



Delayed Presentation of an Esophageal Perforation Many Years after Anterior Cervical Spine Surgery: A Case Report

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Abstract

Cervical osteomyelitis due to an esophageal perforation is a rare condition with a high morbidity and mortality. Its presentation can be acute or chronic which makes the diagnosis not always straightforward. Usually it is seen in patients who underwent anterior cervical surgery. Patients may present up to many years later with a variety of symptoms. We report a delayed presentation of cervical osteomyelitis in a 51-year-old woman who suffered from increasing cervicalgia and thoracic discomfort. Imaging revealed a prevertebral abscess with osteomyelitis and loosening of the anterior plate fixation which she underwent ten years ago following ACDF. A two-stage surgical intervention was necessary, followed by long term antibiotic therapy. The recovery was long but satisfactory with an improvement of the presenting complaints. There are several therapeutic options for the management of cervical spine infection described in the literature; we will briefly address the most prevalent techniques.

Introduction

Cervical osteomyelitis after Anterior Cervical Discectomy and Fusion (ACDF) is relatively rare. It can be the result of an iatrogenic esophageal perforation during anterior cervical surgery or by esophageal erosion up to many years later. The incidence of esophageal injuries ranges between 0% and 3.4% [1].

This condition needs a prompt treatment. The treatment consists of a multidisciplinary approach and a surgical intervention is often inevitable. The vast majority of the patients with cervical spine infections initially present with axial and musculoskeletal pain. Other symptoms include dysphagia, hoarseness, fever, etc. There is a wide variety in the used surgical technique to perform an esophageal tear repair with or without instrumentation. Hence treatment should be tailored in each case.

Here, we present a case report of a 51-year-old woman diagnosed with a retropharyngeal abscess related to an ACDF procedure performed ten years earlier.

Case Presentation

A 51-year-old woman was referred to our department due to increasing cervicalgia with pain irradiating down arms, thoracic discomfort, sternal pain, night fevers and unintentional weight loss. Her previous medical history consists of beta thalassemia minor, depression and an ACDF at C5-C6-C7 performed ten years earlier. A thorough clinical neurological examination showed no abnormalities. A blood analysis revealed known microcytic hypochromic anemia, a raised C-reactive protein and protein electrophoresis suggesting a reactive process. At an early stage in the work-up, an esophagogastroscopy was performed: below the upper esophageal sphincter, a submucosal bulge and a small lump of loose connective tissue were present and suggestive for a silent defect fistula (Figure 1). Subsequently a full body FDG-PET CT showed extensive FDG caption at the lower cervical spine suggestive for osteomyelitis (Figure 2). A CT and MRI of the cervical spine confirmed reactive retropharyngeal tissue from C2 to Th2, a prevertebral abscess (dimensions 13 mm × 9 mm × 13 mm) at the level of C7 and loosening of the anterior plate fixation and osteomyelitis from vertebra C4 to C7 (Figure 3).

A surgical procedure was performed to stabilize the cervical spine posteriorly and subsequently obtain a specimen for microbiological diagnosis and perform anterior sanitation. After surgery, a CT of the cervical spine showed a good position of the posterior instrumentation and no other unexpected findings (Figure 4). Postoperatively, a Barium swallow X-ray examination showed,

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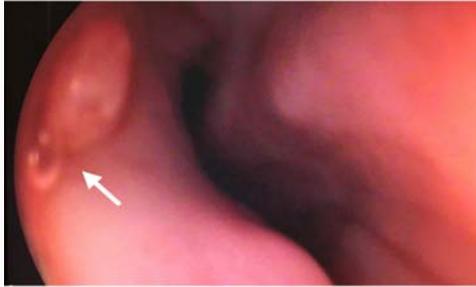


Figure 1: Endoscopic oesophageal biopsy; below the upper oesophageal sphincter, a submucosal bulge and a small lump or loose connective tissue is found (arrow).

