
Successful treatment of descending necrotizing mediastinitis with hemorrhagic complication

Rahim MAHMODLOU¹, Rahman ABBASIVASH²

¹ Urmia Üniversitesi, Emam Hastanesi, Genel ve Göğüs Cerrahisi Bölümü, Urmia, İran,

² Emam Hastanesi, Anestezi Bölümü, Urmia, İran.

ÖZET

Hemorajik komplikasyon gelişen desendan nekrotizan mediastinitin başarılı tedavisi

Desendan nekrotizan mediastinit boyundan başlayıp mediastene yayılan nadir ve ölümcül bir mediasten infeksiyonudur. Hastanın kurtarılmasını sağlayan anahtar noktalar erken tanı, agresif drenaaj ve komplikasyonların dikkatli bir şekilde tedavisidir. Odontojenik kökenli, hemorajik komplikasyon gelişen ve başarılı bir şekilde tedavi edilen desendan nekrotizan mediastinit olgusunu sunuyoruz.

Anahtar Kelimeler: Mediastinit, nekrotizan, odontojenik.

SUMMARY

Successful treatment of descending necrotizing mediastinitis with hemorrhagic complication

Rahim MAHMODLOU¹, Rahman ABBASIVASH²

¹ Department of General and Thoracic Surgery, Emam Hospital, Urmia University of Medical Sciences, Urmia, Iran,

² Department of Anesthesiology, Emam Hospital, Urmia, Iran.

Descending necrotizing mediastinitis is a rare and fatal infection of mediastinum that begins in the neck and spreads to the mediastinum. The key points of patient salvage are early diagnosis, aggressive drainage, and meticulous handling of comp-

Yazışma Adresi (Address for Correspondence):

Dr. Rahman ABBASIVASH, Department of Anesthesiology, Emam Hospital,
URMIA - IRAN

e-mail: rabbasivash@gmail.com

lications. We present a case of descending necrotizing mediastinitis with odontogenic origin and with hemorrhagic complication that successfully treated.

Key Words: Mediastinitis, necrotizing, odontogenic.

Descending necrotizing mediastinitis (DNM) is one of the most lethal form of mediastinitis and its mortality remains high because of associated lethal complications, such as acute respiratory obstruction, aspiration pneumonia, jugular thrombophlebitis, and carotid artery hemorrhage (1,2). Delay of diagnosis and inappropriate drainage of the mediastinum are the main cause of mortality in this life-threatening condition (3).

CASE REPORT

The patient was a 26 year-old man presented with recurrent pain in his lower jaw. He had fever, swelling and erythema in submental region and difficulty mouth opening for five days before referring to otolaryngology clinic. He underwent drainage of abscess under local anesthesia. In spite of drainage, his general condition worsened during the first six hours when he was agitated and tachypenic. In physical examinati-

on, his neck was edematous and erythematous which extended to the upper thorax, and crepitation was detected in the neck and the upper thorax.

Hydration and intravenous antibiotic including penicillin, ceftriaxon and clindamycin were started. Cervicothoracic computerized tomography (CT) scan with IV contrast was carried out which showed right sided pleural effusion, and severe infection with gas bubbles in anterior mediastinum (Figure 1).

After preparation of patient for operation, right side of neck was drained where malodor pus discharged under pressure. Subcutaneous tissues and muscles were necrotic. Internal jugular vein was thrombotic and necrotic, but carotid artery was intact (Figure 2). All necrotic tissues were debrided, however, since necrosis extended along vein caudad and cephalad and also

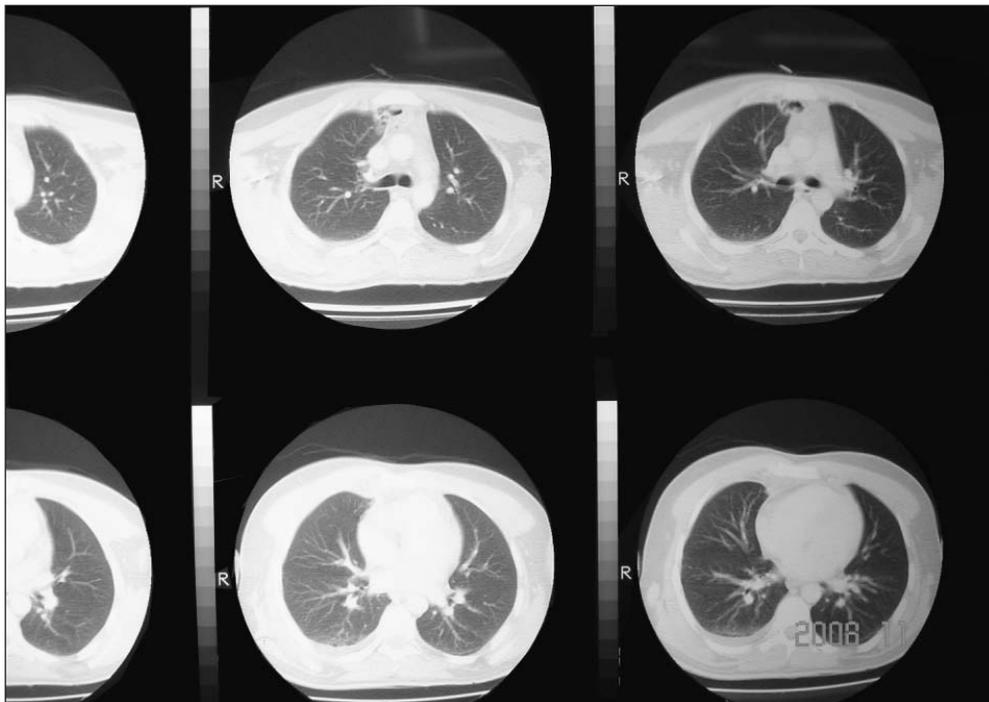


Figure 1. CT scan of chest shows gas in mediastinum and effusion in the right hemithorax.



