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OLGU YAZISI / CASE REPORTS

DİŞ ÇEKİMİNİN YIKICI BİR KOMPLİKASYONU: BOYUN VE MEDİASTİNAL APSENİN EŞLİK ETTİĞİ LEMİERRE SENDROMU

A DEVASTATING COMPLICATION OF DENTAL EXTRACTION: LEMIERRE'S SYNDROME WITH NECK AND MEDIASTINAL ABSCESS

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ÖZET

Diş çekimi, günlük rutinde sıklıkla uygulanan bir prosedürdür. Orofarengeal floranın aerobik ve anaerobik mikroorganizmalardan zenginliği nedeniyle diş çekimi sonrası ölümcül enfeksiyonlar meydana gelebilir. Orofarengeal enfeksiyonlar, boyun ve mediastene servikal fasya yoluyla yayılabilir ve yaşamı tehdit eden komplikasyonlarla yumuşak dokularda ve damarlarda şiddetli enfeksiyon ve inflamasyona neden olabilir. Diş çekimi sonrası şiddetli derin boyun enfeksiyonu, amfizem, juguler ven tromboflebiti (Lemierre sendromu), mediastinal apse, ampiyemi komplikasyonları olan ve cerrahi olarak mediastinal apsesi boşaltılan bir olguyu literatür eşliğinde takdim ediyoruz. Diş çekimi, diyabetik hastalarda yaşamı tehdit eden komplikasyonlara neden olabilen oral enfeksiyonunun en sık nedenidir.

ANAHTAR KELİMELER: Diş Çekimi, Lemierre Sendromu, Mediastinal Abse.

ABSTRACT

A dental extraction is a frequently performed procedure in daily routine. Fatal infections may occur after dental extraction due to the richness of the oropharyngeal flora from aerobic and anaerobic microorganisms. Oropharyngeal infections can extend into the neck and mediastinum via cervical fascia leading to severe inflammation in soft tissues and vessels with life-threatening complications. We present a patient with complications after dental extraction procedure including severe deep neck inflammation, thrombophlebitis of jugular vein (Lemierre's syndrome), mediastinal abscess, and empyema. A dental extraction is the most frequent cause of the oral infection that may cause coexisting and individually life-threatening complications in diabetic patients.

KEYWORDS: Dental extraction, Lemierre's Syndrome, Mediastinal Abscess.

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INTRODUCTION

A dental extraction is a frequent procedure that can cause lethal complications if not performed under appropriate conditions. The mouth flora is rich from aerobic, and anaerobic microorganisms. For this reason, oral infections may spread to the neck through the cervical fascia, and cause the deep neck infections. Complications encountered after dental extraction range in a variety of disorders including head, and neck emphysema (1), pneumomediastinum (2), parapharyngeal abscess, septic thrombophlebitis of internal jugular vein (Lemierre's syndrome) (3), mediastinitis, and mediastinal abscess (4). Spread of infection to the mediastinum may result in high morbidity and mortality (5). Peribronchovascular inflammation in the lung parenchyma, abdominal abscess (6), and septicemia (7) can be occured. Infectious complications after dental extraction are more common, especially in immunosuppressive, and diabetic individuals (8). This case report reveals the imaging features of various coexisting complications occurred after multiple dental extractions in a diabetic patient.

CASE PRESENTATION

A 54-year-old male patient with diabetic, and poor oral hygiene was subjected to multiple dental extractions before implantation of a dental prosthesis. Three days after the extraction, the patient was referred to the emergency department with fever, limited mouth, and neck movements, swelling in the neck, shortness of breath, and difficulty in swallowing. Physical examination revealed poor oral hygiene, swelling, erythema, and crepitation in the right supraclavicular region. Contrast-enhanced computed tomography (CT) examination involving neck, and chest region demonstrated subcutaneous emphysema in right submandibular, and submental area, and inflammatory stranding in fat tissues of deep neck region, and superior mediastinum suggesting deep neck infection spreading to mediastinum (**Figure 1)**.

