CHAPTER 24

DESCENDING NECROTISING MEDIASTINITIS WITH ODONTOGENIC ORIGIN

Beyza KARADEDE ÜNAL [1]
Nuri ÜNAL [2]
Onur ŞAHİN [3]
Berşan KARADEDE [4]
M. İrfan KARADEDE [5]

As a complication of odontogenic infection, acute purulent mediastinitis is rarely seen and when this occurs, it is called Descendant Necrotizing Mediastinitis (DNM). Descendant necrotizing mediastinitis (DNM) is described as an severe infection that occurs in the buccopharyngeal tissues and subsequently extends along the mediastinum and cervical fascia. DNM, which occurs as a complication of oropharyngeal infection, has been defined in the literature previously [1,2].

Although the overall incidence of mediastinitis has decreased after the initiation of antimicrobial treatments, a growing number of DNMs with odontogenic origin have been reported in the literature [3-5]. DNM shows an aggressive course and may result in pyothorax, pericarditis, sepsis, multiple organ failure and death. With a mortality rate of over 50% before the antibiotic age, DNM still has a high mortality rate (approximately 11-40%), mainly due to late diagnosis and inappropriate surgical treatment, despite its wide range of antibiotics [6].

In 60-70% of DNM cases, there is a medical history of dental infections, especially associated with abscesses affecting the lower molars [7,8]. However, in recent years, a considerable amount of mediastinitis has been identified as a complication of surgical procedures such as implant surgery or extracting impacted wisdom teeth [9]. This deadly condition is usualy misdiagnosed in the early stages because of its rarity and nonspecific symptoms. The process that begins as an odontogenic infection after tooth extraction can progress quickly from the submandibular space to the parapharyngeal and retropharyngeal spaces, lower thorax as well as along the carotid sheath.

In other respect, orthognathic surgery is one of the most commonly performed cosmetic surgical procedures. Hemorrhage, infection, and facial palsy have been reported as complications of the surgery, but the occurrence is low. Kim et al. encountered a case of Le Fort I osteotomy and SSRO at the same time after which facial nerve palsy, postoperative bleeding, wound dehiscence, and descending necrotizing mediastinitis (DNM) developed in a sequence. Also descending necrotizing mediastinitis is a life-threatening infection that requires prompt and aggressive multi-

[1] Asst. Prof. Dr., İzmir Katip Çelebi University Faculty of Dentistry Department of Orthodontics, dr.beyzakaradede@gmail.com
[2] Dr., Private Oral and Maxillofacial Surgeon, İzmir, dr.nuriunal@icloud.com
[3] Asst. Prof. Dr., İzmir Katip Çelebi University Faculty of Dentistry Department of Oral and Maxıllofacial, onursahin43@hotmail.com
[4] Dent., İzmir Katip Çelebi University Faculty of Dentistry Department of Orthodontics, bersan.karadede@hotmail.com
[5] Prof. Dr., İzmir Katip Çelebi University Faculty of Dentistry Department of Orthodontics, mikaradede@gmail.com

In the light of all these data and considering the aggressive course of DNM and the high mortality rate due to delayed diagnosis, a detailed anamnesis and clinical examination, CT imaging, bacterial culture and, if necessary, surgical drainage following antibiotherapy; it is very important in terms of the course of infection and mortality.