Figure 2. Gangrene and thrombosis of internal jugular vein.

considering that debridement of necrotic internal jugular vein is not safe due to insecurity of vein stumps, vein left unhandled. Then left side of the neck was explored and pus drained where vascular structures were normal. Then right anterolateral thoracotomy was done due to extension of infection to posterior mediastinum based on preoperative CT scan. As soon as pleural space was opened malodor pus was drained. The mediastinal pleura were necrotic and all necrotic mediastinal tissues removed and pleural space irrigated with copious saline. After insertion of two posterior and one anterior chest tubes for irrigation, the chest closed and neck wounds left open and packed with moist long gauze.

Pleural space irrigated continuously with slain plus 1 gm cephazolin per liter. The neck wound irrigated and debrided in operating room daily



Figure 3. Profuse bleeding on 7th postoperative day.

and his dressing changed twice daily in intensive care unit. His general condition recovered and extubated in third postoperative day. Soft diet is started in 5th postoperative day and left neck wound approximated. In 7th postoperative day bleeding occurred at the right neck and patient returned to the operating room and exploration showed that bleeding is from blowouted facial vein where it joins to the internal jugular vein (Figure 3). After control of bleeding, the necrotic and thrombosed jugular vein removed sub-totally, because necrosis was extended along the vein to the base of skull. Gradually, granulation tissues appeared and irrigation discontinued. Under general anesthesia, his right second inferior molar tooth extracted by maxillofacial surgeon on 14th postoperative day. Then, his chest tubes removed sequentially. On 18th postoperative day, he became febrile and CT scan showed loculated effusion in the posterior right hemi-thorax which drained by means of another chest tube. Neck wound gradually filled with granulation tissue and closed secondarily and he discharged after 44 days.

DISCUSSION

The descending necrotizing mediastinitis is a rather rare lesion and less than 100 cases have been reported in the Angloaxon medical literature. The process mainly involves young adults around the fourth decades (4).

The origin of the infectious process is almost always located deep in the cervical area. Among these, the periodontal primary focus constitutes 41%, while a pharyngitis complicated with the formation of an abscess is the second most common etiology, noted in 35.5% of cases (4,5). Four facial spaces that involve both the neck and mediastinum (pretracheal, retropharyngeal, perivascular, and parapharyngeal spaces) are important because infection reaches the mediastinum through these spaces (2).

The clinical picture during the first few days is nonspecific. Classical presentation is a syndrome pointing toward an infectious process, which may end in a state of shock. The clinical signs related to a cervical localization are an inflammatory edema, dysphasia, and cracking on palpation, findings that should be strictly watched (4-6).

Cervicothoracic CT scan is the diagnostic method for investigation in DNM. Endo et al. classified four patients with DNM into three groups according to the degree of diffusion of infection as diagnosed by CT scan. Localized DNM (type 1) was localized to the upper mediastinal space above carina. Diffuse DNM (type 2A) extended to the lower anterior mediastinum. Diffuse DNM (type 2B) extended into both the anterior and posterior lower mediastinum (2).

Radiography of the cervical segment and chest may be useful in the demonstration of subcutaneous emphysema in the form of vertical linear where clear bands of gas extending from cervical spaces into the mediastinum. However, their modest diagnostic sensitivity should call immediately for CT scanning of cervicothoracic areas, the key examination in the search of the stigma of the latent diseases (4).

Early diagnosis is important and aggressive surgical drainage of mediastinum is recommended for successful treatment (2-5). The critical aspects of a treatment strategy for DNM are sufficient debridement, adequate drainage, and effective irrigation. Until 1980s, transcervical mediastinal drainage was the main treatment strategy and open thoracotomy was unusual (3). Since 1990s, early wide thoracotomy has been supported by many authors and mortality rate has been dramatically reduced (3-5). Despite

acceptance of the crucial rule of surgical debridement in management of DNM, the extension of debridement is controversial. But, recent reports of successful treatment of DNM denote that when DNM extended to the level of the fourth thoracic vertebra or tracheal bifurcation, cervicomediastial drainage is insufficient (1).

REFERENCES

1. Takao M, Ido M, Hamaguchi K, et al. Descending necrotizing mediastinitis secondary to a retropharyngeal abscess. *Eur Respir J* doi: 10.1183/09031936.94.07091716.
2. Hirai S, Hamanaka Y, Mitsui N, et al. Surgical treatment of virulent descending necrotizing mediastinitis. *Ann Thorac Cardiovasc Surg* 2004; 10: 34-8.
3. Iwata T, Sekine Y, Shibuya K, et al. Early open thoracotomy and mediastinopleural irrigation for severe descending necrotizing mediastinitis. *Eur J Cardiothorac Surg* 2005; 28: 384-8.
4. Novellas S, Kechabtia K, Chevallier P, et al. Descending necrotizing mediastinitis: a rare pathology to keep in mind. *Clin Imaging* 2005; 29: 138-40.
5. Yamasaki Y, Nishi J, Nishikama T, et al. Descending necrotizing mediastinitis secondary to retropharyngeal abscess in a child. *J Infect Chemother* doi: 10.1007/s10156-008-0606-3.
6. Liptay M, Kanaan S. Acute and chronic mediastinal infections. In: Shields TW, Locicero III J, Ponn RB, Rusch VW (eds). *General Thoracic Surgery*, 6th ed. Philadelphia: Lippincott Williams and Wilkins, 2005: 2477-88.