
Pneumono-mykosis in a Bovine.

**By G. DE KOCK, M.R.C.V.S., Dr.Med.Vet., and P. J. J. FOURIE,
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MULTIPLE nodules were identified in the lung of a bovine which was slaughtered at the abattoirs in Durban. The animal appeared clinically healthy, and came direct from Rhodesia to the abattoirs for export purposes. Pneumono-mykosis has on several occasions been observed in the lungs of animals. Noller and Krause, in their paper on pneumono-mykosis in the horse (*Zeitsch. für Inf. Kr.*, 25 Band, 2-3 Heft, 1923) give a complete review of the cases recorded. The object of this paper is merely to record the occurrence of such a condition in South Africa. Unfortunately the material (Specimen No. 6053) was forwarded in 10 per cent. formalin solution, and we were therefore not placed in a position to identify the species of the fungus culturally. It resembles an aspergillus, except that the ampulla-like extremities of the hyphae showed a most peculiar appearance (see plate II, fig. 2).

Macroscopically.—From plate I it will be seen that the piece of lung forwarded for examination is permeated by multiple nodules, which are fairly uniform as regards size, shape, age, and consistence. These nodules can be identified through the visceral pleura, and are also present in the substance of the lung.

Microscopically.—The nodules vary in size; they are circumscribed, and sharply marked off from the remaining pulmonary tissue, which is quite normal.

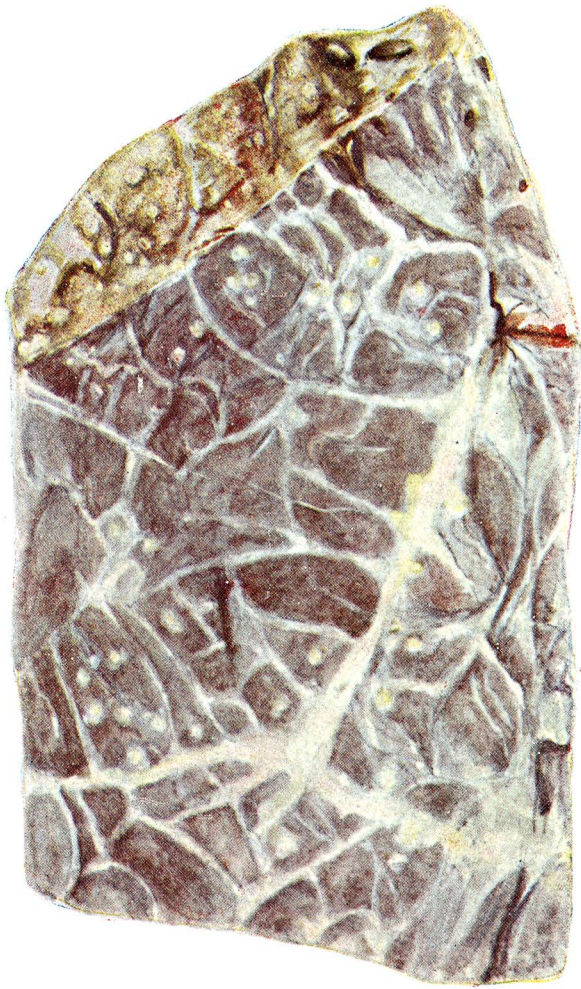
The larger nodules are undoubtedly associated with bronchioli, and the pulmonary vessels are easily identified. The bronchiolar lumen is more or less completely occluded and contains the following:—

(1) Centrally there is a more deeply staining circular area, which measures about 400 m. in diameter. In this, again, there is a somewhat paler, central area, consisting of granular masses, probably débris made up of broken-down cells, and numerous round or oval refractile bodies, probably spores of the fungus. From the periphery of this area are seen branching filaments, which, with giemsa staining, show the presence of well-developed capsules. These filaments or hyphae vary in length and radiate outwards in an irregular manner. Around and in these filaments spores are also abundantly present. Many of the filaments have club-shaped or ampullae-like thickenings of their terminal ends, which are studded with minute vertical projections resembling peritrichous flagella of bacteria (see plate II, fig. 2). From the preserved specimen submitted to Dr. Doidge, the Government Mycologist, the fungus could not be identified. Unfortunately no material was available to study the organism culturally.

