

MUCOROMYCOSIS IN LAMB

By:

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INTRODUCTION :

Mucoromycosis is a fungal disease which has been described in man and in a wide variety of animals.

The mucoracea, the causal agent of the disease, has been presented by different names in the nomenclatures of the parasitic fungi, but, the *Absidia corymbifera* has been accepted by mycologists.

Mycotic placentitis in cow which causes abortion and gastric ulcers of pig, piglet and calf, have been described by different authors (2,3 & 4).

The fungi will cause a fatal renal infection in mice and rabbits when injected intravenously (1 & 7).

The object of this communication is, to report a case of mucoromycosis in lamb, which is described for the first time in Iran.

THE SUBJECT :

It was about three months old sick lamb submitted from Alah-Abad State Farm to Dept. of Pathology of Razi State Institute for diagnosis. The State Farm is located in Ghazwin area, 100 Km. far from Razi Institute.

CLINICAL SIGNS :

The lamb was sick for three weeks. Any attempt for treatment was useless and it did not show any response to admitted antibiotics and other medicines.

The lumbo-sacral region was in arc position and palpation of the kidneys region was painful.

The body temperature had been raised previously up to 41°C. but, at the time it measured 39.5°C. before necropsy performance.

No other significant symptoms was seen.

GROSS PATHOLOGICAL FINDINGS :

The lamb was slaughtered and post-mortem examination performed immediately.

The rumen showed large ulceration which underlying with thick grey fibrinous exudate, that found in ventral sac. It was difficult to detach the fibrinous exudate overlying the ulcer. The ulcer measured approximately 2×1.5 cm., which extended deeply to serosa where there was focal fibrino-hemorrhagic exudate resulting adhesion to the neighbour organs. The ulcer was irregular in shape with thickened, raised and sharply demarcated margine. There was blood tinged inflammatory materials at beneath and margine of the lesion.

The kidneys, were greatly enlarged, twice as normal size. The surface of kidneys were uneven and mottled with patchy raised redish-black discolored area, (Fig. 1), which scattered throughout. The lesions were bulging black-red in color with irregular distinct margination. They varied in size from few mm. to 1.5 Cm; in diameter. The lesions on cut surface were wedge-shaped contracted zones, which extended from capsul towards the pelvic region of the kidneys (Fig. 2).

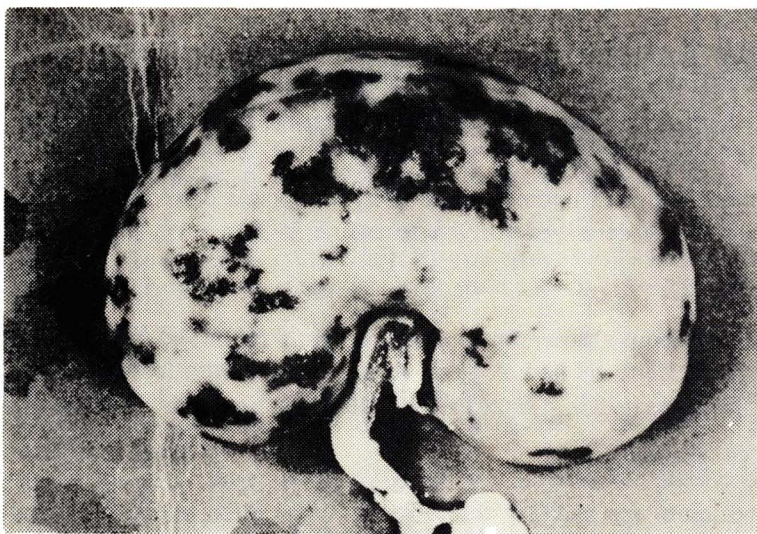


Fig. 1. Note enlarged kidney with mottled surface.

Besides of the lesions in rumen and kidneys, there was no gross change in other organs.

Tissues from lesioned organs collected in 10% formaline solution. The tissue processed by paraffine embaded method and were cut in 5 microns in thickness, three sets of histo-slides from each paraffine blocks was prepared, that, one set stained with H.E. and the rest were stained with PAS and GMS methods.

