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A case report

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Introduction
Cryptococcosis is an opportunistic systemic fungal infection and occurs worldwide, caused by several Cryptococcus (C.) species, which are saprophytic, round, basidio- mycetous yeasts with C. neoformans most commonly causing disease (1, 2, 3). Dissemination can occur by either direct extension or hematogenous spread (by macrophages), to the skin, lungs, eyes, or central nervous system (CNS) (2, 4, 6).

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Summary
Disseminated cryptococcosis was diagnosed in a cat presenting with severe dyspnoea and multiple cutaneous nodules based on cytology, serology and culture. A 3.5 years old male, castrated, domestic shorthaired cat presented with an acute history of progressive dyspnoea, tachypnoea and anorexia and a history of chronic continuous stridor, stertor and recurrent cutaneous masses.

Nasal and thoracic radiographs showed an increased opacity in the nasal cavity, a diffuse pulmonary infiltrate and a suspected cranial mediastinal mass. Thoracic ultrasound confirmed the presence of several cranial mediastinal masses. Fine needle aspiration of the cutaneous and mediastinal masses revealed the presence of encapsulated yeast cells. Culture confirmed infection with Cryptococcus neoformans. Latex Cryptococcus agglutination antigen test was highly positive with a titer of >1:8192. The cat was treated with fluconazole for 15 months until the titer was below detectable levels.
not more common in cats with retroviral infections (7, 8, 10, 11). Diagnostic options of cryptococcosis include cytologic examination, capsular antigen detection, and culture. Cytological finding in aspirates of encapsulated yeast cells is suggestive. Capsular antigen can be demonstrated by Latex Cryptococcus Agglutination Test (LCAAT) (12). Aetiological diagnosis is obtained by culture and mycological characterisation of the isolate.

Case History
A 3.5 years old male castrated, domestic shorthaired cat presented to the University Hospital for Companion Animals at the University of Copenhagen with a 5-days history of progressing dyspnoea, tachypnoea and anorexia. The cat was born and raised in California, USA and was imported to Denmark one year previously. It had a history of long-standing respiratory symptoms, described as continuous stridor and stertor and occasionally dyspnoea, and recurrent cutaneous masses, some of which had been surgically removed. There was no history of nasal discharge and cough was only occasionally observed. The cat had been kept indoors for the past year, but had been an outdoor cat prior to that. It was current on vaccinations, but it had not been wormed for the last year. It had been treated with amoxicillin/clavulanic acid (12.5 mg/kg q12h per os) without response for the previous three days.

Physical examination confirmed tachypnoea (respiratory rate 50 breaths/minute) with an increased inspiratory and expiratory effort. Auscultation of the lungs was difficult due to pronounced stridor and stertor. Mucous membranes were pale pink with a capillary refill time of two seconds. The cat had multiple cutaneous, indolent, mobile, firm masses of varying size with a raised, smooth surface, dispersed over the whole body.

The initial therapeutic approach was aimed at addressing the respiratory distress with oxygen supplementation. After the initial stabilization, blood was collected for complete blood count (CBC), serum biochemistry, acid-base chemistry (venous blood sample) and Idexx SNAP® FIV/FeLV Combo Test. CBC and biochemistry did not show any abnormalities except for a mild stress-induced hyperglycemia. Acid-base chemistry did not show any abnormalities either, but as venous blood was used, blood oxygenation could not be assessed. Lactate was in the reference range. FIV and FELV tests were negative.

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Marcy-l’Etoile, France) according to the manufacturer’s instructions. Latex Crypto-
coccus agglutination antigen test (LCAAT), performed on blood serum at Athens Uni-
versity, Georgia, USA, was highly positive with a titer of >1:8192.

Treatment with the antifungal flucon-
azole (10mg/kg q12h PO) was initiated on
day 2 based on the cytological findings.
The cat continued to be stable on cage rest
and did not require further oxygen supple-
mentation. It was bright, alert and respon-
sive, started eating, and was discharged
after five days with instructions to ensure a
quiet, non-stressful environment and
reduced physical activity.

Follow-up examinations were performed
on day 30, 90 and 150. Blood samples for
biochemistry profile and LCAAT titer were
obtained which did not show improvement
compared to previous findings. After mov-
ning back to the USA, LCAAT titer was
tested 15 months after treatment start
with levels below detection limit. Flucon-
azole treatment was discontinued.

Discussion
This presentation of a young cat with
chronic respiratory symptoms and cutane-
ous nodules due to disseminated crypto-
coccosis represents a rare case in Denmark,
though the disease is described to have
worldwide significance. In all likelihood,
the infection had been acquired during the
cat’s stay in California, USA, as it had a
history of long-standing continuous
respiratory signs. The severe findings on radiography and
CT indicated irreversible chronic intranasal
changes and marked pulmonary pathology
with intrathoracic granulomata which
might prevent full recovery, so that ongo-
ing respiratory sounds and decreased lung
capacity would be expected. The presence
of CNS disease caused by cryptococcosis is
the major factor described to influence
outcome in cats (13). In our case, the cat
did not show any signs of CNS involve-
ment, but as imaging studies of those
regions were not performed, this could not
be definitely ruled out. Our patient had a
LCAAT titer >1:8192 which correlated posi-
tively with the disseminated distribution of the
disease, as patients with dissemi-
nated skin and/or lymph node involve-
ment have significantly higher titers (12).
Although the prognosis of cryptococcosis
should be considered as guarded, a major-
ity of cats can be expected to be cured,
but treatment is protracted and expensive
(13). We initiated treatment with flucon-
azole, an azole antifungal, which is
described to be very effective in the treat-
ment of feline cryptococcosis, including
cases with advanced, longstanding, or dis-
seminated disease (2, 13, 14). Further-
more, this drug can be given orally. Side
effects in cats can be inappetence and,
rarely, increased liver enzyme activity and
hepatic toxicity (14). On follow-up visits,
severity and LCAAT titers were
measured to monitor progress, evaluate
prognosis, and guide cessation of treat-
ment (2, 12, 15, 16). The cat responded
well to treatment and no side effects were
observed. Antifungal therapy was contin-
ued until the LCAAT titer declined to an
undetectable level after 15 months of con-
tinued therapy. This was a significantly
longer treatment period than described in
a previous study where the median dura-
tion of treatment with fluconazole in cats

Figure 4. CT nasal cavity and thorax (2 mm slice thickness). A: Nasal cavity: soft tissue filling bilaterally in
the nasal cavity and in the left frontal sinus, bilateral nasal turbinate destruction and deviation of the
nasal septum. B: Thorax: soft tissues nodules distributed throughout the lungs and significant consolid-
ation of the lungs in the ventral lung field.

Figure 5. Culture on Sabouraud dextrose agar of
isolate from aspirated material from a cutaneous
nodule, incubated at for 30°C for 6 days, showing
mucoid, grey-white colonies.
with less severe cryptococcosis was 4 months with a range of 1 to 8 months (13). Due to the advanced disease progression in our patient, a longer treatment period was expected. Despite clinical improvement, resolution of the cutaneous masses and a finally undetectable LCAAT titer, a full recovery with resolution of all respiratory symptoms seems unlikely due to the severe intranasal anatomical changes.

This case report emphasises that it is important to consider cryptococcosis in cats with respiratory symptoms with or without cutaneous involvement due to its worldwide significance, particularly in cats from countries with a high prevalence of cryptococcosis.

None of the authors of this article has a financial or personal relationship with other people or organisations that could inappropriately influence or bias the content of the paper.

Reference