CASE REPORT

Acute prevertebral abscess secondary to infected pancreatic pseudocyst

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SUMMARY

We report a case of a middle aged, man with diabetes who presented with dysphagia and odynophagia. On evaluation, he was diagnosed to have an acute prevertebral abscess with an unusual aetiology, an infected pseudocyst of pancreas. Contrast-enhanced CT revealed an enhancing collection in the prevertebral space extending to the retrogastric space and communicating with the body of the pancreas via the oesophageal hiatus. Transoral incision and drainage of the prevertebral abscess were performed. Nasogastric tube was placed in the prevertebral space for continuous drainage and daily irrigation. Supportive intravenous broad spectrum antibiotic therapy along with the surgical intervention led to the resolution of the prevertebral abscess and the infected pancreatic pseudocyst.

BACKGROUND

Prevertebral abscess secondary to infected pseudocyst of the pancreas is extremely rare. Diagnosis of aetiology of acute prevertebral abscess associated with infected pancreatic pseudocyst requires a high index of suspicion and detailed clinical evaluation. Imaging modalities play an extremely important role in determining the aetiology and follow-up. Treatment of this clinical condition poses a serious challenge to the clinician because of risk of complications associated with the disease.

Pancreatic pseudocyst is a collection of fluid in the retroperitoneal space lined by a false membrane in the form of either fibrous tissue or granulation tissue. It is localised, rich in pancreatic enzymes and has communication with the pancreas. It is diagnosed ideally by transabdominal ultrasound, contrast-enhanced CT (CECT) or MR cholangiopancreatography. It often resolves with conservative treatment. Symptomatic pseudocysts require surgical drainage procedures. Pseudocysts can be complicated by infection, bleeding or spontaneous rupture.¹⁻³ By writing up this case, we would like to present our management of this clinical condition and successful treatment of the prevertebral abscess by a unique method of nasogastric tube drainage.

CASE PRESENTATION

A 51-year-old man presented to the outpatient department of our tertiary care hospital with sudden onset dysphagia to solids and odynophagia of 4 days duration. There was no history of fever with chills, breathing difficulty, change in voice, aspiration, foreign body ingestion, cough with

expectoration, haemoptysis or neck swelling. There was no history of toothache, trauma or upper respiratory infection. He was diagnosed to have chronic pancreatitis with pseudocyst of the pancreas subsequent to chronic alcoholism for which he was treated conservatively and underwent alcohol de-addiction 5 years ago. He gave history of three episodes of acute on chronic pancreatitis in the past. He did not have history of tuberculosis in the past. However, he was diagnosed to have type 2 diabetes mellitus for which he was being treated with insulin.

The patient was afebrile with normal pulse, blood pressure and respiratory rate. Clinical examination revealed a smooth bulge in the posterior pharyngeal wall extending from the level of soft palate to the post cricoid area with overlying congested mucosa. A pus point was noticed on the posterior pharyngeal wall predominantly on the left side at the level of epiglottis (figure 1). Laryngeal

Figure 1 Rigid laryngeal endoscopy showing pus point on the posterior pharyngeal wall bulge at the level of the epiglottis.

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crepitus was absent. There was no evidence of any neck swelling. Rigid laryngeal endoscopy was carried out to document the adequacy of airway and the presence of mobile vocal cords. The lower extent of the posterior pharyngeal wall bulge could not be ascertained even on rigid laryngeal endoscopy. Examination of ear, nose and oral cavity did not reveal any foci of infection. Abdominal, respiratory, cardiac and neurological examinations were normal.

