We describe a case of acute myeloid leukemia (AML) complicated with retropharyngeal abscess (RPA) due to methicillin-resistant Staphylococcus aureus (MRSA) in a 56-year-old man. After administration of vancomycin and lavage of the retropharyngeal space with gentamicin, complete resolution of the RPA was observed. Despite their lower frequency, deep neck infections are associated with high mortality rates. The possibility of RPA should be considered in patients who present with fever, dysphagia and limitation of neck extension. Lavage of the retropharyngeal abscess with gentamicin may be optimal in cases of large RPA.

Key words: retropharyngeal abscess, methicillin-resistant Staphylococcus aureus, acute myeloid leukemia

Introduction

The incidence of retropharyngeal abscess (RPA) has been decreasing recently because of widespread use of broad-spectrum antibiotics (1–3). Most cases of RPA are of medical or traumatic origin. Non-traumatic RPA has been reported to be a complication due to infection of retropharyngeal lymph nodes mainly in infants and young children (2, 3). Retropharyngeal lymph nodes usually disappear after age 4 or 5 years. Therefore, the incidence of non-traumatic RPA in adults has been reported to be rare and usually secondary to chronic tuberculous cervical spine osteomyelitis (1–3). We present here a case of acute myeloid leukemia (AML) complicated with RPA after resolution of methicillin-resistant Staphylococcus aureus (MRSA) sepsis. The patient was successfully treated with intravenous vancomycin (VCM) and lavage of the retropharyngeal space with gentamicin (GM).

Case Report

A 56-year-old man was diagnosed as having AML with trilineage dysplasia in July 1998. Remission induction chemotherapy with idarubicin and cytosine arabinoside was initiated. After two courses of induction chemotherapy, complete remission (CR) was obtained. However, he relapsed in March 2000 after six courses of maintenance chemotherapy with 32% blast cells in peripheral blood.

Reinduction therapy with mitoxantrone, etoposide and cytosine arabinoside was initiated. On day 14 after the start of therapy, the patient developed high fever, watery diarrhea and intermittent abdominal pain. White blood cell count was only 300/µl and C-reactive protein (CRP) had increased to 196 mg/l at that time. MRSA sensitive to VCM, teicoplanin, arbecacin and GM grew in peripheral blood culture. No bacteria were isolated from a removed central venous catheter. After intravenous administration of VCM at a dose of 1,500 mg/day was started, diarrhea and abdominal pain disappeared immediately. His fever gradually subsided, and results of a test of blood culture on the 3rd day of treatment were negative. On day 30, CRP had decreased to 22 mg/l following recovery from myelosuppression, and intravenous VCM was discontinued. A bone marrow aspiration performed on day 40 after the start of reinduction therapy showed complete remission.

Consolidation chemotherapy with mitoxantrone and cytosine arabinoside was initiated in April 2000. The patient became febrile again and presented with non-productive cough, dysphagia and right-sided chest pain during profound myelosuppression. The serum levels of lactate dehydrogenase and CRP were 741 U/l and 261 mg/l on day 14 after the start of consolidation therapy. A chest radiograph and CT scan demonstrated typical multiple nodules with cavitations.
of pulmonary aspergillosis in the right upper lobe. After administration of amphotericin B (AMPH) at a dose of 1 mg/kg/day, cough and chest pain disappeared immediately and multiple nodules were reduced on a chest radiograph. CRP had decreased to 88 mg/dl on the 8th day of treatment. However, the patient remained febrile and complained of dysphagia for about one month despite recovery from therapy-induced neutropenia. Results of an otolaryngological examination were unremarkable, and CRP had increased to over 100 mg/l again. Moreover, he developed limitation of neck extension, aphagia and difficulty in swallowing. We were concerned about the possibility of a brain abscess or meningitis, though results of a brain CT scan were unremarkable. Lumbar puncture could not be performed because of prolonged thrombocytopenia. No bacteria were isolated from frequent blood cultures, and central venous catheter removal resulted in no significant response. Fever persisted despite administration of sulbactam/cefoperazone, meropenem and cefepime.