HISTOPATHOLOGICAL FINDINGS :

Following changes were observed in the rumen and kidneys.

A) – Rumen : The histo-slides prepared from the lesion of the rumen showed marked ulceration with extensive hemorrhages and necrosis. Necrosis extended very deeply down to serosa. The vessels were engorged and filled with RBC. Some of the vessels were filled with thrombus materials, in the wall and beneath of the ulcerated area. Branches of non septate fungus were detected

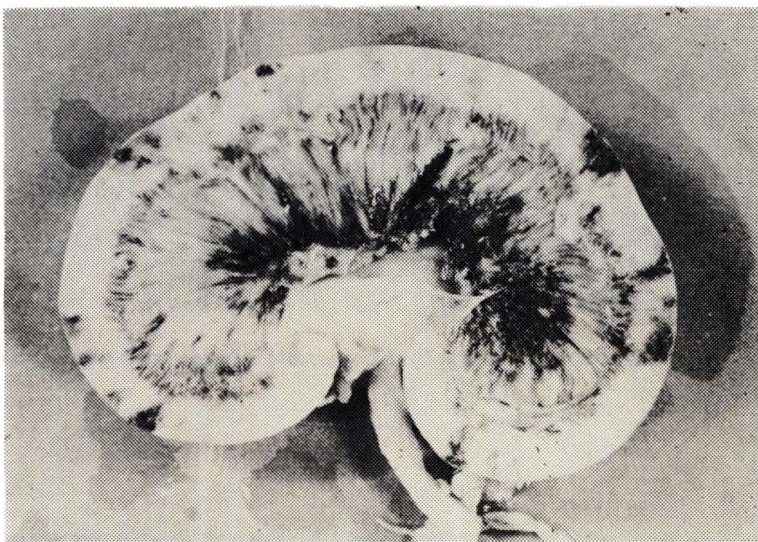


Fig. 2. A cut surface of the kidney. Note the lesions are extended from surface to the pelvic region

within the vessels. Necrotic process, fibrino-purulent materials, with branches of non septated hyphae were collected in the ulcerative region.

B) – Kidneys : The vessels were severely engorged and hyperemic, there were some focal hemorrhages which scattered in corticomedullary junction and various part of medula region. Some of the vessels were filled with branches of non septated fungi.

Wedge-shaped streaks which elongated from subcapsular region towards pelvic area were presented. There were heavy involvement of glomeruli and urinary tubules. Most of the infected glomeruli were showing destruction of capillaries and enlargement of Bowmann's capsul which filled with inflammatory cells containing hyphae segments while some of them contained proteinous materials (Fig. 3 & 4).

Urinary tubules including proximal and distal convoluted and collecting tubules were severely infected. They were greatly dilated contained inflam-

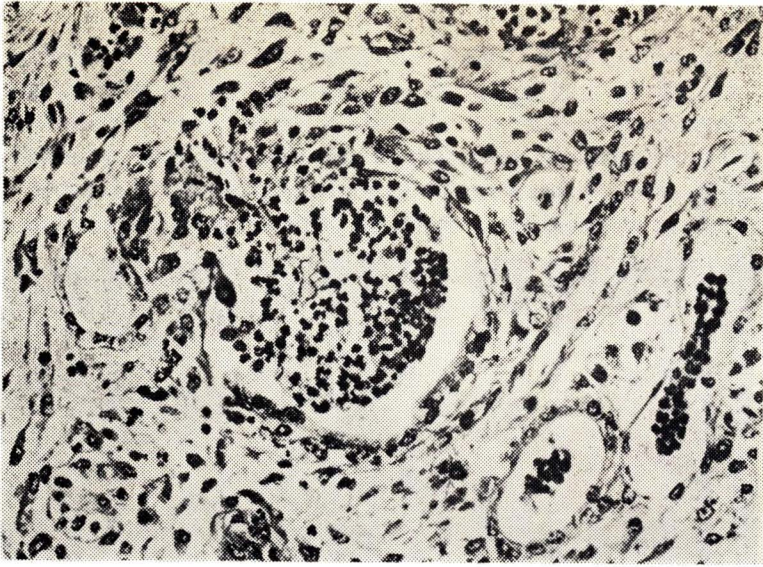


Fig. 3. Note inflammatory cells and hyphae segments in an infected glomerule. X 300

