

Challenge 0909-3

Absidia species

HISTORY

This sample was sent as a simulated sample obtained from brain lesion swab. Laboratories were expected to isolate and identify *Absidia* species.

CMPT QA

The sample was verified by a reference laboratory. *Absidia* species was isolated as a 4+ pure culture, viable for 44 days.

SURVEY RESULTS

Eight out of 11 laboratories (73%) correctly identified the isolate as *Absidia* species. Two laboratories reported *Mucor* species and one laboratory does not normally process this kind of sample (see Table 1). This is the first time CMPT has sent *Absidia* species in a challenge. The laboratories did very well overall in the identification of this fungus.

The Committee recommends that all Proficiency Testing samples should be processed as routine samples even when there is a staff shortage or high workload.

IDENTIFICATION

Zygomycetes grow rapidly on most routine fungal media (3-5 days). Because they are sensitive to cyclohexamide, however, they will not grow on commonly utilized selective medium. ¹

Absidia corymbifera grows readily upon subculture on routine mycology media, growing more

rapidly at 37°C than at 25°C and it is capable of growth at temperatures up to 48°C to 52°C, which distinguishes it from the other *Absidia* species. ^{2, 3, 4}

Colony morphology

A. corymbifera produces a woolly colony with fluff resembling gray cotton candy. Fast growing, it can fill a petri-dish in 24h. Initially, the colony is white, but it changes to grey-brown to olive green on the surface with no color in the reverse. ^{2, 4, 5}

Microscopic morphology:

Absidia forms broad sparsely septated hyphae with stolons and intermodal rhizoids. Sporangio-phores of *Absidia* arise at points, on the stolon, that are between the rhizoids. The sporangio-phores are branched and widen, forming a conical apophysis just below the columella. The columella is typically shaped like a semicircle with a small projection on top. The sporangia are relatively small and slightly pear shaped instead of spherical. The sporangiospores are round to oval. ^{2, 3, 5}

Carbon assimilation profiles have been evaluated as a tool for species identification within the order Mucorales. ⁶

Caution

Since *Absidia* species are ubiquitous in nature, they are also common laboratory contaminants. Thus, their isolation in culture requires cautious evaluation.

CLINICAL RELEVANCE

Absidia species are filamentous fungi that are cosmopolitan and ubiquitous in nature. Like other members of the class zygomycetes, they are common environmental contaminants. They are found in plant debris and soil, as well as are isolated from foods and indoor air environment.

Table 1: Results received – *Absidia* species challenge

Reported	No of labs	%
<i>Absidia</i> species	7	64.6
<i>Absidia corymbifera</i>	1	9.1
<i>Mucor</i> species	2	18.2
snp	1	9.1
Total	11	100

snp: sample not normally processed

Absidia corymbifera is a relatively rare cause of human zygomycosis.^{7, 8}

The genus *Absidia* currently contains 21 species. The most commonly isolated species is *Absidia corymbifera*. It is the only recognized pathogen among the other *Absidia* species. It accounts for ~ 2 – 3% of culture-confirmed cases of zygomycete infection.²

Clinical presentation of *A. corymbifera* includes cutaneous, pulmonary, rhino-cerebral, gastrointestinal, and disseminated forms.⁸

A. corymbifera can cause invasive disease in compromised hosts with a high mortality even when aggressive antifungal therapy and surgical intervention are utilized. Clinically, the disease most often affects the respiratory sinuses with or without pulmonary involvement; direct extension from sinuses into cerebral tissue is not uncommon.^{2, 9}

A. corymbifera is less virulent and more susceptible to human sera than *Rhizopus*. Infections with *A. corymbifera* usually occur in immunocompromised hosts.¹⁰

Rhinocerebral Mucormycosis

Rhinocerebral mucormycosis (RCM) is a rare opportunistic infection of the sinuses and brain caused by saprophytic fungi and commonly affects individuals with diabetes and those in immunocompromised states

The three genera responsible for most cases include *Rhizopus*, *Absidia*, and *Mucor*. Mucormycosis has a fulminantly fatal clinical pattern. The survival rates among patients with invasive sinus disease without cerebral involvement may be as high as 50-80%. If infection spreads to the brain, the case fatality rate can exceed 80%.

The prognosis of mucormycosis may improve with rapid diagnosis, early management including combined antifungal and surgical interventions, and reversal of underlying risk factors. One case series reported that the survival rate is approximately 80% when both medical and surgical interventions are administered. An underlying risk factor is recognized in more than 96% of mucormycosis cases.¹¹

TREATMENT

Because of the mortality associated with mucormycosis, immediate aggressive treatment is required including control of the underlying disease process, surgical intervention and administration of amphotericin B.^{1, 2}

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