

Scedosporium apiospermum infection in a Bernese Mountain Dog

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Case Presentation

A 2 year 9 month male neutered Bernese Mountain Dog presented to the Queen Mother Hospital For Small Animals, Royal Veterinary College, UK in May 2009. He presented with a history of recurrent episodes of vomiting and diarrhoea, intermittent since approximately 6 months of age. In a previous episode January 2009 a tennis ball sized mass was palpated in his cranial abdomen. Following laparotomy the mass was excised and histopathological examination identified fungal hyphae, within the mass consistent with a mycetoma.

Following presentation in May 2009 multiple focal mesenteric and intestinal lesions were identified on ultrasound examination. Lymphadenopathy was also noted. A lesion closely associated with the intestine and a second lesion noted paraintestinally were also observed. A lesion was also noted in the liver.

Exploratory laparotomy revealed grossly multiple nodules throughout the omentum, and nodular thickening in the jejunum. Clinical concern was for histiocytic sarcoma given the signalment of the case.

Description and Diagnosis

Intraoperative impression smears of the omental lesion revealed a neutrophilic to pyogranulomatous inflammation, with moderate numbers of plasma cells, and rare mast cells also noted over the smears. Occasional spindle cells were also noted, interpreted as fibrocytes, or reactive fibrocytes when plump. Occasional sheets of mesothelial cells were also present. The macrophage population often contained phagocytosed debris, and occasionally leukophagia was noted. Multinucleate cells were also noted in low numbers. Background contained abundant cellular debris, and low to moderate numbers of erythrocytes.

