becoming even more acute due to the fact that in recent years the purchase and import of imported highly productive precious cattle has sharply increased. In addition to all this, imported animals are very predisposed and susceptible to atypical mycobacteria, and also react positively in allergy tests for tuberculosis. The disease not only causes significant economic damage, but also has great socio-epidemiological significance.

Increasingly, reports are appearing in the scientific literature indicating the identification of a significant number of animals with “nonspecific reactions” during allergy studies. These reactions have been observed in animals infected with so-called atypical mycobacteria. Currently, more than

300 species of atypical mycobacteria are known, the isolation of which has dramatically complicated the problem of eliminating tuberculosis. This is explained by the unreasonable slaughter of highly productive animals and birds that respond positively to the introduction of tuberculin, as well as the imposition of restrictive measures on the farm, household, etc. The import of a large number of cattle to Uzbekistan from neighboring countries and Europe, where atypical mycobacteria are widespread, has further aggravated the task of veterinary specialists. Increasingly, reports are appearing in the scientific literature indicating the identification of a significant number of animals with “nonspecific reactions” during allergy studies. These reactions have been observed in animals infected with so-called atypical mycobacteria. Currently, more than 300 species of atypical mycobacteria are known, the isolation of which has dramatically complicated the problem of eliminating tuberculosis. This is explained by the unreasonable slaughter of highly productive animals and birds that respond positively to the introduction of tuberculin, as well as the imposition of restrictive measures on the farm, household, etc. The import of a large number of cattle to Uzbekistan from neighboring countries and Europe, where atypical mycobacteria are widespread, has further aggravated the task of veterinary specialists.

Material and research methods. In order to study the pathogenic effect on the morphology of internal organs, an experimental intranasal infection was carried out with reference strains of atypical mycobacteria of rabbits, divided into 3 groups (9 animals each). The first and second groups of rabbits were infected, respectively, with a bacterial mass of M.kansasii and M.intracellulare strains at a dose of 5 mg/kg; the third group served as a control and was not infected. In order to study the dynamics of the development of pathological processes, rabbits were subjected to planned slaughter 2, 4 and 6 months after infection, three animals from each group.

At each slaughter, the pathological anatomical picture of the autopsy of all experimental animals was carefully studied. The pathological material obtained from each animal was subjected to appropriate histological processing; after staining with hematoxylin-eosin, all histological sections were examined under a microscope.

Research results. During control slaughter, to study the dynamics of the development of pathological processes in the body of experimental animals, the following changes were established:

1 – group. All rabbits killed 2 months after infection showed congestion of the lungs with small areas of atelectasis and focal pinpoint hemorrhages, as well as multiple necrotic lesions the size of millet grains on the liver with curdled contents.

4 months after the start of the experiments, the liver, spleen and lymph nodes of all rabbits were enlarged and hyperemic, and in two animals there were dense foci of gray necrosis on the lungs. In one rabbit, the entire intestinal tract, especially its thick section, is diffusely affected by necrotic foci of various sizes. The autopsy picture 6 months after infection was characterized by the discovery of numerous foci of necrosis penetrating deep into the liver parenchyma, as well as severe enlargement of the lymph nodes.

2 – group. In animals killed 2 months after infection, the liver is enlarged, on its surface in one rabbit there are lesions with small punctate sizes, and in others there are extensive areas of necrosis with curdled contents, the kidneys and spleen are swollen and stagnant. At slaughter 4 and 6 months after infection, no significant changes were detected in the internal organs.

At all times of slaughter, no pathological changes were found in rabbits of the 3-rd control group at autopsy.

Pathological material taken from all experimental laboratory animals, after appropriate histological processing, cutting and staining, was subjected to a thorough microscopic examination, the results of which are given below.

Thus, morphological changes in rabbits of group 1, killed 2 months after infection, were characterized by hemodynamic disorders in the form of hyperemia, stasis and hemorrhages in the lungs; the presence of small and extensive hemorrhages, granular degeneration, micronecrosis of hepatocytes in the liver and convoluted tubule epithelium in the kidneys; infiltration of lymphoid elements of the connective tissue stroma.