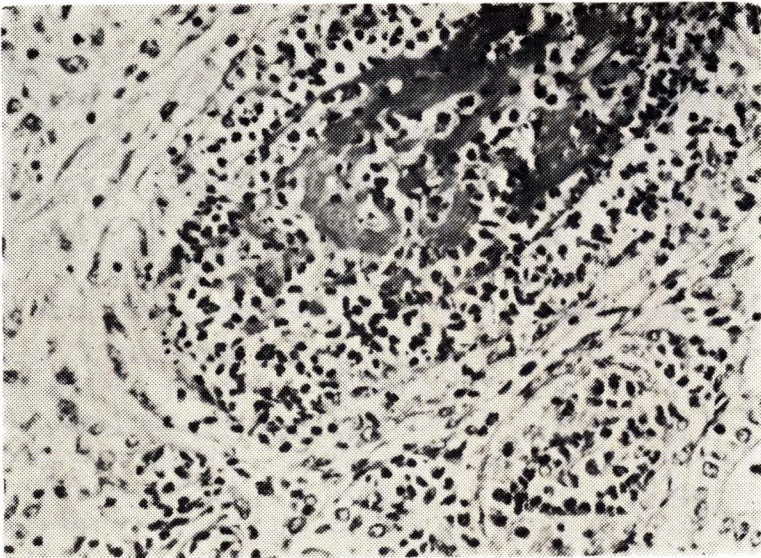


Fig. 4. Proteinous cast in glomerule and hyphae segments in glomerule and capillary could be noted. X 300

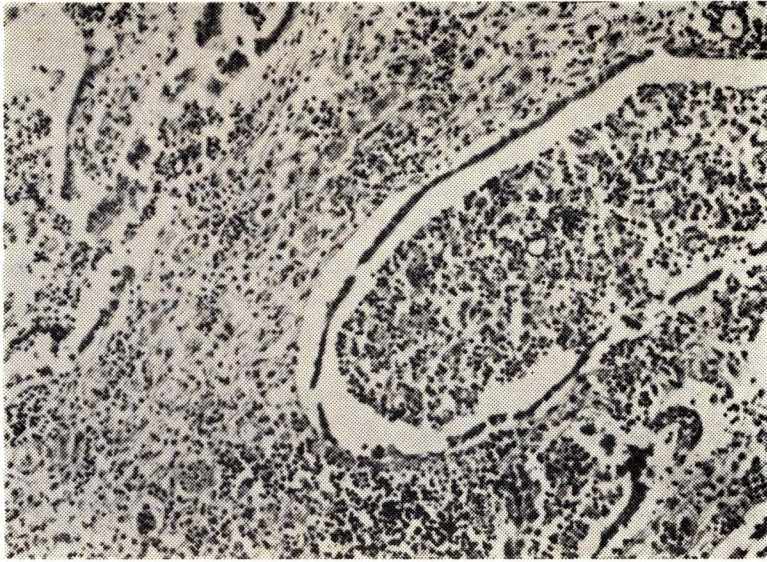


Fig. 5. Note fungal hyphae segments scattered throughout the urinary tubules. X 50

