**Disseminated Trichosporon asahii infection in a dog**

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**Abstract**

Trichosporon spp. are widely distributed in nature. In humans, Trichosporon spp. infections are rare but have been associated with a wide spectrum of clinical manifestations, ranging from superficial cutaneous infections and hypersensitivity pneumonia in immunocompetent individuals to severe systemic disease in immunocompromised patients. There are only very few case reports of Trichosporon spp. infections in animals which are classically associated with intramammary infections in cows. We report the clinical signs as well as the pathological and mycological findings of a disseminated Trichosporon (T. asahii) infection in a 4-year-old German Shepherd dog. The most prominent clinical features were unilateral panuveitis with secondary glaucoma, posterior uveitis with subretinal exudate in the other eye and generalized lymphadenopathy. At necropsy, greyish granulomas of different size were present in lymphnodes, spleen, thymus, heart muscle and kidneys. The aortal lumbar lymphnodes were enlarged up to 5 cm in diameter. With Grocott's fungal stain and the periodic acid-Schiff reaction fungal structures were detected inside the granulomas. The hypotrophic and dilated heart showed calcification and a fibrous endocarditis in the left atrium in which the periodic acid-Schiff reaction revealed fungal structures as well. To our knowledge, this is the first report of an invasive infection caused by T. asahii in a dog.

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**Conclusions**

- In cases of generalized lymphadenopathy and panuveitis a spontaneous disseminated infection caused by fungal agents should be considered.
- *T. asahii* is a potential pathogen in dogs causing granulomatous inflammation in multiple organs despite Trichosporon spp. are rarely mentioned as animal pathogens and were so far mainly implicated in cases of localized infections. This could be of special interest since the susceptibility of Trichosporon spp. to antifungal drugs differs significantly from that of other systemic mycosis causing agents.
- The isolation of *T. asahii* is in accordance to human case reports since this Trichosporon sp. is the most common agent of disseminated trichosporonosis.
- Disseminated trichosporonosis can be a principal suspect in differential diagnosis even if the patients do not exhibit common risk factors such as granulocytopenia, impaired phagocyte function, and long-time broad-spectrum antibiotic treatment.

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**Results**

- A disseminated trichosporonosis was diagnosed in a 4-year-old male German shepherd dog.
- Ophthalmologic examination revealed unilateral exsudative panuveitis with secondary glaucoma as well as posterior uveitis with subretinal exudate and hemorrhage in the partner eye.
- General examination showed marked generalized lymphadenopathy.
- Further diagnosis was unable to identify the cause of the disease even though fungal infection was strongly suspected.
- At necropsy granulomatous inflammation was found in multiple organs.
- In lesions of kidney, lymphnodes and heart muscle histochemical staining with Grocott's fungi stain and the periodic acid-Schiff reaction revealed yeast-like cells and septate hyphae along with a few arthroconidia.
- All specimens were culture positive for *Trichosporon sp.*
- Colonies grew within 5 days, initially appearing cream-coloured, smooth, and shiny before becoming slightly dry, heaped-up, and freely wrinkled with an irregular margin.
- Microscopic examination of these colonies as well as of the direct smears revealed oval, yeast-like cells and true hyphae forming cylindrical arthroconidia.
- An excellent *T. asahii* identification profile was obtained with API 20C AUX.
- *T. asahii* specific oligonucleotide primers amplified DNA of the isolate and produced an approximately 500-bp fragment.

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**Material and methods**

**Patient**

A 4-year-old intact male German Shepherd dog was referred for ophthalmologic examination. The history included a pneumonia 8 months prior to presentation which had been treated with antibiotics and corticosteroids, a pruritic skin condition of unknown cause with a duration of several weeks, marked polydipsia and polyuria as well as weight loss over the last two weeks. Deterioration of the patient's general condition as well as the ocular signs despite treatment lead to euthanasia. The body was submitted for pathologic examination.

**Ophthalmologic examination**

Ophthalmologic and general examination was completed by further diagnostics including repeated fine needle aspiration biopsies of lymphnodes and vitreus for cytologic examination and culturing as well as repeated urine cultures and repeated hemograms and blood chemistries.

**Postmortem examination**

Specimens of organs with and without granulomatous lesions were fixed in 5 % formalin and routinely processed for histopathology. All slides were stained with haematolizin and eosin (HE). In addition the Grocott's fungi stain and the periodic acid-Schiff reaction were performed directly on all specimens as well as on the resulting colonies. The organism was identified on the basis of morphology and name identification was confirmed by using the commercial identification system API 20C AUX (bioMérieux) to determine carbohydrate and nitrogen assimilation patterns. Morphologic and physiologic identification was completed by performing a *T. asahii* specific PCR based on sequences of the internal transcribed spacer region according to Sugita et al. (1998). DNA was extracted by the method of de Hoog et al. (2000).

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**References**

De Hoog et al. (2000), Atlas of clinical fungi, CBS

Itoh et al. (1996), Mycosis 39: 195-199