In experimental animals killed 4 months later, serous edema with diapedetic hemorrhages, infiltration of serous-hemorrhagic exudate, desquamation and necrobiosis of alveocytes and bronchial epithelium are noted in the lungs. Venous congestion, depletion of the pulp in lymphocytes, increased hemosiderosis and hemorrhages were found in the spleen. The villi of the small intestine are shortened and deformed; there is no epithelial cover on them. The sinuses of the lymph nodes are dilated and filled with exudate containing reticular cells, lymphoblasts, lymphocytes, single eosinophils and erythrocytes.

In rabbits killed 6 months after the start of the experiments, the liver had multiple foci of necrobiosis and necrosis of hepatocytes, hyalinosis of the walls of the central veins and arteries. Granular dystrophy was established in the kidneys, hyperplasia was developed in the spleen due to the growth of the reticular base, and the number of plasma cells was increased.

Microscopic studies of histosections from the internal organs of rabbits of group 2, killed 2 months after infection, were distinguished by numerous small foci of necrosis in the liver. Many of them focus on the breakdown of cell nuclei into clumps or their transformation into a homogeneous mass. Necrotic lesions are surrounded by a belt consisting of epithelioid and plasma cells. In the kidneys - dilation and congestion of blood vessels, granular degeneration and necrobiosis of the convoluted tubule epithelium.

Histological studies of the internal organs of experimental animals killed 4 and 6 months after infection did not reveal significant changes. Microscopic studies of histosections from the internal organs of rabbits of group 2, killed 2 months after infection, were distinguished by numerous small foci of necrosis in the liver. Many of them focus on the breakdown of cell nuclei into clumps or their transformation into a homogeneous mass. Necrotic lesions are surrounded by a belt consisting of epithelioid and plasma cells. In the kidneys - dilation and congestion of blood vessels, granular degeneration and necrobiosis of the convoluted tubule epithelium.

Histological studies of the internal organs of experimental animals killed 4 and 6 months after infection did not reveal significant changes.

Conclusion. Thus, the results of pathological and histological studies of experimental rabbits infected with atypical mycobacteria showed that the latter are capable of causing quite profound pathological processes in their body. These processes are characterized, in addition to general hemodynamic disorders, by the development of necrotic foci of various sizes in the liver. At the same time, the dynamics and degree of development of these changes in the structure of the organs of experimental animals are very diverse, but they are more pronounced in experimental rabbits of the first group infected with a strain of atypical mycobacteria M.kansasii.

LIST OF USED LITERATURE:

1. Мамадуллаев, Г., Элмуродов, Б., Джураев, О., Джуракулов, О., & Файзиев, У. (2022). Рифизострепв–новый комбинированный препарат против микобактерий туберкулёза. *in Library*, *22*(2).
2. Джураев, О., & Хушназаров, А. (2023). Порядок и методы патологического обследования сельскохозяйственных животных. *in Library*, *3*(3), 21-25.
3. Джураев, О. (2024). Общее определение патоморфологических изменений при инфекционных болезнях. *in Library*, *1*(1), 28-31.
4. Джураев, О. (2024). Порядок анализа и обобщения результатов патологоанатомического исследования. *in Library*, *1*(1), 25-26.
5. Джураев, О. (2023). Патология сельскохозяйственных животных проверка на краску. *in Library*, *4*(4), 28-29.
6. Джураев, О. А. (2023). РЕЗУЛЬТАТЫ ПАТОМОРФОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ ПО ИСПЫТАНИЮ НОВОГО КОМБИНИРОВАННОГО ПРЕПАРАТА “РИФИЗОСТРЕП”. *Gospodarka i Innowacje.*, *35*, 517-520.

