
Case Report

**CRYPTOCOCCOSIS IN A FOUR-YEAR-OLD INTACT MALE
DOMESTIC SHORT-HAIRED CAT**

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ABSTRACT

A four-year old male domestic shorthair cat was brought to the University of the Philippines Veterinary Teaching Hospital with clinical signs of sneezing and nasal, ocular and gingival discharges. Physical examination revealed ulceration of the nostrils, gingival swelling and a subcutaneous lumbo-sacral lump. Scrapings and impression smears were obtained from the oral and nasal lesions and were submitted for cytologic evaluation. Yeast-like organisms with variably-sized thick capsules resembling soap bubbles were found, confirming the presence of *Cryptococcus* sp. Initial treatment given before confirmation of the disease included enrofloxacin, meloxicam and ascorbic acid. Fluconazole was given after the disease was confirmed. Prognosis for the case was good, with aggressive treatment and constant monitoring of the patient.

Keywords: cat, cryptococcosis, cytology, oral lesions, nasal lesions

CASE DESCRIPTION

Kimba, a four-year old intact male domestic shorthair cat, was brought to the University of the Philippines Veterinary Teaching Hospital (UPVTH) due to respiratory problems, including sneezing with some mucopurulent nasal discharge and an ulcerated growth on its nasal area (Figure 1). These have been observed about four months from presentation and medicated with amoxicillin-clavulanic acid, ascorbic acid and ferrous sulfate for 14 days but did not resolve. The patient was also lethargic and showed some purulent discharges from the mouth. Commercially available cat food was given twice daily and the patient had access to outdoors and was housed with five other cats.

Kimba weighed 2.5 kg, with an emaciated body condition. Body temperature was 39.2°C and heart rate was 76 beats/min. A soft doughy lump, about 50 mm in



Figure 1. Ulcerated growth, about 10 mm in diameter, on the nasal surface of a cat diagnosed with cryptococcosis. Also seen were some nasal and ocular discharges.

diameter was found on the lumbo-sacral area, which was observed for about two weeks prior to presentation. Halitosis was apparent and swelling with abscess of gingival tissues of the upper left canine (Figure 2) was observed. An ulcerated growth on the nostrils, about 10 mm in diameter was apparent. The left eye had



Figure 2. Gingival swelling around the upper left canine in a cat diagnosed with cryptococcosis.

some serous discharges and ears showed ceruminous discharges. No neurologic signs were observed at presentation.

Hematology revealed packed cell volume at 30% and total white blood cell count at 25,500 cells/ul. Differential white blood cell count showed neutrophils at 22,185 cells/ μ l and lymphocytes at 3,315 cells/ μ l. Leukocytosis with neutrophilia was observed which may be solely due to *Cryptococcus sp.* or maybe with a mixed infection.

Impression smear and scrapings were obtained from the nasal and gingival lesions. Results were provided a week later which showed round yeast-like organisms with variably-sized thick unstained capsules resembling a soap-bubble (Figures 3 and 4). According to Scherding (2006), cryptococcal yeasts are easy to identify by their characteristic budding and prominent unstained capsule. Thus, based on the clinical signs presented such as sneezing and nasal discharges, facial deformity at the nasal bridge of the nose, ulcerative lesions on the nasal planum as described by Nelson and Cuoto (2009) and Sherding (2006) and as supported by the results of the cytologic evaluation of the impression smears and scrapings, the patient was diagnosed with cryptococcosis.

Initially, before the results of cytology were obtained, Kimba was treated for respiratory infection and gingivitis, and was given enrofloxacin, meloxicam and ascorbic acid. Upon release of the cytologic evaluation, fluconazole was given as a specific treatment against cryptococcosis.

