patient’s extensive tumor had been irradiated after SEMS placement.

Given the limited options available for such severe airway erosion and massive tumor, the patient declined therapeutic intervention. Most SEMS complications are managed symptomatically or endoscopically. Tracheoesophageal fistula may be occluded by a second stent placed inside the first. Tumor ingrowth and obstruction may be prevented by the silicone-covered SEMS. In the majority of patients with malignant esophageal strictures, palliative therapy with SEMS are successful without complications. However, hemoptysis, chest pain, and recurrent pneumonia caused by Gram-negative bacteria in such a patient, especially after radiation therapy, may result from stent erosion into the respiratory tract.

REFERENCES

Torulopsis Pneumonia*

A Case Report and Review of the Literature

Sangeeta Srivastava, MD; George Kleinman, MD; and Constantine A. Manthous, MD, FCCP

Torulopsis glabrata is a rare cause of pneumonia in immunocompromised patients. We herein describe the case of an elderly man who presented with fulmi-
nant Torulopsis pneumonia and septic shock leading to death. We then review the literature, describe the clinical syndrome, and delineate an approach to diagnosis and treatment of Torulopsis pneumonia.

**CHEST 1996; 110:858-61**

**Key words:** Candida; multiple organ failure; pneumonia; sepsis; septic shock; Torulopsis glabrata

**Torulopsis glabrata** is a yeast belonging to the cryptococceae family and is closely related to Candida species. Although Torulopsis is most frequently saprophytic in man, it may cause disease in immunocompromised hosts. Few cases of Torulopsis respiratory infection have been reported.1-13 We report a case of rapidly progressive Torulopsis pneumonia and septic shock with multiple system organ failure, then review the literature regarding Torulopsis respiratory infections.

**Case Report**

An 87-year-old white man with no significant past medical history developed nausea and vomiting 24 h after consuming fish. He presented to the emergency department after developing severe shortness of breath. His wife, who also ate the same meal, presented with nausea and vomiting without respiratory symptoms. A review of organ systems was otherwise normal. On presentation, he was an elderly white man in severe respiratory distress with respiratory rate of 44 breaths per minute, tachycardia (heart rate, 130 beats per minute; irregular), a temperature of 38.9°C, and hypotension (BP, 80/40 mm Hg). He had bilateral diffuse crackles on examination of his lungs and had a nontender, distended abdomen with reduced bowel sounds. His chest radiograph revealed bilateral infiltrates which were initially more pronounced on the left side (Fig 1), but later generalized to diffuse ground-glass infiltrates. He had a total WBC count of 1.6x10⁹/mm³ (absolute neutrophil count, 1,100/ mm³).

He was intubated for refractory hypoxemia (PaO₂, 58 mm Hg, while receiving 100% O₂ from a nonbreathing face mask) and was resuscitated with crystalloids. Bacterial cultures were obtained, and mezlocillin sodium (5 g every 8 h), erythromycin (1.0 g every 6 h), and aztreonam (1 g every 12 h) were administered intravenously. A Gram’s stain of the urine was negative and that of sputum revealed numerous leukocytes, normal flora, and budding yeast cells. An echocardiogram revealed excellent left ventricular and valvar function. Catheterization of the right side of the heart was performed to aid in fluid management and revealed a central venous pressure of 4 mm Hg, a pulmonary artery pressure of 20/15 mm Hg, and a pulmonary artery occlusion pressure of 12 mm Hg (concurrent mean arterial pressure was 60 mm Hg, and cardiac output was 5.2 L/min). Therapy with fluids, dobutamine (10 μg/kg/min), and dopamine (2 μg/kg/min) was started; as a result, transient stabilization of the blood pressure was achieved. However, he remained oliguric and became progressively hypotensive, despite the addition of norepinephrine, with worsening hypoxemia (PaO₂, 57 mm Hg while receiving 100% inspired O₂ and 5 cm H₂O of positive end-expiratory pressure). He died of intractable shock less than 24 h after his admission.

Bacterial cultures of blood and urine, which returned around the time of his death, were negative for organisms. Cultures of urine for Legionella antigen and of blood for Mycoplasma as well as viral and Chlamydia antibody titers subsequently were negative or normal. His autopsy showed bilateral bronchopneumonia with budding yeast cells present diffusely throughout the lung parenchyma (Fig 2). Sputum cultures subsequently grew *T. glabrata*.

**Discussion**

*T. glabrata*, a yeast belonging to the cryptococceae family, is closely related to both Candida and Cryptococcus species. This 2- to 3-μm yeast organism is characterized by the absence of mycelia, pseudomycelia, and hyphae. Microbiologically, Torulopsis colonies are further characterized by the absence of urease production, presence of fermentation, and assimilation of only glucose and trehalose on culture media.