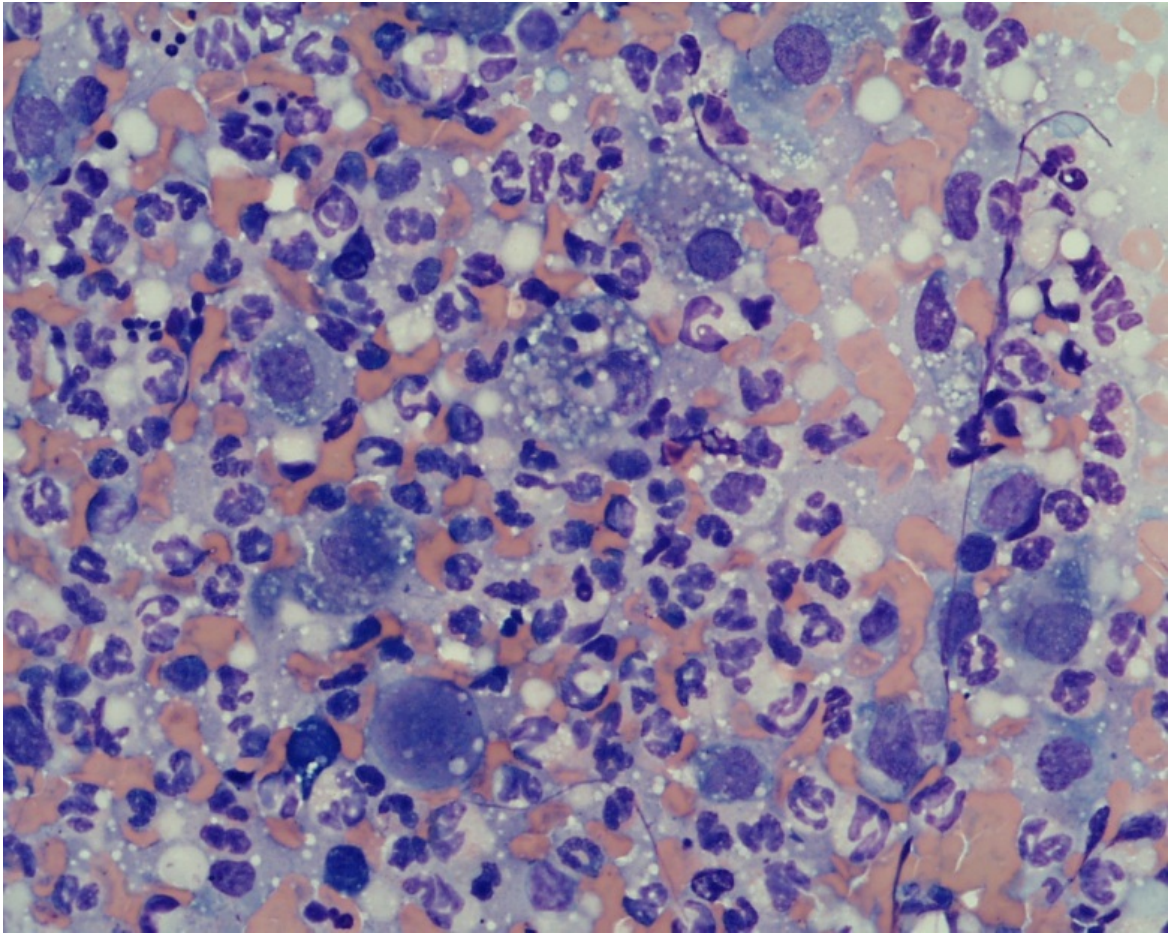


Fig 1. Impression smear of omental lesion x40 obj showing pyogranulomatous inflammation

Suspect fungal hyphae were noted extremely rarely on the Wrights-Giemsa stained smears.

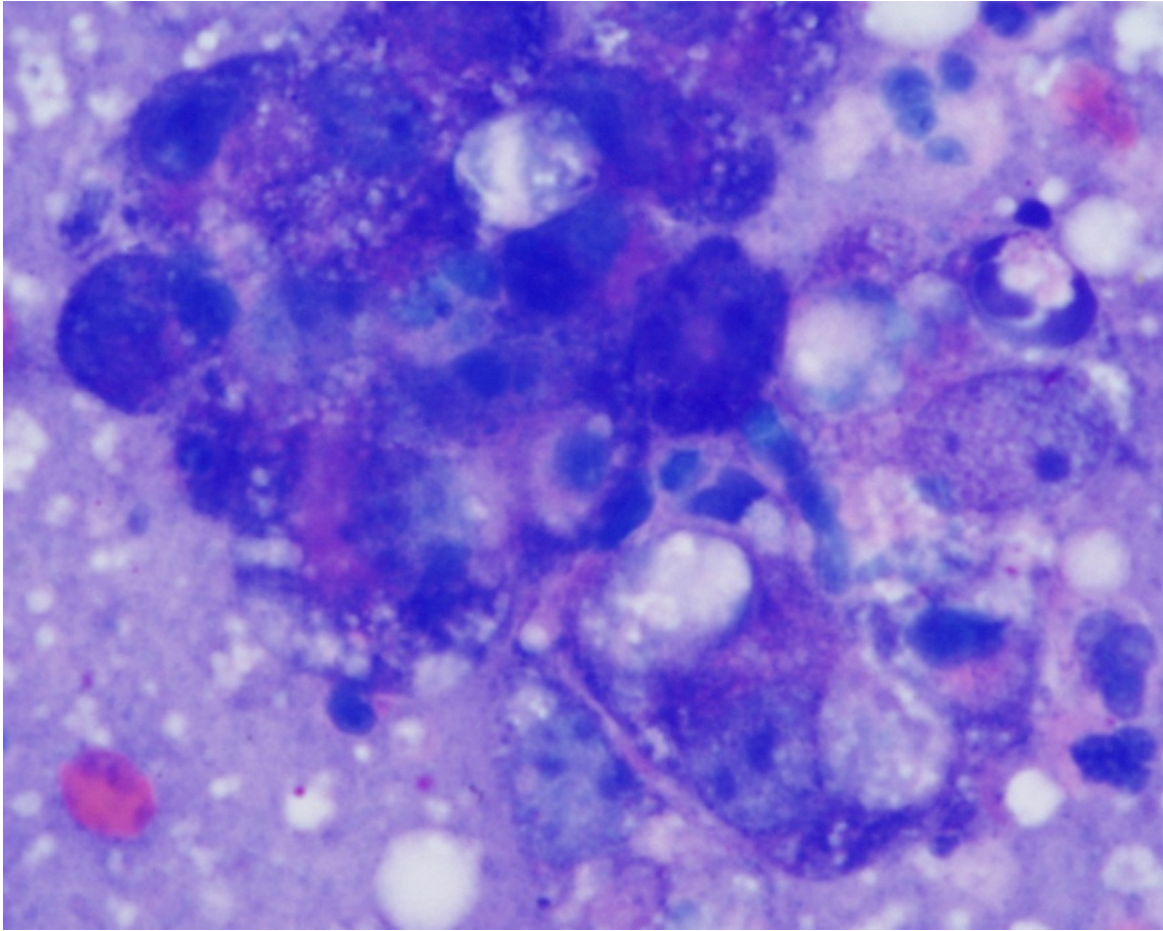


Fig 2 Impression smear of omental lesion x 100 obj Modified Wrights Giemsa Stain

These rare fungal elements were highlighted by the use of Periodic Acid Schiff stain.

