Case report - Esophagus

Purulent spondylitis related to anastomotic fistula after esophageal cancer surgery

Tomoyuki Kakuta, Shin-ichi Kosugi*, Tatsuo Kanda, Katsuyoshi Hatakeyama
Division of Digestive and General Surgery, Niigata University Graduate School of Medical and Dental Sciences, 1-757 Asahimachi-dori, Niigata City 951-8510, Japan

Received 12 February 2010; received in revised form 15 April 2010; accepted 17 April 2010

Abstract

A 73-year-old man underwent neoadjuvant chemotherapy followed by transhiatal esophagectomy with gastric tube reconstruction for advanced esophageal cancer with palliative intent. Cervical esophagogastrostomy with circular-stapled end-to-side anastomosis was performed; however, anastomotic fistula developed. Fever, severe pain in the nape of the neck and numbness of the left hand were noted after drainage by wide opening of cervicotomy and the administration of empiric antibiotics. Magnetic resonance imaging revealed high signal intensity between the inferior C5 vertebral body and the intervertebral disc on T2-weighted images, and some areas were contrast-enhanced, suggesting purulent spondylodiscitis. Because methicillin-resistant Staphylococcus aureus was detected by bacterial culture from the drained pus, sensitive antibiotics were given, and those symptoms improved rapidly without sequelae.

Keywords: Spondylitis; Anastomotic fistula; Esophagectomy; Esophageal cancer

1. Introduction

Purulent spondylitis frequently occurs via hematogenous infection but sometimes develops via consecutive infection from the adjacent purulent focus or direct involvement of inflammation by invasive spinal procedures. Several case reports of purulent spondylitis caused by esophageal rupture, esophageal stent for benign stricture, or unresectable cancer have been published [1–4]; however, to our knowledge, there have been few reports of purulent spondylitis related to anastomotic fistula after surgery for esophageal cancer [5, 6].

2. Case report

A 73-year-old man was referred to our hospital, complaining of dysphagia and weight loss of about 7 kg over two months. Routine evaluation, including esophagography, esophagogastroduodenoscopy with biopsy, and computed tomography (CT)-scan, revealed that he had lower thoracic esophageal cancer with invading adventitia with perigastric nodal involvement that was not confirmed by endoscopic ultrasound-guided fine-needle aspiration. His cancer was classified as stage III according to the TNM classification of the International Union Against Cancer (UICC). Neoadjuvant chemotherapy with cisplatin and 5-fluorouracil were repeated twice every three weeks. Cisplatin at a dose of 80 mg/m² was given on day 1; 5-fluorouracil was adminis-
Fig. 1. Magnetic resonance imaging (MRI) on the 16th POD revealed high signal intensity between the inferior C5 vertebral body and the intervertebral disc on T2-weighted images (arrow). Some areas were contrast-enhanced, suggesting purulent spondylodiscitis. POD, postoperative day.

Fig. 2. MRI on the 94th POD showed that the high signal intensity and enhanced areas on the intervertebral disc remained; however, those on the inferior C5 vertebral body were indistinct and improved. MRI, magnetic resonance imaging; POD, postoperative day.

nape of the neck and left shoulder, and numbness of the left hand were noted, and the C-reactive protein level rose to 11.7 mg/dl on the 15th POD. Magnetic resonance imaging (MRI) on the 16th POD revealed high signal intensity between the inferior C5 vertebral body and the intervertebral disc on T2-weighted images (Fig. 1). Some areas were contrast-enhanced, suggesting purulent spondylodiscitis. Neither residual abscess nor bone metastasis was detected. Methicillin-resistant *Staphylococcus aureus* (MRSA) was detected in the pus bacterial culture; therefore, treatment with vancomycin at a daily dose of 1 g was initiated immediately. Thereafter, fever, pain in the nape of the neck, and neurological symptoms rapidly improved. Oral intake was started on the 16th POD as the anastomotic fistula itself closed on fluoroscopic re-examination.