Torulopsis was considered a saprophyte until Black and Fisher described an immunocompetent patient with bronchopneumonia whose nasopharyngeal cultures grew Torulopsis. Aisner et al reported three cases of Torulopsis pneumonitis in patients with hematologic malignancies and subsequent reports have suggested that Torulopsis is pathogenic principally in immunocompromised patients (Table 1). Risk factors which have been associated with Torulopsis infections include hematologic malignancies, cirrhosis, diabetes, corticosteroid therapy, immunosuppressive medica-

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**Figure 1.** Chest radiograph of our patient with Torulopsis pneumonia demonstrating bilateral infiltrates which were initially greater in the left lung.

**Figure 2.** Specimen of lung tissue demonstrating budding yeast cells in the lung parenchyma (methenamine-silver, original x600).
tions, and prolonged use of broad spectrum antibiotics. In a retrospective review of the medical records of 167 patients with malignancies, Aisner et al described tracheobronchial colonization with Torulopsis in 1.5% and histologically proven infection in 1.0% of patients. Colonization was found on routine surveillance cultures; however, factors predisposing to colonization have not been studied. These investigators conjectured that upper airway colonization predisposes to subsequent infections when a patient becomes immunocompromised. Torulopsis pneumonitis rarely has been noted in patients who are believed to be immunocompetent.\(^1,5,6\) One patient was a 48-year-old healthy man who presented with chronic nonproductive cough, dyspnea, and fatigue.\(^5\) His laboratory examination revealed a leukocytosis (21,000/mm\(^3\)) with 4% eosinophilia, and his only (questionable) risk was a history of splenectomy. A chest radiograph revealed bilateral apical nodular opacities, and fiberoptic bronchoscopy with BAL revealed Torulopsis. Another patient was a 72-year-old immunocompetent man who presented with fever, but no respiratory symptoms, whose chest radiograph revealed bilateral nodular infiltrates and hilar adenopathy.\(^5\) Open-lung biopsy revealed *T glabrata*. Both patients were treated with antifungal agents with subsequent clinical improvement.

The clinical presentations of patients with Torulopsis pneumonia vary considerably. It may present acutely with fever, shaking chills, shortness of breath, and productive cough, or it may present insidiously with mild fever, dry cough, dyspnea, fatigue, and weight loss. Torulopsis pneumonia appears as either focal infiltrates (with or without cavities) or as a diffuse reticulonodular lesion on the chest radiograph. Leukopenia (<1,500/mm\(^3\)) has been a consistent finding in most reported cases, and persistence of leukopenia marks a poor prognosis.\(^4\)

No studies have been performed to determine the appropriate test for detecting Torulopsis pneumonia, though lung biopsy demonstrating a neutrophilic and lymphocytic infiltration with Torulopsis in the lung parenchyma remains the “gold standard.” The presence of Torulopsis on a Gram’s stain of expectorated sputum generally is considered indicative of colonization and does not prove pathogenesis in cases of pneumonia. Fiberoptic-guided lung biopsy and brushings also have been used to make the diagnosis of Torulopsis pneumonia, although data regarding predictive accuracies are

<table>
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*AML=acute myelogenous leukemia; ATG=antithymocyte globulin; FOB=fiberoptic bronchoscopy; MOPP=melphalan, vincristine sulfate, prednisone, and procarbazine hydrochloride; NA=data not available.*
not available owing to the infrequency of the disease. Serologic testing was done in a single case report by Greenfield and Jones using T. glabrata cytoplasmic extract. Likewise, no studies have determined the optimal antibiotic treatment for Torulopsis, which is sensitive, in vitro, to amphotericin B. Patients who have survived Torulopsis pneumonia have received amphotericin B with rifampin. However, some have survived without antibiotic therapy with resolution of their underlying immunocompromised states.2,8

Our patient presented with neutropenia, which may have predisposed him to this infection. Interestingly, his wife, who ate the same meal, developed gastrointestinal symptoms and leukopenia which quickly abated. We hypothesize that both experienced a foodborne microbial (likely viral or toxin-related) gastrointestinal illness leading to neutropenia though no gastrointestinal pathogen was isolated in either case. We also hypothesize that in this patient colonization of Torulopsis was present before the acute neutropenia occurred, which predisposed him to subsequent pneumonia. However, we cannot discount the possibility that the patient’s neutropenia resulted from overwhelming sepsis which would make this the third reported case of Torulopsis pneumonia in an immunocompetent host. The presence of budding yeast cells in the alveoli in the absence of other pathogens at the time of autopsy strongly suggests that his fatal pneumonia and septic shock resulted from Torulopsis infection.

Yeast cells are often recovered from the tracheobronchial secretions of hospitalized patients. Such culture results usually are considered to be “contaminants” or “colonizers.” However, our case demonstrates that, in the appropriate clinical circumstances (especially in patients with severe leukopenia and pneumonia), Torulopsis should be considered a potential pathogen. Early recognition and directed therapy should, theoretically, reduce morbidity and mortality from this pathogen.

REFERENCES