CRYPTOCOCCOSIS IN A CAT

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Cryptococcosis is a mycotic disease in various kinds of animals, as well as in human beings\(^{15}\). This infection is caused by *Cryptococcus neoformans*. This etiological organism was isolated from soil\(^{6}\) and avian excreta\(^{7,22,23}\). Therefore, *Cryptococcus neoformans* is known as a saprophyte and as a human and animal pathogene\(^{15}\). There are at least 21 reported cases of feline cryptococcosis\(^{2,5,8-14,16-21,23}\). In Japan, three cases of this infection in cats were reported by Yamamoto et al.\(^{23}\) in 1957, Saeki et al.\(^{20}\) in 1964, and Chiba et al.\(^{21}\) in 1967.

This paper deals with a case of disseminated cryptococcosis in a cat. This was the 4th case of feline cryptococcosis observed in Japan.

CASE REPORT

A two-year-old female Siamese cat born in Tokyo was presented at the Veterinary Hospital, Faculty of Agriculture, University of Tokyo, Tokyo, Japan, in 1967. At that time, there was an edematous swelling on the underside of the neck in the patient cat, but there had been no history of trauma. The patient cat gradually showed depression, anorexia, loss of condition as the swelling developed. The cat died, without showing any improvement, a few weeks after the enlargement had been first noticed at the neck.

MYCOLOGY

India ink-stained preparations from a fatty-appearing mass at the lesion of the cervical area revealed yeast-like organisms with capsule (Fig. 1). The isolation of these organisms was made by inoculation onto Sabouraud dextrose agar and incubation at 37°C. There developed white, mucoid and glistening colonies within a few days. A creamy to light-tan coloration occurred to the colonies at 2 weeks of incubation. India-ink mounts of a portion of these colonies showed thin-walled, ovoid to spherical budding cells, which resembled those observed in clinical materials by direct examination. No mycelium was produced in this isolate on Sabouraud dextrose agar. Subculture into urea broth Eiken (a product of the Nippon Eioy Kagaku Co., Ltd., Tokyo, Japan) produced urease after incubation at 37°C for 24 hours. The isolate was also examined for its carbon and nitrate assimilation. As a result, it did not assimilate lactose and potassium nitrate. Assimilated carbon sources were glucose, sucrose, maltose, mannitol, and galactose. A starch-like substance was also produced on synthetic agar medium for detection of extracellular starch production by yeasts\(^{15}\). This isolate developed no ballistospores on potato agar or no ascospores on Gorodkowa agar or on chlamydospore agar.

When inoculated intracerebrally with the organisms suspended in the saline solution, mice died within two weeks after inoculation. Many organisms encapsulated thickly

were observed in India ink mounts of the brain tissues collected from these mice. As a result, the isolated yeast-like fungus was identified as Cryptococcus neoformans.

PATHOLOGY

Macroscopic: At necropsy, a soft fatty-appearing mass was observed along the trachea. The mass weighed about 250 g (Fig. 2). On the surface of the right kidney, a fat-like mass was also found and measured 1.7 cm × 1.0 cm. It was revealed by bisection that this fat-like material was infiltrating into the cortex of the kidney (Fig. 3). Many yellowish-white consolidations about 5 mm in diameter were present scatteringly in every lobe of the lungs.

Microscopic: Tissue blocks were fixed in 10% formalin. After routine processing and paraffin-embedding, they were sectioned and stained with hematoxylin and eosin. With these sections, histological examination was carried out. Many yeast-like organisms were harbored in the subarachnoid space and perivascular spaces in the cerebral parenchyma. Fungal bodies were also seen in lesions of the parenchyma of the spleen (Fig. 4). Any host reaction, however, was hardly observed around these lesions. A great many organisms were found in the pulmonary alveoli. Cellular proliferation occurred in the septa of the lung. On the fibro-elastic layer of the trachea, many fungal cells were present and multiplication of fibrocytes was seen. There were lesions with many fungal cells in the cortex of the kidney (Fig. 5). One of these lesions was extended to the medulla of the kidney. Around this large lesion, round-cell infiltration was observed and the glomeruli were atrophic.

DISCUSSION

Identification of the isolate was carried out according to Ajello et al.11 and Littman et al.16 In the case which the authors observed, the patient cat died a few weeks after swelling was first noticed in the cervical region. A fatty-appearing mass of fungi that weighed about 250 g developed along the trachea. A fat-like mass was also detected from the right kidney. It was proliferated into the organ. Microscopic examination revealed the occurrence of lesions in the brain, trachea, lung, and spleen, as well as the kidney. Every lesion contained fungal bodies. Such a disseminated case of feline cryptococcosis as this was different from any one of the 21 cases which the present authors had reviewed.

SUMMARY

Disseminated cryptococcosis was found in a two-year-old female cat. Histological examination of hematoxylin-eosin stained sections revealed lesions containing many fungal cells. Such lesions were observed in the brain, trachea, lung, spleen, and kidney of the cat.

REFERENCES

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猫のクリプトコックス症について

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猫のクリプトコックス症は、これまで世界で少なくとも21例の報告があるが、本邦においては、1957年山本ら、1964年佐伯ら、および1967年千葉らの3例の報告がある。著者らは、東京大学農学部附属家畜病院患畜の猫に本症の1例を認め、これについて検討した。患畜は家畜生産者、2才、雄のシャム猫で、顔部が次第に腫脹するに従い、元気消失、食欲減退を示し、ついに死を来すことなく、そのまま生存した。顔部病変部から作成した塗抹標本の直接鏡検によって、気管を有するイースト様真菌を認めた。この真菌をサブプローブなど培地に分離培養して検討した結果、本分離真菌は、37℃で発育すること、マウスに病原性があること、炭素源および窒素源同化の点などから、Cryptococcus neoformansと同定した。剖検の結果、顔面部の顔側面にかかった、気管にそって、重量約250gのクリーム色の腫瘍様を呈した菌塊を認めた。同様に小葉塊が、右気管支にも付着浸潤しているのが認められた。また腫瘍では、全皮膚にわたって、黄白色的粟粒大の結節が多数散在していた。組織学的検索の結果、腫瘍、腫瘍辺縁部も含め、肺、肝臓、脾臓、気管および腫瘍に、本菌体を認めた。以上のように、全身各所に、C. neoformansが考えられる病巣を認めた。本分離性クリプトコックス症の1例を示した。
EXPLANATION OF PLATE

PLATE I

Fig. 1. India-ink mount of clinical material showing encapsulated fungal cells. ×100.
Fig. 2. A fatty-appearing mass attached to the trachea of the patient cat.
Fig. 3. The right kidney of the patient cat with a lesion caused by cryptococcal infection.
Fig. 4. A lesion containing fungal cells in the spleen. Hematoxylin-eosin staining. ×100.
Fig. 5. A lesion containing fungal cells in the kidney. Hematoxylin-eosin staining. ×100.