After this treatment regimen, the patient had no relapse of symptoms and was discharged on the 43rd POD. Intravenous administration of vancomycin was continued in the outpatient setting. MRI on the 94th POD showed that the high signal intensity and enhanced areas on the intervertebral disc of C5/6 remained; however, those on the inferior C5 vertebral body were indistinct and improved (Fig. 2), so the administration of vancomycin was stopped. The patient died of cancer relapse involving lung, liver, peritoneum, and systemic lymph nodes on 122nd POD, but fever and neurological symptoms did not recur until the patient’s death.

3. Discussion

Iannettoni et al. reported that cervical osteomyelitis developed in three of 842 patients (0.35%) who underwent cervical esophagogastric anastomosis after transhiatal esophagectomy [5]. In these three patients, a suspension suture was placed between the anterior cervical prevertebral fascia and the very tip of the pulled-up stomach where the blood supply was most compromised, which might have caused focal gastric necrosis and subsequent infection involving the vertebral bodies. Although a suspension suture was not performed in this patient, it was possible for the fascia to be inadvertently injured during the anastomotic procedures. In any case, the mode of causing spondylitis may have been the direct spread of infection from the infectious focus, the same as in the three patients reported by Iannettoni et al., considering that the affected vertebral bodies were close to the impaired anastomosis and spondylitis manifested itself for relatively short duration after leakage. Additionally, it should be emphasized that age, immunosuppression caused by neoadjuvant chemotherapy, and highly advanced cancer with metastatic disease were associated with the occurrence of spondylitis in this patient, because a number of co-morbidities have been found to increase the risk of the disease [7]. Mecklenburg et al. reported an extremely rare case of esophagospinal fistula with spondilodiscitis after esophagectomy with gastric pull-up [6]. The patient had received neoadjuvant chemoradiotherapy for carcinoma of the mid-thoracic esophagus 18 months before presentation, which suggests...
not only an association with immunosuppression but also a direct effect of radiation itself.

MRI is the most sensitive and specific modality for confirming early diagnosis of spondylitis [7]. When neck or back pain with neurological deficit occurs in patients with highly advanced esophageal cancer, the differential diagnosis includes metastatic spinal disease. On MRI, spondylitis and metastatic spinal tumor are visualized as areas of low signal intensity on T1-weighted images and high signal intensity on T2-weighted images. Purulent spondylitis often involves the intervertebral disc, but the signal intensity of the intervertebral disc remains normal in patients with metastatic spinal tumor. MRI is, therefore, useful for differentiation. However, MRI is of limited value in monitoring response to the treatment. Imaging findings may actually persist or even worsen in spite of clinical improvement, as seen in this case, which does not necessarily represent deterioration or treatment failure [7].

Staphylococcus aureus is the most commonly isolated pathogen that complicates invasive spinal procedures, and methicillin resistance is found in 30–40% of nosocomially-acquired S. aureus strains [8]. A particular problem exists with MRSA spondylitis because of the poor bone penetration of vancomycin, which may correlate with the high failure rate of MRSA spondylitis treatment [8]. A switch to teicoplanin or linezolid was considered and would have been implemented if the treatment with vancomycin had failed; however, about 12 weeks of intravenous administration of vancomycin successfully controlled the pain and neurological symptoms until the patient’s death from esophageal cancer relapse.

It is to be regretted that quality of the rest of the patient’s life was impaired by prolonged spondylitis and early cancer relapse. Treatment selection is most important for patients with limited life expectancy so as not to suffer from unexpected complications by invasive procedures. Purulent spondylitis after esophagectomy is an extremely rare complication that can cause catastrophic sequelae, such as quadriplegia subsequent to epidural abscess. All esophageal surgeons should be aware of the disease for early detection and adequate treatment.

Acknowledgements

We gratefully acknowledge Takui Ito (Division of Orthopedic Surgery, Niigata University Graduate School of Medical and Dental Sciences) for his great contribution to this article.

References