(2) A fairly wide zone of closely packed neutrophiles, amongst which are also seen epithelial cells; these are probably desquamated cells from the bronchiolar epithelium.

(3) A wide zone of granulation tissue, in which quite a number of neutrophils are present, and which has already become differentiated towards its periphery into fibrous tissue. In this zone giant cells are occasionally encountered (see plate II, fig. 4); in this case the giant cell has phagocytosed portions of the fungus. The bronchiolar wall is very markedly altered, only in the case of some of the larger nodules can bronchiolar epithelium be identified (see plate II, fig. 3). In the great majority of cases the bronchiolar epithelium has completely disappeared; indeed, the entire bronchiolar wall is more or less completely replaced by fibrous tissue.

The zones described above do not appear regularly in the various nodules. In some there are exceedingly numerous neutrophils, and the other zones cannot be identified. Undoubtedly some of the nodules were cut tangentially, but this explanation does not hold in all cases.



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PLATE I.

Specimen No. 6053. Lung. Bovine. Natural size.

Pneumono-mykosis.]

[*De Kock and Fourie.*

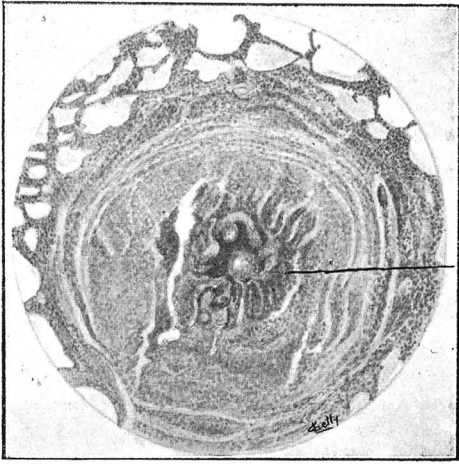


FIG. 1.—Nodule associated with broncholus.

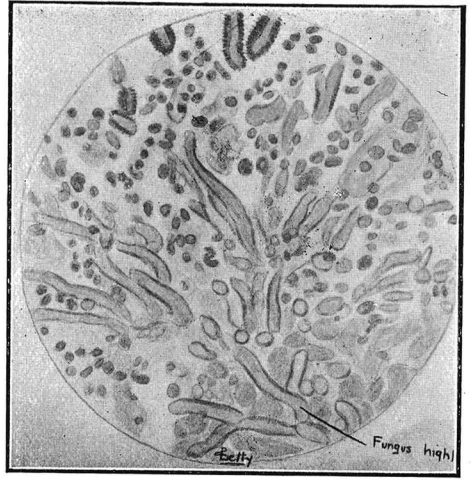


FIG. 2.—High magnification of Fig. 1, showing fungus.

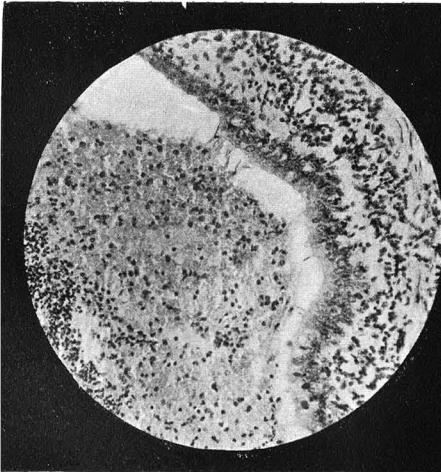


FIG. 3.—Towards periphery of nodule where bronchiolar epithelium can still be recognised.

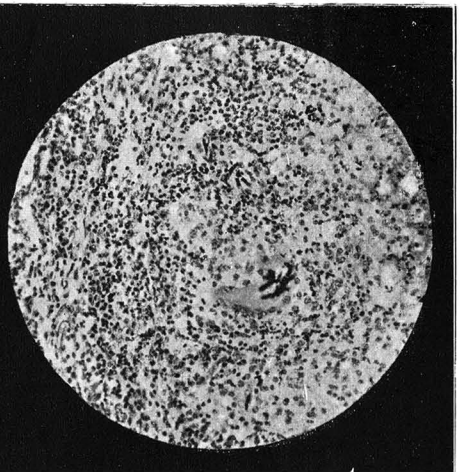


FIG. 4.—Portion of nodule with giant cell which has phagocytosed portions of fungus.