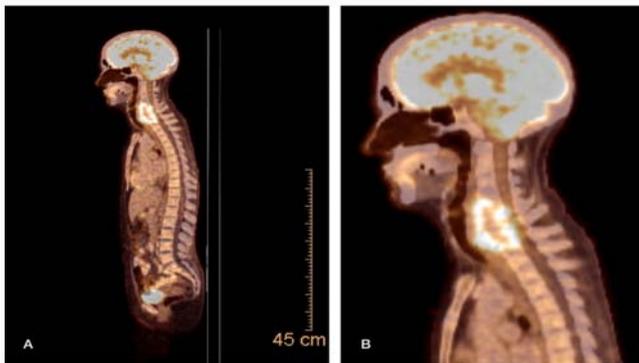


Figure 2: Sagittal SPECT CT scan (A) and sagittal detail SPECT CT scan (B).



Figure 3: Sagittal CT scan (A) and sagittal MRI scan T1 contrast enhanced sequence (B).

as suspected on the esophagogastroscopy, a small posterolateral esophageal defect with contrast leakage approximately 1 cm from the upper esophageal sphincter. Postoperatively, empirical treatment with vancomycin, ceftriaxone and metronidazole was started which was subsequently narrowed to amoxicillin/clavulanic-acid. For a period of 7 months, there was a strict 'nil per os' regimen with nasogastric tube feeding. During the follow-up period, timely MRI scans were performed to assess the evolution of the cervical osteomyelitis which was favourable. To date, the patient has only a small terminal sinus (esophageal diverticulum) with no discomfort. She successfully returned to a normal 'oral' diet and is, to date of publication, 3 years postoperative.

Discussion

A retropharyngeal abscess due to an esophageal perforation



Figure 4: Sagittal CT scan (A) and sagittal MRI T1 Contrast enhanced sequence (B).

during or after anterior cervical surgery is a challenging problem. It may not be easily diagnosed due to its unspecific presentation, especially in the case of a delayed perforation. A high index of suspicion for esophageal perforations is mandatory during anterior cervical surgery and afterwards when dysphagia, hoarseness, systemic signs of fever or leukocytosis, imaging evidence of air or fluid in the cervical fascia spaces of the mediastinum are present [1,2].

Generally, the diagnosis is made by plain X-rays, a Barium swallow study, a CT scan or an MRI scan. Endoscopic studies are also useful. One should bear in mind that the clinical suspicion is the most important factor and thus a surgical exploration may be warranted in cases with inconclusive imaging studies but with a high clinical suspicion [3]. In our case, there was a relatively high clinical suspicion with a confirmed abscess and loosening of the anterior plate fixation on CT and MRI imaging as well as a suggestive esophagogastroscopy.

A surgical intervention was performed to stabilize the cervical spine posteriorly and subsequently obtain a specimen for microbiological diagnosis and perform anterior sanitation. After the initial surgery, the cervical spine was deemed to be stable due to an established bony fusion and the second anterior reinforcement was not performed. To date, there are no signs of cervical instability on follow-up imaging.

In the literature, several surgical techniques are suggested. If the esophageal perforation is recognized intraoperatively or in the early postoperative phase, a primary suture technique with or without muscle flap reinforcement can be used. These muscle flaps can include a sternocleidomastoid muscle flap, a pectoralis major muscle flap, a longus colli muscle flap, etc. If the perforation becomes apparent after weeks, months or even years, there is often a need for a more elaborate approach with an esophageal reconstruction. These reconstructions can be performed with a free jejunal graft, fibula osteo-adipofascial flap, free vascularized fibular graft, etc. [4-6]. In our case, although it was a late presentation, there was a successful conservative treatment of the esophageal defect with a long-term strict 'nil per os' regimen. Thus, besides the surgical repair, one should always take supportive measures such as nasogastric tube feeding with a strict 'nil per os' regimen and administration of targeted antibiotics [2].

The overall survival of an esophageal perforation is 95.9% (mortality 4.1%). If recognized in time, whether it is an early or late presentation of an esophageal perforation and treated accordingly, the overall outcome is favourable. As well in terms of cervical stability (fusion rate nearly 100%) as pain relief (improvement postoperatively 100%) [7].

Conclusion

If a cervical osteomyelitis due to an esophageal perforation is suspected, an extensive diagnostic work-up is indicated. This must be followed by a patient targeted approach consisting of cervical stabilization and esophageal sanitation. In addition, the administration of antibiotics and a restricted oral intake are mandatory.

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