In view of the possible diagnosis of deep neck infection, a lateral X-ray of the neck was obtained on day 45 after the start of consolidation chemotherapy. The X-ray revealed some thickening anterior to the lower cervical space with invasion to the fourth cervical vertebra (Fig. 1). A contrast-enhanced CT scan demonstrated a ring-enhancing lesion in the retropharyngeal space suggestive of retropharyngeal abscess (RPA) (Fig. 2). Laryngoscopic examination was performed again but revealed little more than mild pharyngeal edema. Ultrasound (US)-guided needle aspiration of the RPA resulted in the release of a large amount of pus, and MRSA was isolated. We started intravenous administration of VCM and lavage of the retropharyngeal space with GM. After these treatments, the patient showed gradual recovery. CRP level decreased, and a CT scan performed after needle aspiration showed complete disappearance of the abscess.

However, he has the complication of progressive renal failure probably due to combination therapy with AMPH and VCM. Ten days after dose attenuation of AMPH, he developed progressive respiratory failure. A chest CT scan demonstrated drastic deterioration of pulmonary aspergillosis with a giant cavity. Moreover, new patchy consolidation in the opposite lung had occurred, and the sputum showed a substantial growth of multi-drug-resistant *Pseudomonas aeruginosa* (*P. aeruginosa*). No recurrent neck abscess or mediastinitis was detected. Despite treatment with broad-spectrum antibiotics, he developed septic shock of *P.*
Aerobic organisms vary (1–3, 11, 12). Har-El et al reported *Staphylococcus* and *S. aureus* are isolated in 45–88% of cases of deep neck abscess, and management of a deep neck infection. Therefore, the most important aspect is to clinically recognize the possibility of a deep neck infection. Laryngoscopic examination may not always be useful for diagnosis, as in the present case, except for injuries of pharyngeal mucosa. Contrast-enhanced CT has become the imaging modality of choice for the evaluation of patients with RPA (7–9). Empirical broad-spectrum antibiotics should be administered promptly to all neutropenic patients at the time of onset of fever. Gram-positive organisms now account for 60–70% of microbiologically documented infections, and MRSA is a common infectious pathogen during profound neutropenia (6). Infections caused by Gram-positive bacteria are generally indolent. The European Organization for Research and Treatment of Cancer (EORTC)—National Cancer Institute of Canada study showed that VCM is not generally a necessary part of initial empirical antibiotic therapy (14).

The necessity of external drainage has been controversial. If an obvious large abscess is found by a clinical examination, drainage should be planned. An alternative to open drainage of a neck abscess is the use of imaging-guided aspiration or catheter insertion. Yeow et al described 15 patients with deep neck abscess treated successfully with US-guided aspiration and catheter placement (16). No complications occurred in their study. Although the potential for damage to neurovascular structures exists, it may be useful for patients with thrombocytopenia or those of a poor general condition. The present patient was successfully treated with intravenous administration of VCM and lavage of the retropharyngeal space with GM via a transcutaneously placed catheter. Although the clinical efficiency of local antibiotics lavage for deep neck infections has not been established, this approach is recognized as a safe and effective option for acute pancreatitis, peritonitis and liver abscess. Local lavage is technically easy and GM covers not only MRSA but also mostly Gram-negative anaerobes implicated in deep neck infections. Furthermore, local lavage has the potential to prevent dissemination to the parapharyngeal area and post mediastinum. Local lavage might be considered as combination therapy with systemic antibiotics in cases in which a cavity remains in the retropharyngeal space after drainage of pus.

A recent study, however, has shown that most patients with deep neck infections could be treated successfully with antibiotics alone (17). Craig et al reviewed records of patients with RPA and found that there were no treatment...
failures in either the antibiotic-only group or antibiotics-plus-surgery group (13). Criteria for external drainage depend on a clinical or radiological suspicion that abscess involves other deep neck compartments.

In conclusion, the possibility of a RPA should be considered in patients who present with limitation of neck extension or dysphasia, and MRSA might be one of the pathogens in immunosuppressed patients, including those who have received intensive chemotherapy. Intravenous administration of VCM should be considered in neutropenic patients with RPA as initial empirical antibiotic therapy, and local antibiotic lavage of the retropharyngeal space may be a good option in cases of large abscess.

References