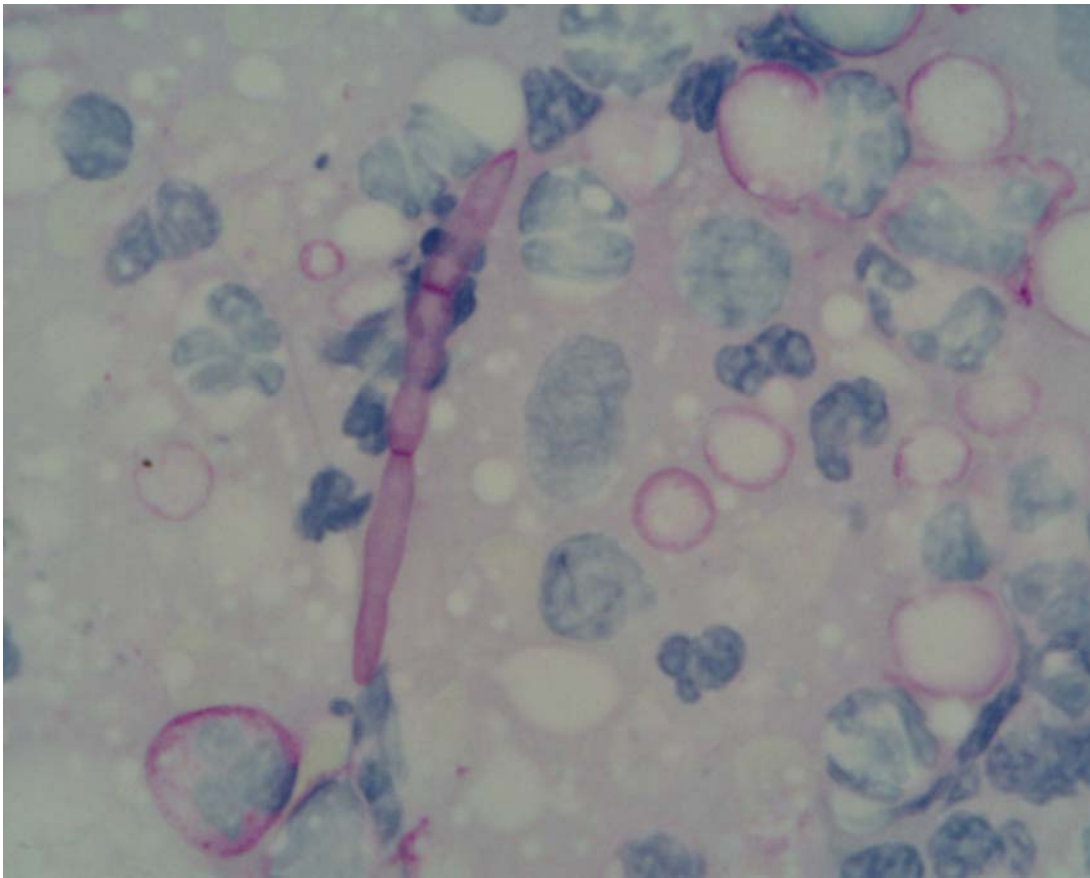


Fig 3. Fungal hypha x100 obj PAS stain.

