False Coccidioidomycosis in a Cow

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Coccidioidomycosis is a disease caused by *C. immitis* and limited to the south-western area of the United States, Mexico, and Central and South Americas [4–5]. The disease usually occurs by inhalation of arthroconidia which are formed in soil. The inhaled arthroconidia transform to spherules characteristic in the infected tissue. In the countries mentioned above, many reports on coccidioidomycosis have been made in cattle [5]. Cattle are readily contracted with *C. immitis*, but lesions are limited to the lungs and lymph nodes of the thorax.

In Japan, two human cases of coccidioidomycosis have been reported [10, 12], but no infection has been recorded in cattle. Recently, Shibatani et al. [13] reported a cow’s case suspicious of coccidioidomycosis and sent the serum and infected tissue to our laboratory for immunological and histopathological studies. Any cultures for causative agents had not been done from the infected tissue of the cow.

This report describes the results of the reinvestigation of a bovine case previously reported as coccidioidomycosis by Shibatani et al. [13].

Histologically, spherule-like structures similar to the tissue form of *C. immitis* were observed in

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Fig. 1a. Spherule-like structures with thick wall in the tissue from diseased cow. PAS, ×200.

Fig. 1b. Endospore-like cells packed in spherule-like structure in the tissue from diseased cow. Note budding form (arrow) in some cells. PAS, ×800.
the abscess of the mediastinal lymph nodes. These structures ranging from 20 to 75 μm in diameter had thick walls (Fig. 1a) and contained endospore-like cells, some with budding features (Fig. 1b). These endospore-like cells were different from the endospores of C. immitis (Fig. 1c) [11] in forming hypha-like structures (Fig. 1d). In addition, the spherule-like structures were different from those of myospherulosis [3]. Namely, the spherule-like structures are stained deeply with PAS, but those of myospherulosis are not.

The cow used in this experiment was born and reared in Japan. We tried to isolate C. immitis from soil and plants in and around the stable where the affection occurred, but failed to isolate the fungus. No human patient and animal infected with coccidiodomycosis have also been recognized in the region where the disease was seen. The fluorescent antibody and immunodiffusion tests are useful for the diagnosis of coccidiodomycosis as well as the complement fixation test [1–2, 4–9]. In the indirect fluorescent antibody technique using the serum obtained from the diseased cow, brightly fluorescing spherule-like structures were observed in the tissue sections from the cow. However, they were not demonstrated in tissues from a mouse infected with C. immitis (Fig. 2). These findings suggest that the antibody against C. immitis was not contained in the serum by immunodiffusion test using the culture filtrate of C. immitis as the antigen. The specific precipitin line did not appear between the serum and the culture supernatant of C. immitis.

From these results, we diagnosed this case as false coccidioidomycosis.
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REFERENCES


要約

牛の偽クシンジオイジス症の1例（短報）：池田輝雄・田潤清・西村和子1)・宮治誠1)・板倉智敏2)・柴谷增博3)・伊藤郁夫4)・倉城悦司5)（鹿島大学医学部微生物学第一講座，1）千葉大学生物活性研究所病原真菌研究部，2）北海道大学医学部比較病理学講座，3）淵本家畜保健衛生所，4）兵庫県農業共済組合連合浜路基幹家畜診療所三原診療所，5）姫路家畜保健衛生所——牛のクシンジオイジス症（C症）とされ、病牛から菌は分離されなかった病例（Jpn. J. Vet. Sci. 48, 155-157, 1986）について組織学的、免疫学的に再検討した。組織学的にはC症に類似の球状体を認めたが、内生胞子の出芽像・菌糸様構造が観察できる点が異なっていた。間接蛻光抗体法で病牛血清は病牛組織の球状体とは反応したが、C. immitis感染マウスの球状体とは反応せず、また、免疫拡散法においてもC. immitis抗原と反応しなかった。以上の結果から、偽クシンジオイジス症と診断した。