

access to the same toxic source, is presumed to be due to individual variations in eating habits.

Following prolific seasons such as the spring and summer of 1983-84, large quantities of straw contaminated by pyrrolizidine alkaloid containing plants may become available, particularly from the Riverina. As consumption of straw by deep litter-raised calves is to be expected from the first week of life (P.H., personal observations), it is recommended that where this system is used for raising calves, the straw should be examined for pyrrolizidine alkaloid containing plants before use.

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Feline cerebral phaeohyphomycosis associated with *Cladosporium bantianum*

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Cladosporiosis is a rare but usually fatal fungal infection of man and animals which is included among the phaeohyphomycoses. Both cutaneous and systemic forms of infection are associated with dark thick-walled septate mycelia. Infections generally occur in compromised or debilitated hosts (Chandler *et al* 1980).

Cladosporium bantianum (*trichoides*) is a neurotropic fungus which has been isolated from human brain (King and Collette 1952; Limsila *et al* 1970; Crichlow *et al* 1973; Bennett *et al* 1973) and lung (Limsila *et al* 1970). Documented cases in animals are rare (Chandler *et al* 1980). Jang *et al* (1977) reported 2 cases of brain abscess in cats from which *C. bantianum* was isolated.

Associated clinical signs in man and animals are those of central nervous disorder such as severe headache, diplopia, convulsions, weakness of the extremities, altered reflexes and weight loss (King and Collette 1952; Bennett *et al* 1973; Crichlow *et al* 1973; Jang *et al* 1977; Chandler *et al* 1980). The original isolation of *C. bantianum* from brain was by Binford *et al* (1952). In south Queensland, Wilson (1982) isolated *C. bantianum* from human brain and showed its neurotropism in experimental animals.

An 18-month-old spayed female cat showed circling and incoordination. The pupils were dilated and pupillary reflex was absent. The cat died and was submitted for necropsy.

Previously it had been presented to the same clinic with mild respiratory signs. Arthroplastic surgery had been carried out on the left hip followed by corticosteroid therapy at the age of 5 months.

A remarkable solid black lesion measuring 2 x 2.5 cm was present in the left occipital lobe of the cerebrum (Figure 1). No pus was detectable grossly. The lungs were congested and somewhat oedematous but other organs were apparently normal. Blocks of tissue were taken from the brain and other organs for histopathology. A fresh sample of the lesion was also obtained for microbiological examinations.

The brain lesion was characterised by massive hyphal invasion, inflammatory cells, reactive neuroglial cells, and liquefactive necrosis (Figure 2). The inflammatory cells were predominantly of large mononuclear type in nodular or diffusely arranged forms throughout the lesion. Numerous capillaries ramified throughout the mass. Lymphocytes, some plasma cells, histiocytes, multinucleated giant cells and early micro-abscessation with scattered neutrophils were components of the lesion. Numerous large reactive astrocytes were also present. Elsewhere the brain was congested and showed some neuronal degeneration and mild focal microgliosis. A few scattered inflammatory cells were seen in the congested cerebral meninges. Some fungal elements were seen in the choroid plexus.

The left retropharyngeal lymph node and the spleen showed lymphoid depletion. The lungs were extremely congested and showed oedema, emphysema, some catarrhal bronchitis, prominent subpleural lymphatics, occasional mononuclear infiltration in the vicinity of small blood vessels, and at least one thrombosed bronchial blood vessel. The liver showed congestion, dilated portal lymphatics, brownish pigment-laden Kupffer cells, moderate degeneration of hepatocytes and an inflamed bile duct with associated fibrosis of the portal triad. Slight degenerative changes of some of the cardiac vascular walls were noticed.

In sections stained by haematoxylin and eosin, the fungus appeared as septate hyphae, sparsely branched, almost rectangular pattern, with thick dark brown to olive walls. Some budding yeast-like cells with occasional hyphal extension were also evident. Massive invasion of the hyphae was associated with the looser cellular reactions and necrotic areas. However, hyphae also occurred in the denser nodular type of reaction and occasionally in the lumina of blood vessels. In PAS sections the brownish colour of the fungal hyphae still dominated but some budding yeast-like cells and thinner hyphae appeared PAS-positive. In methenamine silver-stained sections the fungi were black and very prominent. The morphology of the fungal hyphae was well-defined in unstained sections where they appeared brownish in colour.

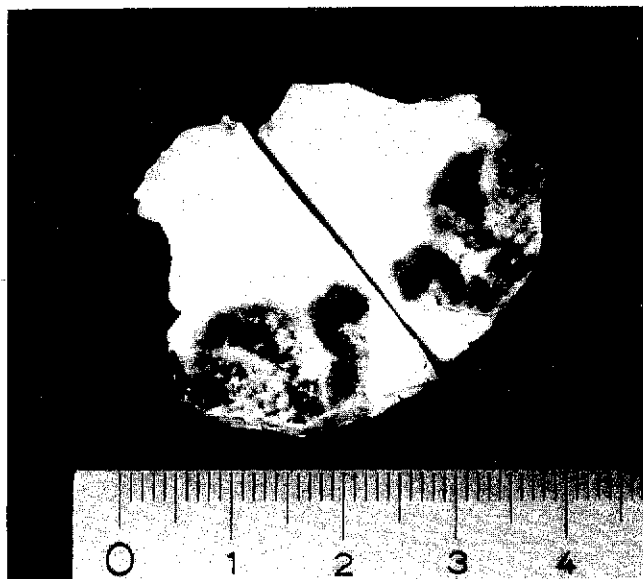


Figure 1: Gross appearance of the cladosporial lesion in the cerebrum with black discoloration.