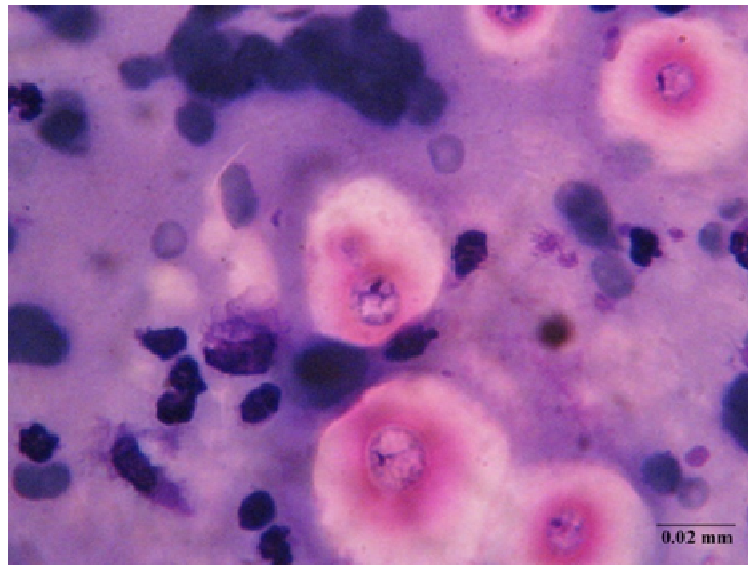


Figure 3. Diff-Quick® stained smear of scrapings from the nostril of a cat diagnosed with cryptococcosis, showing the characteristic “soap-bubble” appearance of *Cryptococcus sp.* Cytology showed encapsulated yeast with prominent capsule that appeared unstained.

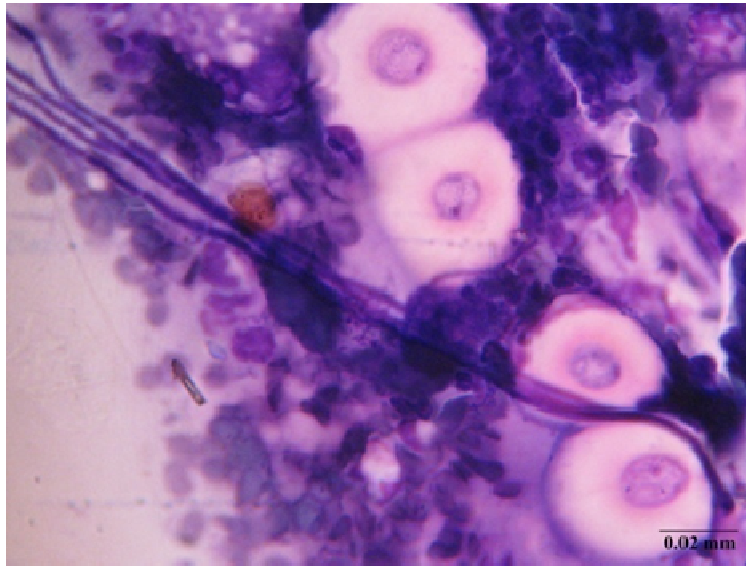


Figure 4. Diff-Quick® stained smear of the scrapings from the gingival in a cat diagnosed with cryptococcosis. Cytology showed fungal hyphae and cryptococcal yeast cells.

DISCUSSION

Cryptococcosis is the most common systemic mycosis of cats (Trivedi *et al.*, 2011; Cote, 2011) caused by an encapsulated yeast belonging to the genus *Cryptococcus*, a dimorphic basidiomycetous fungus, which is found worldwide and may be spread by pigeons (Gough and Thomas, 2004; Trevidi *et al.*, 2011). The disease usually originates in the nasal cavity, paranasal tissues or lungs and is then disseminated to the skin, eyes and central nervous system (Taboada, 2008) hematogenously within macrophages or by direct spread (Trevidi *et al.*, 2011) leading to chronic infection of the nose and sinuses, and skin ulcers. In affected cats, systemic signs are variable and may include lethargy, fever, poor body condition or anorexia (Trevidi *et al.*, 2011).

Cryptococcosis has a worldwide occurrence (Gough and Thomas, 2004; Medleau and Hnilica, 2006; Nelson and Cuoto, 2009), and feline cryptococcosis is most frequently reported in Australia, western Canada and western United States. Though less prevalent, it occurs sporadically in all other countries worldwide (Trevidi *et al.*, 2011). In the Philippines, there are no known available published cases or reports of feline cryptococcosis. This is also the first time that feline cryptococcosis has been diagnosed in the UPVTH. The mean age of cats affected is 6 years; however, it can vary. Approximately 58% of cats diagnosed with cryptococcosis were considered primarily outdoor cats (Bergman, 2006). Kimba, according to the owner is around 4-years of age and is an outdoor cat, consistent with the reported

occurrence on feline cryptococcosis.

