Case History

Aspergillus fumigatus Abscesses of the Thyroid with Obstruction of the Esophagus

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Thyroid invasion by Aspergillus spp. can occur with invasive aspergillosis, although it is rarely diagnosed ante-mortem. We describe a case of multiple thyroid abscesses from A. fumigatus that caused esophageal obstruction in a patient with myelodysplasia. Despite aggressive antifungal treatment, the outcome was rapidly fatal.

Introduction

Invasive aspergillosis is a common opportunistic infection that develops, as a rule, in immunocompromised patients. High-risk groups include patients with hematologic malignancies, patients who receive steroid therapy and chemotherapy, transplant recipients, and patients with acquired immune deficiency syndrome (AIDS) (1, 2). Invasive pulmonary aspergillosis is the typical presentation, but extrapulmonary disease, including thyroid involvement, is found frequently at necropsy (3). We report a case of multiple thyroid abscesses from Aspergillus fumigatus that caused obstruction of the esophagus. To the best of our knowledge, this latter complication has not been previously described.

Case Report

A 46-year-old man was admitted to our university internal medicine department in December 2003 with a diagnosis of "subacute thyroiditis." Two weeks prior to his admission, the patient, who lived in another country, had presented to his primary care physician with right neck pain, and was found to have an enlarged thyroid gland. Thyroid scan demonstrated that no uptake by the thyroid gland. In conjunction with the clinical findings, thyroiditis was considered the most likely diagnosis, and the patient's physician prescribed oral aspirin. However, the patient failed to improve and experienced progressive weakness and weight loss, and for this reason presented to our hospital.

The patient had a 3-year history of myelodysplasia and type refractory anemia with pancytopenia. Therapy was limited to growth factors and transfusions. The surgical history revealed that in September 2002, the patient underwent surgical resection of a left upper-lobe lung mass that was suspected to be a primary lung tumor, but was found on histological examination to be consistent with an aspergilloma. He subsequently began taking maintenance oral itraconazole at 200 mg/day.

In December 2003 the patient presented to our department with high fever, pain and swelling of the anterior cervical region, and inability to swallow solids or liquids. On admission he was dehydrated, ill-appearing, and had the following vital signs: temperature 39°C, blood pressure 90/60 mmHg, pulse 105/min., and a respiratory rate of 30...
breaths/min. Examination of the anterior neck at the height of the thyroid gland revealed an area of swelling, with erythema and local warmth, that was painful to palpation. Chest examination demonstrated a left thoracotomy scar and clear lungs. The remaining examination was without significant findings. The patient was hydrated and specimens for cultures of blood, urine and sputum were obtained.

Laboratory evaluation on admission demonstrated a leucocyte count of 13.8 x 10⁹/L (95% neutrophils, 3% lymphocytes, 2% mononuclear cells). The hematocrit was 29.3%, the hemoglobin was 9.4 g/dL and the platelet count was 19 x 10⁹/L. The erythrocyte sedimentation rate was 145 mm/hr. The chest radiograph showed lobectomy of the left upper lung with no acute infiltrates, masses, or effusions. A screen for human immunodeficiency virus (HIV) was negative.

Results of thyroid studies were as follows: free triiodothyronine (T₃) = 1.4 ng/dL (normal: 0.9-2.0 ng/dL), free thyroxine (T₄) = 2.5 pg/mL (normal: 2.1-4.7 pg/mL), and thyroid stimulating hormone (TSH) = 0.033 µIU/mL (normal: 0.4-4.0 ng/dL). A computed tomography (CT) scan of the cervical region showed multiple well-demarcated cavities ranging from 13 to 30 mm in size, with peripheral enhancement, within the right lobe, left lobe, and isthmus of the thyroid gland. Severe stenosis of the esophagus, with almost complete obstruction, was also evident (Fig. 1). Esophagoscopy demonstrated relatively easy passage of the flexible gastroscope through the esophagus and absence of any mucosal lesions, suggesting external compression. A CT scan of the brain demonstrated four ring-enhancing bilateral cortical lesions.

Fine needle aspiration of one of the thyroid cystic masses was performed, and purulent fluid was obtained and sent for culture. In view of the history of prior aspergilloma of the lungs, therapy with intravenous high-dose liposomal amphotericin was immediately initiated. Culture of the aspirated fluid yielded *A. fumigatus*. Blood and sputum cultures were negative. Despite therapy, the patient remained febrile, his condition worsened, and after 3 days he died as a result of cardiovascular collapse, most probably from overwhelming infection.

**FIG. 1.** Computed tomography (CT) scan of thyroid area showing multiple thyroid abscesses. White arrow indicates area of esophageal obstruction.

**Discussion**

This patient’s risk factor for developing disseminated aspergillosis was his coexisting myelodysplasia and type refractory anemia with pancytopenia. One other case of disseminated aspergillosis with thyroid involvement in a patient with myelodysplasia and type refractory anemia with profound neutropenia has been reported (4). Our patient was receiving bone marrow-stimulating growth factors before admission, and was able to mount a robust neutrophilic response. However, when these factors were withheld during hospitalization, his leucocyte count rapidly fell to 2.29 x 10⁹/L. Fungal dissemination may have occurred at the time of lung surgery and resection of aspergilloma that was not followed by complete antifungal therapy.

Thyroid involvement can occur in disseminated aspergillosis, and this risk warrants careful examination of the gland in high-risk patients (3,5). Most reports of thyroid invasion are from postmortem studies, since aspergillosis involving the thyroid is rarely diagnosed ante-mortem (4-8). Postmortem studies show that thyroid involvement constitutes 12% of extrapulmonary disease (3). The frequency of thyroid invasion at necropsy in patients with disseminated aspergillosis varies from 9%-35% (1-3). The majority of studies report absence of clinical or biochemical signs of gland dysfunction (3), although in two cases clinical thyrotoxicosis was reported and confirmed by biological tests (7,8). In the patient presented here, the TSH level was low, but the T3 and T4 levels were normal and no clinical signs of thyroid dysfunction were seen.

The most unusual feature in the patient described here was dysphagia for both solids and liquids, as a result of esophageal obstruction from local edema. Aspergillosis of the thyroid with obstruction of the esophagus has not been previously reported as far as we can ascertain. However, rapid enlargement of the gland causing airway compromise has been previously described (4-7).

Our patient had no clinical evidence of pulmonary involvement at the time he presented with disseminated aspergillosis. Disseminated aspergillosis with absence of pulmonary involvement has been previously reported, although this can only be verified by necropsy (9). Cerebral aspergillosis was probably present in our patient, based on the tomographic findings suggestive of multiple brain abscesses.

The mortality rate in invasive aspergillosis exceeds 90% when thyroid invasion or cerebral aspergillosis is present (1,4,10). The treatment of choice for invasive aspergillosis is amphotericin B, but the response rate is at best 55% (9). Despite antifungal therapy, our patient died. Surgical decompression and drainage of his abscesses was not performed, although this is an additional therapeutic option that should be considered in these cases.

In order to diagnose invasive aspergillosis of the thyroid gland, the clinician must maintain a high level of diagnostic suspicion among known high-risk patients who present with fever and findings localized to the thyroid region. Fine needle aspiration is a valuable and simple diagnostic method that facilitates the early diagnosis of this life-threatening condition.
References


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