Large fungal mats were noted in the histology sections of the omental nodules

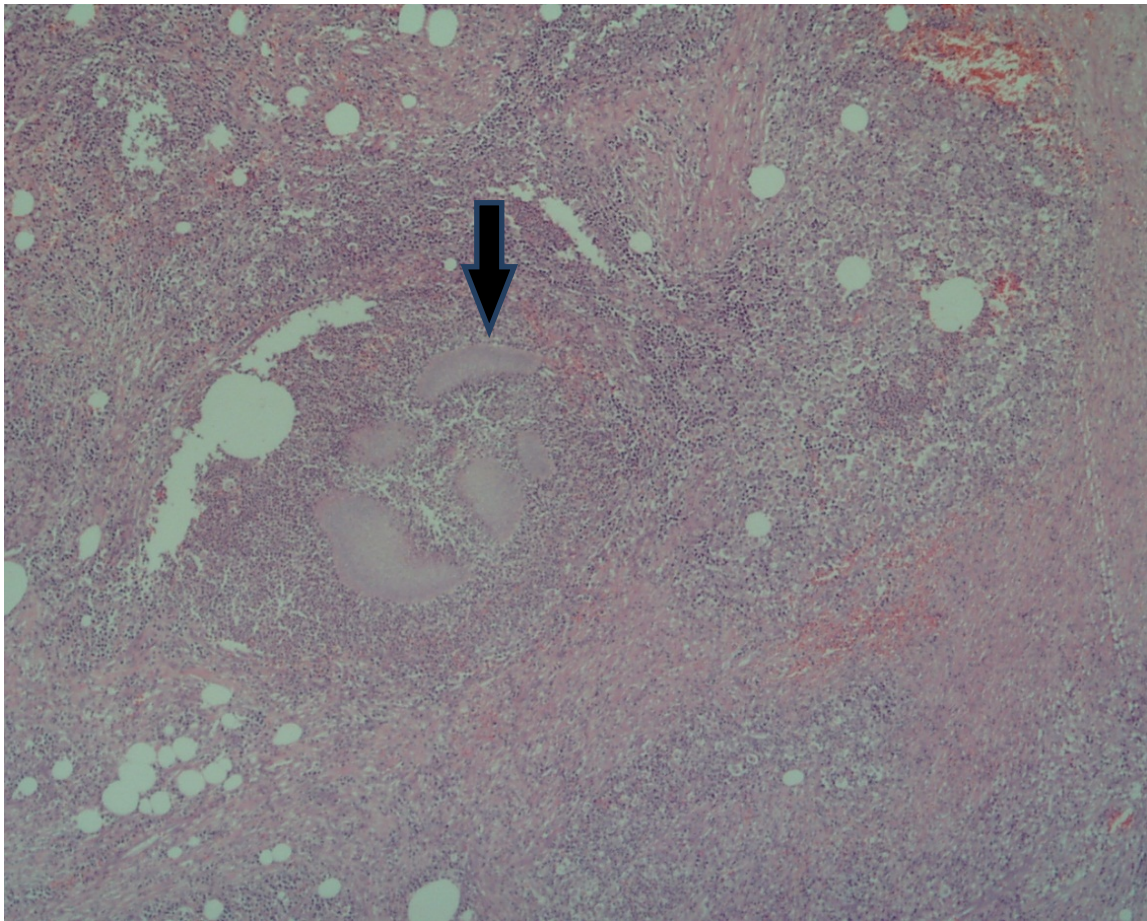


Fig 4. Histology Section of omental nodule Haematoxylin and Eosin stain x4 obj. Arrow points to area of fungal hyphae