INVESTIGATIONS

Blood picture revealed an elevated white cell count with predominant neutrophilia and an elevated erythrocyte sedimentation rate. The fasting and postprandial blood glucose levels were elevated. The liver function tests and renal function tests were normal. Serum amylase level was normal (139 U/L). Urine sugar and ketones were positive. Lateral view plain radiograph of the neck revealed an increased soft tissue density along the entire extent of the prevertebral region of the neck with straightening of cervical vertebra. There was no evidence of air fluid level, vertebral erosion or foreign body. To ascertain the lower extent of the abscess, CECT of the neck including thorax and abdomen was carried out. It revealed an enhancing collection in the prevertebral space of size 1.4×3 cm (in cervical region) and 4.5×3.4 cm (in thoracic region) extending from the C1 vertebra to posterior mediastinum and through oesophageal hiatus to retrogastric space communicating with the body of the pancreas (figures 2–4). The size of the pancreatic pseudocyst was $3.3 \text{ cm} \times 2.2 \text{ cm}$ with surrounding rim enhancement. The prevertebral collection was abutting the vertebral bodies posteriorly and oesophagus anteriorly with encasement of descending thoracic aorta (figure 5). Great vessels of neck, lungs and rest of the mediastinum were normal.

TREATMENT

The patient was started empirically on intravenous antibiotic therapy with third-generation cephalosporins and aminoglycosides.

Figure 2 Contrast-enhanced CT of the neck (axial view) showing rim enhancement of prevertebral abscess at the level of the epiglottis.

Figure 3 Contrast-enhanced CT of the neck and thorax (sagittal view) showing prevertebral space abscess.

A general surgery consultation was given in view of infected pseudocyst of pancreas and they suggested conservative therapy with intravenous antibiotics in the present state with close follow-up and surgical or endoscopic drainage of the pseudocyst if the current situation did not resolve with intravenous antibiotic therapy. However, in view of increasing size of prevertebral abscess, the patient was taken to the operating room and under general anaesthesia with endotracheal intubation, transoral incision and drainage of abscess were carried out. A vertical incision of size 4 cm was made along the prominent pus point on the posterior pharyngeal wall and 100 mL of frank pus was drained. A nasogastric tube was inserted into the space and secured in place for constant drainage of abscess and irrigation of the space with antiseptic (povidone iodine) solution postoperatively (figure 6). The pus obtained was sent for Gram staining, aerobic bacterial culture and sensitivity, acid-fast bacilli (AFB) staining and culture and amylase levels. Biopsy was also taken from the necrotic tissue in the space. Another nasogastric tube was inserted for feeding purposes.

OUTCOME AND FOLLOW-UP

Gram staining and culture revealed moderate growth of *Klebsiella* species sensitive to amikacin, gentamicin, ceftriaxone,

Figure 4 Contrast-enhanced CT of abdomen (axial view) showing rim enhancement of collection in retrogastric space.

Figure 5 Contrast-enhanced CT of the thorax (coronal view) showing prevertebral abscess encasing the descending thoracic aorta.

cefotaxime, ciprofloxacin, ofloxacin and cotrimoxazole. AFB staining and culture were negative and histopathology revealed features consistent with necrotic tissue in abscess. Amylase levels

Figure 6 Contrast-enhanced CT of the neck (axial view) showing nasogastric tube in the prevertebral space with resolution of abscess. Nasogastric tube used for feeding purposes can also be visualised.

were elevated in the abscess (6412 U/L). Constant aspiration of pus and irrigation of the space was carried out up to day 10 postoperatively until there was no aspirate, after which the nasogastric tube was removed. During the course of therapy, a repeat CECT carried out showed significant decrease in size of prevertebral collection in cervical and posterior mediastinum and retrogastric space with a communication between the retrogastric space and dilated pancreatic duct in the region of body of the pancreas. The patient was discharged after 2 weeks of intravenous antibiotic therapy and was advised 4 weeks of oral antibiotic therapy and nasogastric tube feeding with weekly follow-up. The incised wound in the posterior pharyngeal wall healed completely in 2 weeks following removal of the nasogastric tube which was used for drainage and irrigation.

The patient had no complaints and recovered completely after 1-month follow-up.