REFERANCES

1. Bartsch MS, von Bernstorff W, Schäfer FK, Wilfang J, Warnke PH: Critical odonto- genic infection involving the mediastinum. Case report. Mund Kiefer Gesichtschir 9: 257e262, 2005
2. Hendler BH, Quinn PD: Fatal medistinitis secondary to odontogenic infection. J Oral Surg 36: 308e310, 1978
3. Seppänen L, Lauhio A, Lindqvist C, Suuronen R, Rautemaa R. Analysis of systemic and local odontogenic infection complications requiring hospital care. J Infect 2008; 57: 116-122.
4. Amponsah E, Donkor P. Life-threatening oro-facial infections. Ghana Med J 2007; 41: 33-36.
5. Rautemaa R, Lauhio A, Cullinan MP, Seymour GJ. Oral infections and systemic disease-an emerging problem in medicine. Clin Microbiol Infect 2007; 13: 1041-1047.
6. Estrera A, Landay M, Grisham J, et al. Descending nec- rotizing mediastinitis. Surg Gynecol Obstet 1983;157:545– 552.
7. Ridder GJ, Maier W, Kinzer S, et al. Descending necrotizing mediastinitis: Contemporary trends in etiology, di- agnosis, management, and outcome. Ann Surg 2010;251: 528–534.
8. Freeman RK, Vallieres E, Verrier ED, et al. Descending necr otizing mediastinitis: An analysis of the effects of serial surgical debridement on patient mortality. J Thorac Cardiovasc Surg 2000;119:260 267.
9. Li KK, Varvares MA, Meara JG. Descending necrotizing mediastinitis: A complication of dental implant surgery. Head Neck 1996; 18: 192-196.
10. Kim SK, Oh ES, Hong J, Roh TS, Rah KD, Paik CH Descending Necrotizing Mediastinitis and Facial Palsy as Serial Complications in Orthognathic Surgery. J Craniofac Surg 2011;22: 559-561.
11. Rubin MM, Cozzi GM. Fatal necrotizing mediastinitis as a complication of an odontogenic infection. J Oral Maxillofac Surg 1987; 45: 529-533.
12. Temes R, Crowell R, Mapel D, et al. Mediastinitis without antecedent surgery. Thorac Cardiovasc Surg 1998; 46: 84-8
13. Singhal P, Kejrival N, Lin Z, Tsutsui T, Ullal R. Optimal Sur- gical Management of De-scending Necrotising Mediastinitis: Our Experience and Review of Literature. Heart, Lung and Circulation 2008; 17: 124-8.
14. Weaver E, Nguyen X, Brooks MA. Descending necrotising me- diastinitis: Two case reports and review of the literature Eur Respir Rev 2010; 19: 141-9.
15. Bancescu G, Dumitriu S, Bancescu A, Pana M, Andrei M. Oral Streptococcal strains isolated from odontogenic infections and their susceptibility to antibiotics. Rev Med Chir Soc Med Nat Iasi 2006; 110: 1012-1015.
16. Chow AW. Infections of the oral cavity, neck, and head. In: Mandell GL, Bennett JE, Dolin R (eds). Principles and Prac- tice of Infectious Diseases. Elsevier BV; 2010: 855-71.
17. Brook I, Frazier EH. Microbiology of mediastinitis. Arch In- tern Med 1996; 156: 333-6.
18. Gorlitzer M, Grabenwoeger M, Meinhart J, et al. Descending necrotizing mediastinitis treated with rapid sternotomy followed by vacuum-assisted therapy. Ann Thorac Surg 2007; 83: 393-6.
19. Garcia R.G., Rojas R.R., Romero L.R., Garcia C.M., Garcia C.L. Descending necrotizing mediastinitis following dental extraction. Radiological features and surgical treatment considerations Journal of Cranio-Maxillo-Facial Surgery 39 (2011) 335e339
20. Exarhos DN, Malagari K, Tsatalou EG, et al. Acute mediasti- nitis: Spectrum of computed tomography findings. Eur Radiol 2005; 15: 1569-74.
21. Hasegawa T, Endo S, Sohara Y. Classification of descending necrotizing mediastinitis AnnThorac Surg 2000; 69: 1296.
22. Papalia E, Rena O, Oliaro A, et al. Descending necrotizing mediastinitis: surgical manage-ment. Eur J Cardiothorac Surg 2001; 20: 739-42.
23. Wheatley MJ, Stirling MC, Kirsh MM, et al. Descending nec- rotizing mediastinitis: Trans-cervical drainage is not enough. Ann Thorac Surg 1990; 49: 780-4.
24. Temes R, Crowell R, Mapel D, et al. Mediastinitis without antecedent surgery. Thorac Cardiovasc Surg 1998; 46: 84-8.
25. Misthos P, Katsaragakis S, Kakaris S, et al. Descending necro- tizing anterior mediastinitis: Analysis of survival and surgical treatment modalities. J Oral Maxillofac Surg 2007; 65: 635-9.
26. Roberts JR, Smythe WR, Weber RW, et al. Thoracoscopic management of descending ne-crotizing mediastinitis. Chest 1997; 112: 850-4.
27. Mortensen CR. Hyperbaric oxygen therapy. Current Anaest- hesia & Critical Care 2008; 19: 333-7.
28. Ekinci M., Turna A.; Mediastinal Infections, Guncel Gogus Hastalıklıkları Serisi, 2020; 8(3):90-106.