7. Джураев, О. А., & Мамадуллаев, Г. Х. (2023, May). Влияние рифизострепа на морфологию внутренних органов. In *International Conference on Research Identity, Value and Ethics* (pp. 387-391).
8. Джураев, О. (2023). Лабораторные исследования павших сельскохозяйственных животных патологоанатомом после анатомического вскрытия. *in Library*, *4*(4), 23-24.
9. Джураев, О. (2023). Патологические исследования морских свинок с экспериментальным брадзотом. *in Library*, *1*(1), 142-144.
10. Джураев, О., & Исматова, Р. (2023). Влияние атипичных микобактерий на морфологию внутренних органов кроликов. *in Library*, *3*(3), 18-19.
11. Джураев, О., Мамадуллаев, Г., & Файзиев, У. (2023). Испытания IN VIVO нового препарата против туберкулеза животных. *in Library*, *4*(4), 8-12.
12. Джураев, О. (2023). Особенности при патолого-анатомическом обсуждении тела лошадей, птицы, плотоядных и композиционных животных. *in Library*, *3*(3), 18-20.
13. Султанова, И., & Джураев, О. (2022). Методы определения различий и сходства колибактериоза кроликов и сальмонеллеза. *Перспективы развития ветеринарной науки и её роль в обеспечении пищевой безопасности*, *1*(2), 458-461.
14. Уракова, Р., & Джураев, О. (2022). Балиқларнинг лигулёз билан зарарланишидаги ўзгаришлар. *Перспективы развития ветеринарной науки и её роль в обеспечении пищевой безопасности*, *1*(2), 219-223.
15. Dzhuraev, O. A. (2022). PATHOLOGICAL STUDIES OF GUINEA PIGS WITH EXPERIMENTAL BRADZOT. *Innovative Society: Problems, Analysis and Development Prospects (Spain)*, 142-144.
16. Султанова, И., & Джураев, О. (2022). Патологические изменения и результаты гистологического исследования при колибакиллезе кроликов. *in Library*, *22*(1), 21-26.
17. Джураев, О., Мамадуллаев, Г., & Файзиев, У. (2022). Патоморфологические результаты испытания препарата «Рифизострепт» на морских свинках. *in Library*, *22*(2), 62-64.
18. Sultanova, I. Y., & Dzhuraev, O. A. (2022). Pathological anatomical changes and the results of histological examination in rabbit colibacillosis.
19. Уракова, Р. М., Салимов, Х. С., Салимов, И. Х., & Джураев, О. А. (2021). ЗНАЧЕНИЕ ПАТОЛОГОАНАТОМИЧЕСКИХ ИССЛЕДОВАНИЙ В ДИАГНОСТИКЕ БРАДЗОТА ОВЕЦ. *Academic research in educational sciences*, *2*(6), 912-917.
20. Джураев, О., & Мамадуллаев, Г. (2020). Результаты патологоанатомных исследований при экспериментальном туберкулезе с применением препарата «Рифизострепт». *in Library*, *20*(2), 11-12.
21. Джураев, О., Мамадуллаев, Г., & Рузимуродов, М. (1999). Сравнительная эффективность туберкулина ППД и туберкулина SQJ в аллергической диагностике туберкулеза крупного рогатого скота. *in Library*, *1*(1), 110-111.
22. Джураев, О., Мамадуллаев, Г., & Рузимуродов, М. (1999). Сравнительная эффективность ППД-туберкулина и SKJ-туберкулина в аллергодиагностике туберкулеза крупного рогатого скота. *in Library*, *1*(1), 109-111.
23. Джураев, О. А. (1995). Патоморфология атипичного микробактериоза крупного рогатого скота.
24. Джураев, О., & Мамадуллаев, Г. (1994). Изучение эффективности химической вакцины при туберкулёзе птиц. *in Library*, *1*(1), 1-2.
25. Джураев, О. (1994). Патогенность атипичных микобактерий для кроликов. *in Library*, *1*(1), 36-39.
26. Султанова, И., & Джураев, О. А. ҚУЁНЛАР КОЛИБАКТЕРИОЗИНИНГ САЛЬМОНЕЛЛЁЗ КАСАЛЛИГИДАН ФАРҚИ ВА ЎХШАШЛИК ТОМОНЛАРИНИ АНИҚЛАШ УСУЛЛАРИ.
27. Djurayev, O. A. (2024). FUNDAMENTALS OF PATHOLOGOANATOMIC DIAGNOSTICS IN POISONING. *Western European Journal of Modern Experiments and Scientific Methods*, *2*(4), 49-55.
28. Джураев, О. (1999). Выделение атипичных микобактерий из объектов внешней среды в Узбекистане. *in Library*, *1*(1), 2-3.

29. Джураев, О., Мамадуллаев, Г., & Рузимуродов, М. (1999). Сравнительная эффективность Ppd-туберкулина и skj-туберкулина в аллергодиагностике туберкулеза крупного рогатого скота. *in Library*, *1*(1), 4-5.

30. Джураев, О., Элмуродов, Б., & Шокиров, Л. (1996). Гематологические и биохимические изменения, происходящие в организме овец при смешанных инфекционных заболеваниях. *in Library*, *3*(3), 2-3.