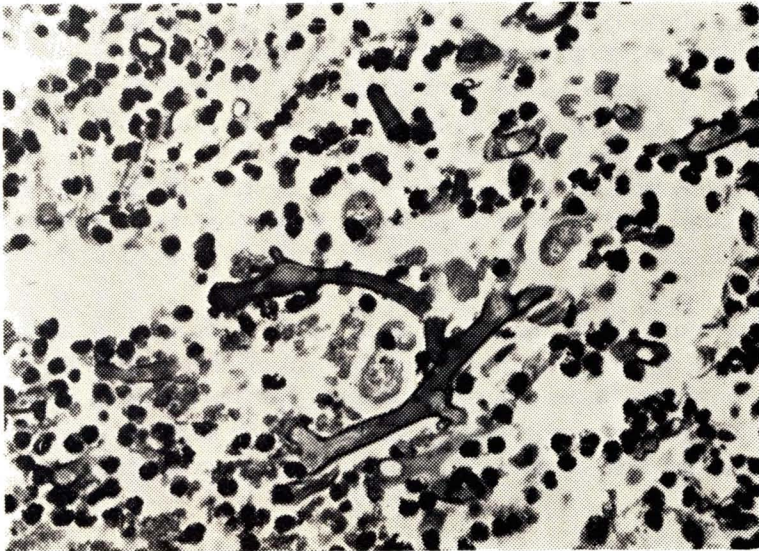


Fig. 6. Note branches of non septated hyphae with Bizarre bulbous enlargement. X

matory processes predominantly neutrophiles. Fungal hyphae segments were scattered through the infected area, and consisted of mycelium made up of branching non septated hyphae which often showed Bizarre bulbous enlargement (Fig. 5 & 6). The fungus was morphologically comparable with mucoracea.

There was a marked fibrous connective tissue proliferation in between the infected tubules and some of Bowmann's capsul.

The viable part of the kidney which layed between the straeaks also showed an interesting lesion. Bowmann's capsuls were distended and filled with proteineous materials. Some of them were proliferated and were thickned several times than normal.

Purulent inflammatory reactions were found in pelvic with partialy invasion of the epithelial cells.

Both uretres, urinary bladder and urinary canal were examined histologically. Besides of scanty purulent exudate the epithelials were entirely intact.

DISCUSSION :

Rumen ulceration caused by mucoracea has been described by many autors, but, non of them were corelated with damages in the kidney. Renal disease in swine which caused by feeding of moldy feeds, has been known long-time ago.

Krogh and Hasselager (6), isolated a toxine producing strain of penicillium which fed to rat , caused proximal convoluted damage and fibrosis of the kidneys.

Lechtheim in 1884 (7), reported the pathogenicity of *Mucora corymbifera*, which was isolated from moist bread by interaveneous inoculation of rabbits. Kidney and lymphatic lesions were detected in the inoculated rabbits.

Davis and al. (1), produced bilateral kidney lesion in white mice by intraveneous inoculation of *Mucora corymbifera* spores.

The present case is correlation of ruminal fungal ulcer with kidneys lesions in lamb. The presence of the fungus within the vesseles wall indicates possibly embolic spread through the blood circulation and producing kidneys lesions.

The course branching non septated hyphae appeared morphologically with *Mucore*. It is regretted that no attempt was made to isolate the fungus from these infected tissues. Our finding in this case resemble to a remarkable degree with *Mucoromycosis* which described in Jubb and Kennedy (5), and other pathology text books by histopathological examination.

SUMMARY :

A case of renal Mycosis in a three months old lamb was diagnosed his-

topathologically for the first time in Iran. The causal fungus was morphologically comparable with Mucoracea.

ACKNOWLEDGEMENT :

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References:

- 1) DAVIS, C.L., ANDERSON, W.A. and McCRORY, B.R. (1955)
Mucoromycosis in food-producing animals. J. Amer. Vet. Med. Assoc., 126, 261-267
- 2) GILMAN, H.L. and BIRCH, R.R. (1925)
A mould association with abortion in cattle. Cornell Vet., 15, 81-89
- 3) GITTER, M., and AUSTWICK, P.K. C. (1959)
Mucoromycosis and Moniliasis in a litter of suckling pigs. Vet. Rec., 71, 6-11
- 4) GLEISER, C.A. (1953)
Mucoromycosis in animal. J.Amer. Vet. Med. Assoc., 123, 441-445
- 5) JUBB, K.V.F., and KENNEDY, P.C. (1963)
Pathology of Domestic Animals. Vol. 2, P:67
- 6) KROGH, P., and HASSELAGER, E. (1968)
Studies on Fungal Nephrotoxicity. Yearbook, Royal Vet. and Agri. College p: 168-214
- 7) LICHTHEIM, L. (1884)
Ueber Pathogene Mucorineen und durck sie ergeugten Mykoren des Kaninchens. Ztscher. f. Klin. Med., 7, 140-177