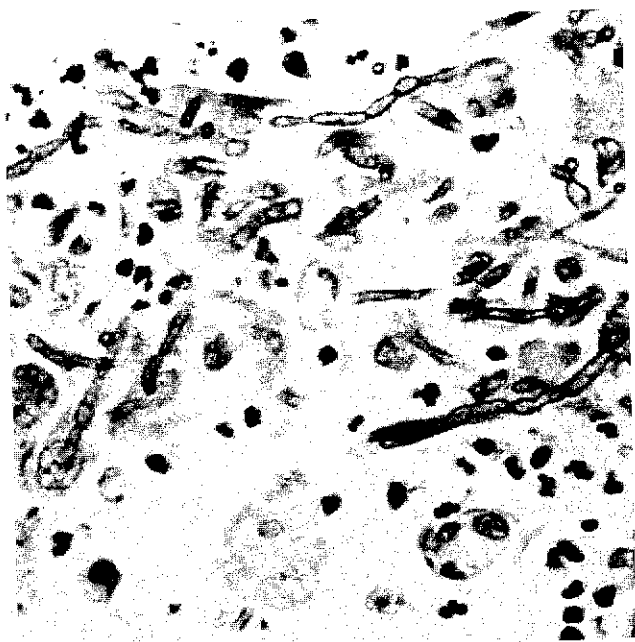


Figure 2: Histological appearance of cerebral lesion showing fungal hyphae and associated cellular response. H and E \times 1700.

Many hyphae could be shown in potassium hydroxide preparations of the brain lesion. Samples of tissue were cultured on Sabouraud's dextrose agar at 28°C. A pure culture of a greyish-black, velvety fungus was obtained within 3 to 5 days. Colonies reached 2.5 cm at maturity. There was some irregular folding at the centre of the colony. Microscopically the conidiophores were yellow-brown, septate and freely branching. There were long chains of yellow-brown oval to elliptical conidia. The conidia measured 4.2 — 9.8 μ m by 2.6 — 3.1 μ m and dark hilum (basal scars) were evident.

A humid tropical climate is suitable for many fungal infections, therefore systemic mycotic diseases of domestic animals are not unexpected problems in North Queensland. *C. bantianum* has been isolated from soil and tree bark (Wilson 1982). Documented cases of cladosporiosis in animals occurred in the United States of America (Chandler *et al* 1980). The gross appearance, histopathology and fungal morphology of the brain lesion resembled those of the human lesions induced by *C. bantianum*. Similar gross and microscopic descriptions have been given in previously reported cases of brain abscesses in cats due to this fungus in the United States (Jang *et al* 1977). Identification of *C. bantianum* was based on an abundant, dematiaceous septate mycelium in the brain and chains of conidia in culture mounts (Ajello, personal communication).

The route of infection is unknown, but was probably haematogenous. As also suggested by Wilson (1982) primary lung infection is a possibility. The generalised congestion and dilated lymphatics of several organs suggested circulatory failure due to the brain lesion. The mild degenerative changes of the liver together with the pigmentation of the Kupffer cells may have followed mycotoxicosis and circulatory failure.

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Evaluation of the effect of tiamulin hydrogen fumarate fed at 25 ppm on performance responses of pigs infected with enzootic pneumonia

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Enzootic pneumonia of pigs is economically among the most important diseases in many countries. The economic repercussions of enzootic pneumonia have been demonstrated by Huhn (1970), Goodwin (1971), Braude and Plonka (1975) and Burch (1982), and are due primarily to reductions in growth rate and feed conversion. The efficacy of various antibiotics in the prophylaxis and therapy of enzootic pneumonia have been reported (Huhn 1971; Schuller and Glawischnig 1972; Taillandier 1973), but despite widespread use of many antibiotics, enzootic pneumonia remains widespread in South Australia (Pointon and Sloane 1984) where surveys show that 47% of pigs have gross lesions at slaughter.

Tiamulin hydrogen fumarate† is currently being used for therapeutic programs for treatment of enzootic pneumonia at 200 ppm in Australia and internationally. The product is also marketed at feed levels between 20 to 30 ppm for maintenance of growth performance in pigs affected with enzootic pneumonia (Burch 1984). The purpose of this experiment was to verify the latter claim when fed at 25 ppm to pigs inoculated with *Mycoplasma hyopneumoniae*, and to investigate if improvement in performance is associated with reduced lung pathology.

Thirty two 5-to-6 week old piglets were purchased from a herd known to be infected with enzootic pneumonia. These had been divided into 4 matched groups before purchase on the basis of age, weight, sex and genetic background and during the experiment were held in adjacent pens of equal size. All piglets, including 2 additional enzootic pneumonia free piglets were inoculated with a suspension of ground pneumonic tissue containing *M. hyopneumoniae*, Beaufort strain (Etheridge and Lloyd 1980).

Each group was fed *ad lib* on a commercial ration for 16 weeks and slaughtered at 22 weeks of age when the average bodyweight was 80 to 85kg. Groups 1 and 2 were fed tiamulin in the ration, while groups 3 and 4 received unmedicated ration. Samples of the medicated ration were assayed and contained on average 25.1 ppm to tiamulin. Pigs were weighed weekly and feed consumed per group each fortnight was recorded. The pigs were reared under environmental and

† Dynamitilin, © E. R. Squibb and Sons Pty Ltd, Noble Park, Victoria.