31. Джураев, О., & Исматова, Р. (1996). Иммуноморфологические изменения в организме морских свинок, вакцинированных штаммом" н-із". *in Library*, *3*(3), 2-3.

32. Джураев, О. (1996). Патоморфология смешанных инфекционных болезней, протекающих в природных условиях. *in Library*, *3*(3), 2-3.

33. Джураев, О. (1994). Особенности проявления аллергических реакций у телят, инфицированных атипичными микобактериями. *in Library*, *1*(1), 1-2.

34. Джураев, О. (1994). Исследование иммунокомпетентных клеток телят, инфицированных атипичными микобактериями. *in Library*, *1*(1), 1-1.

35. Джураев, О. (1994). Динамика развития иммуноморфологических реакций у овец при вакцинации их вакциной из штамма" невский". *in Library*, *1*(1), 1-1.

36. Джураев, О. (1991). Патологоанатомические изменения у телят, зараженных некоторыми атипичными микобактериями. *in Library*, *1*(1), 1-1.

37. Султанова, И., & Джураев, О. А. ҚУЁНЛАР КОЛИБАКТЕРИОЗИНИНГ САЛЬМОНЕЛЛЁЗ КАСАЛЛИГИДАН ФАРҚИ ВА ЎХШАШЛИК ТОМОНЛАРИНИ АНИҚЛАШ УСУЛЛАРИ.

38. Саидов, А. А., Рузимуродов, М. А., Абдалимов, С. Х., & Каюмов, Э. А. (2022). Результаты испытания отечественных наборов ифа для диагностики бруцеллёза животных. *Journal of new century innovations*, *14*(2), 73-78.

39. Саидов, А., Абдалимов, С., & Рузимуродов, М. (2022). Разработка реагентов для иммуноферментного анализа (elisa) используемых при диагностике бруцеллёза и других инфекционных болезней. *Перспективы развития ветеринарной науки и её роль в обеспечении пищевой безопасности*, *1*(2), 183-186.

40. Рузимуродов, М., & Жалилов, Ж. (2022). Экономический ущерб, наносимый заболеванием бруцеллез по показателям продуктивности животных. *in Library*, *22*(1), 467-469.

41. Рузимуродов, М., & Оккиев, С. (2022). К вопросу производства ветеринарных биологических препаратов. *Перспективы развития ветеринарной науки и её роль в обеспечении пищевой безопасности*, *1*(1), 16-19.

42. Рузимуродов, М., & Улугмурадов, А. (2022). Совершенствование средств и методов аллергической диагностики бруцеллеза животных. *in Library*, *22*(2), 8-10.

43. Мамадуллаев, Г. Х., Рузимуродов, М. А., Саидов, А. А., Файзиев, У. М., Журакулов, О. К., & Арзимурадова, Р. Э. (2021). ВИТИ-БИОВЕТ ТУБЕРКУЛИН ДИАГНОСТИКУМИНИНГ МАХСУС ФАОЛЛИГИ. *ВЕСТНИК ВЕТЕРИНАРИИ И ЖИВОТНОВОДСТВА*, *1*(2).

44. Улугмурадов, А. Д., & Рузимурадов, М. А. (2021). Результаты производственных испытаний единых бруцеллёзных антигенов для ра и рск, изготовленных из разных штаммов бруцелл. *Academic research in educational sciences*, *2*(6), 562-571.

45. Ulugmuradov, A. D., Saidov, A. A., & Ruzimurodov, M. A. (2020, August). Improvement of allergic diagnostics of animals under the conditions of Uzbekistan. In *IOP Conference Series: Earth and Environmental Science* (Vol. 548, No. 2, p. 022073). IOP Publishing.

46. Ulugmuradov, A. D., & Uzimurodov, M. A. (2020, August). Some issues related to the study of brucellosis in Uzbekistan. In *IOP Conference Series: Earth and Environmental Science* (Vol. 548, No. 2, p. 022070). IOP Publishing.

47. Рузимуродов, М., Саидов, А., & Улуғмурадов, А. (2020). Информация о бруцеллезе животных. *in Library*, *20*(3), 180-184.

48. Рузимуродов, М., Улугмурадов, А., & Саидов, А. (2020). Совершенствование аллергодиагностики животных при условия Узбекистана. *in Library*, *20*(3), 1-5.