DISCUSSION

Prevertebral space is a deep neck space which lies between the prevertebral fascia and the bodies of vertebrae and extends from the skull base to the coccyx.^{4 5} Prevertebral abscess forms less than 1% of all deep neck space infections.^{6 7} Odontogenic infections are the commonest aetiological factors in the development of deep neck space abscess; however, it has been emphasised that infective spondylodiscitis and Pott's spine are the common aetiologies in the formation of prevertebral abscess. Penetrating trauma is a common aetiology which can develop multiple deep neck space infections involving retropharyngeal, danger space and prevertebral space.^{4 5}

Deep neck space abscesses have been on the decline and prevertebral abscess, with its low incidence, is extremely uncommon. However, in developing countries, lack of primary healthcare and education, poor socioeconomic status, substance abuse and increasing incidence of multidrug resistant infections and HIV have been recognised as prime contributing factors not only for deep neck space infections but also its life-threatening complications.⁶⁻⁹ Immunosuppression due to diabetes mellitus, chemotherapy, renal failure and steroid therapy are other important predisposing factors in the development of deep neck space abscess.⁶⁻¹¹ In the literature, there have been reports of extension of pseudocyst complicating an acute or chronic pancreatitis into the mediastinum, through the openings in the diaphragm, both in the adult and paediatric age groups; however, presence of a prevertebral abscess secondary to an infected pancreatic pseudocyst as a complication of pancreatitis in a diabetic patient has not been reported.^{12 13}

Multiple organisms have been isolated in the cultures of deep neck space abscesses. *Streptococcus* species is the single most commonly isolated organism implicating deep neck space abscess.^{7 8 10 11 14} However, in the presence of diabetes mellitus, *Klebsiella* species has been reported as the commonest organism causing deep neck space infections.^{11 14}

Clinical features vary according to the site of infection. Odynophagia is the commonest symptom in deep neck space infections.^{7 15 16} Other common modes of presentation are neck swelling, dysphagia, trismus, toothache, neck pain, otalgia and respiratory difficulty.^{4 7 15 16}

Imaging forms the mainstay of determining the source and extent of deep neck abscess, including the presence of complications. Ultrasound has been used as the preliminary radiological investigation to confirm the presence of an abscess;^{4 6} however, CECT has a high sensitivity and is always mandatory in ascertaining the origin and extent of deep neck space abscess.^{4 6 7 16} MRI with gadolinium contrast can be carried

out for accurate soft tissue involvement assessment.⁴ High amylase levels in pus determine pancreatic pseudocyst as contributory aetiological factor in the development of prevertebral abscess.^{12 13 17}

Pharmacotherapy, surgical drainage, airway management and treatment of the predisposing factor constitute the multimodal therapy in management of deep neck abscesses.^{6-10 15 16} Broad spectrum antibiotic therapy is essential at the time of presentation of deep neck abscess, and specific therapy against the cultured organism can be initiated once the organism sensitivity report is available.^{6 7 16} Surgical drainage can be carried out by transoral or transcervical approach, whereas thoracotomy maybe warranted in mediastinal extension of abscess.^{5-7 10 16} Nasogastric tube drainage has been used in retropharyngeal abscess.¹⁸ In our case, we were able to successfully manage a prevertebral abscess using nasogastric tube drainage without fistula formation which has been implicated as a complication of transoral drainage of prevertebral abscess.^{3 4} Airway should be managed either by endotracheal intubation or by tracheostomy before proceeding with drainage of abscess.^{6-8 16}

Life-threatening complications are triggered by deep neck abscesses, more so in patients with decreased immunity and highly virulent organisms. The various complications of deep neck abscesses are airway obstruction, mediastinitis, pneumonia, sepsis, disseminated intravascular coagulation and intracerebral abscess. Mortality rate of deep neck abscess is high in the presence of complications.^{6 11} Hence, adequate and aggressive therapeutic algorithm should be initiated at the earliest possible stage of a deep neck space infection.

Learning points

- The commonest aetiology of a prevertebral abscess is infective spondylodiscitis or posterior pharyngeal wall trauma. However, in the absence of these, other aetiological factors including extension of infections from retroperitoneal organs should be considered.
- Contrast-enhanced CT forms the gold standard investigation in the diagnosis of a deep neck space abscess.
- Treatment of deep neck space abscess should include incision and drainage of abscess with intravenous antibiotic therapy and airway management.

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Contributors AMB was the principal investigator and prepared the manuscript. SP reviewed the manuscript. SV reviewed the literature. AA documented case details and imaging.

Competing interests None.

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