Cryptococcosis is caused by an encapsulated yeast species belonging to the genus *Cryptococcus*. The two most common species infecting cats are *C. neoformans* and *C. gattii* (*C. neoformans* var *gattii*). Other species like *C. laurentii* and *C. albidus* cause disease when associated with immunocompromise. *C. magnus* has been described as the cause of otitis externa in a cat. Classically, five serotypes of *Cryptococcus* sp. (A, B, C, D and AD) have been recognized. The organism produces a capsule consisting of polysaccharides, xylose, mannose, glucuronic acid, sulfur, lactase and phospholipase polymers (Larrison, 2005). This inhibits plasma cell function, phagocytosis, leukocyte migration, and opsonization, potentiating infection (Nelson and Cuoto, 2009). Kimba's cryptococcal infection could have been present even before the first presentation at the UPVTH and due to the organism's resistant properties, the disease has progressed.

Infection of the nasal cavity, resulting in sneezing and nasal discharges is reported more frequently. Granulomatous lesions of the external nares, facial deformity over the bridge of the nose, and ulcerative lesions on the nasal planum are commonly observed in the infection (Nelson and Cuoto, 2009; Sherding, 2006). There is sometimes involvement of other organs including the skin, central nervous system and eyes (Beatty *et al.*, 2000). These clinical signs have been consistent with Kimba's case. Upon physical examination, facial deformity with an ulcerated wound was seen from the nasal bridge and mucopurulent ocular discharges. A new finding was gingival swelling and abscess, which, upon cytology, demonstrated the presence of cryptococcal organisms (Figure 4).

Cytologic testing is a quick and easy means of identifying cryptococcal organisms (Taboada, 2008) from nasal exudates, cerebrospinal fluid, skin exudates or impressions, lymph node aspirates, oculocentesis specimens or urine sediment using Gram's, PAS, new methylene blue or Diff-Quick® stains. Yeasts are usually numerous and easy to identify by their characteristic budding and prominent unstained capsule (Sherding, 2006). The test is sensitive, although negative test results do not eliminate the possibility of cryptococcosis (Trevioli *et al.*, 2011) as the organism may not be apparent in approximately 25% of animals (Taboada, 2008). If no organisms are seen, samples can be used for culture and histopathology (Trevioli *et al.*, 2011). In this case, cytologic examination from the nasal and gingival scrapings using Diff-Quick® stain was enough to identify the etiologic agent and to diagnose the disease.

Fluconazole is currently regarded as the initial drug of choice with localized cutaneous or nasal disease (Trevioli *et al.*, 2011). It is widely distributed throughout the body and penetrates well into the cerebrospinal fluid, eye and peritoneal fluid and achieves high concentrations in the urine. Fluconazole does not have appreciable effects on hormone synthesis or hepatocellular damage (Plumb, 2008; Trevioli *et al.*, 2011). Fluconazole was used as the treatment for cryptococcosis at a dose rate of 50 mg/kg once daily and should continue for at least one to two months beyond resolution (Plumb, 2008). This may vary from patient to patient depending on the severity of the case. Client compliance will then become a factor in the recovery of the patient as fluconazole may be a little expensive than other antifungal drugs.

The owner was contacted regarding the patient's progress. Kimba had better

appetite on the fourth day of treatment. Nasal lesions were still visible as well as some serous ocular discharges. The lump on the lumbo-sacral area had resolved. The owner was supposed to bring Kimba back for follow-up consultation a week later but they did not show up.

Cryptococcosis may not be transferred directly from cats to humans but reports of the disease have been documented in humans causing cryptococcal meningitis which is a factor for morbidity and mortality in the AIDS population (Warkentien and Crum-Cianflone, 2010) caused by *C. neoformans* var *grubi* (Trevioli *et al.*, 2011). Thus, the area should be investigated for the possible source of infection since this may also be accessible to the human population in the area.

Further studies must be done to identify the specific etiologic agent since the treatment may vary. Adequate treatment must also be given to infected animals to ensure recovery.

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