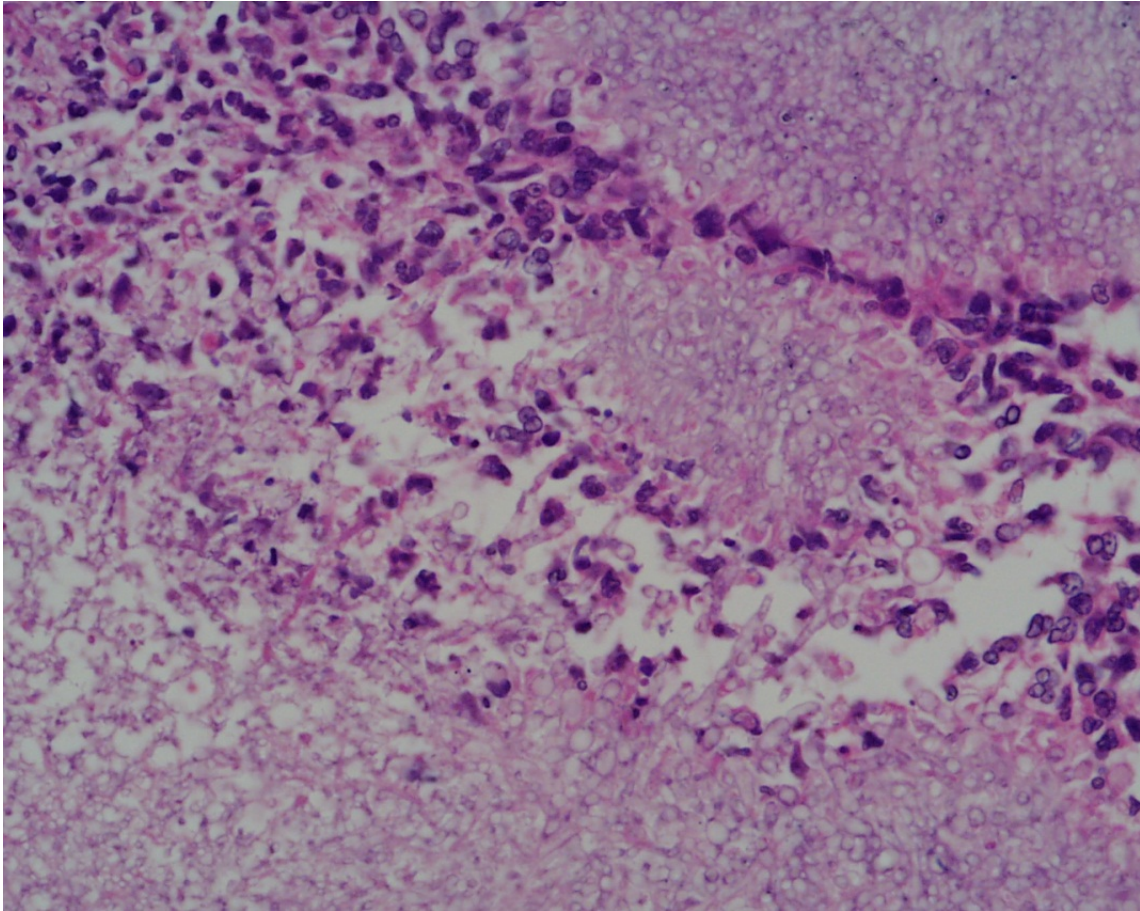


Fig 5. . Histology Section of omental nodule Haematoxylin and Eosin stain x 40 obj

Fig 5 shows a close up of the large mat of fungal hyphae. In this image the branching nature of the septate hyphae can occasionally be noted. Also conidia may be noted as subspherical to oval structures.

At surgery the multiple omental nodules were removed. Also removed were the hepatic lymph node, and an associated mass, and three masses associated with the small intestine. A prophylactic gastropexy was also performed.

Fungal culture was performed on fresh tissue submitted, and was identified as *Scedosporium apiospermum* (Clinical Mycology Department, Yorkhill Hospital, Glasgow).

Antifungal medication was initiated, Itraconazole, and this was continued in an attempt to control the infection. Other fungal agents were considered cost prohibitive, or likely ineffective in this instance.

Following a rapid dramatic deterioration the patient was euthanized in October 2010, 20 months after initial presentation. A post mortem examination found a severe disseminated fungal infection affecting multiple organs including liver, spleen, mesentery and pericardium.

Scedosporium apiospermum infections have been previously reported in canines.¹⁻⁷ However reclassification of the fungi has led to some confusion in the literature. *Scedosporium* species are considered to be part of the *Scedosporium/Pseudallescheria* complex. Prior to molecular typing it was assumed that *Scedosporium apiospermum* and *Pseudallescheria boydii* were anamorph (asexual) and telomorph (sexual) states of the same fungus. They are now considered to be two distinct species, with other distinct *Scedosporium* and *Pseudallescheria* species also being identified. A review of infections caused by this complex in veterinary species has been recently published.⁸ Rhinitis, or nasal infections, or keratomycosis are amongst the most frequently reported sites in the recent literature, although abdominal mycetomas have been reported previously. Disseminated infections, and osteomyelitis are also noted in the literature.

It is unclear how the infection became established in this individual. The patient had a history of 'stick eating', and infection through routes of entry such as ulcerative gastrointestinal lesions, or direct inoculation following trauma have been reported.⁹ Refractory infections with *S. apiospermum* may occur in immunocompetent hosts, as well as immunocompromised ones. IgG, IgA, and IgM were assessed in this patient (IDEXX Laboratories, Wetherby, UK) and found to be within expected limits or increased. Globulin was also frequently increased in the biochemistry profile. Leukocytosis, most commonly neutrophilia, was frequently identified on haematology profiles. On no occasion was any leukopenia observed. Although these findings would not rule out a functional immune deficiency, severe immunocompromise appears less likely in this patient.

This unusual fungal infection, which is increasing in prevalence in the human clinical caseload,¹⁰ should be considered a differential for disseminated, or focal, mycotic infections in the dog. It may also be helpful to review the literature over the next few years to gain a greater understanding of the nomenclature of the fungus following more extensive molecular typing studies.

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