Medical treatment including antibiotherapy was started according to imaging findings. Follow-up CT performed four day after initial presentation to emergency department revealed increased in the severity, and extension of inflammation with the imaging features of right submandibular abscess, thrombophlebitis of right internal jugular vein, mediastinitis, mediastinal abscess, peribronchovascular thickening in right parahilar region suggestive of inflammation and right sided empyema **(Figure 2)**.

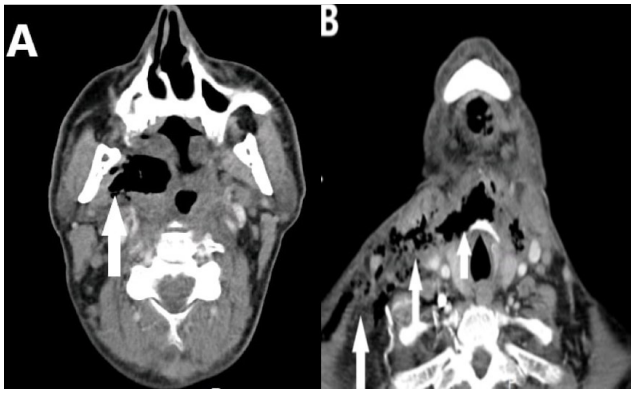

Figure 1: A. Axial contrast-enhanced CT image reveals air collection (arrow) medial to the right condyle of the mandible. **B**. Axial contrast enhanced CT image demonstrates spread of air to the inferior neck area and right supraclavicular region(arrows).

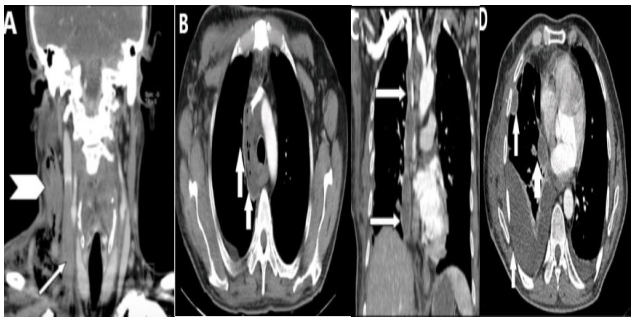

Figure 2: A. Coronal contrast-enhanced CT image demonstrates an abscess (arrowhead) in the right sternocleidomastoid muscle. Thrombosis of right jugular vein appears as a filling defect (arrow). **B, C.** Axial (B) and coronal (C) contrast enhanced CT images show a mediastinal abscess (arrows) at the right paratracheal area in superior mediastinum extending through mediastinum to the right hemidiaphragm. **D.** Axial contrast-enhanced CT image reveals fluid collections in the right pleural space with enhancing walls suggestive of empyema (arrows).

Blood culture test yielded streptococcus anginosus as causative organism for infection. The mediastinal abscess of the patient was explored with Video-Assisted-Thoracic Surgery (VATS). Cervical mediastinal pleura was opened, and the abscess was drained. Follow-up imaging showed shrinkage in the abscess of the neck, mediastinum and empyema (**Figure 3)** with persistence of the right internal jugular vein thrombophlebitis. The patient continued to be followed under antibiotic therapy.

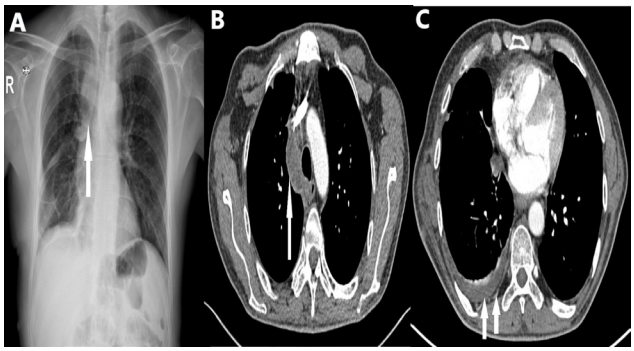

Figure 3: A. Postero-anterior chest radiography 2 months after surgery shows opacity of the residual mediastinal abscess adjacent to the right paratracheal and right main bronchus (arrow). **B.** Axial contrast- enhanced CT mediastinal window image reveals residual mediastinal abscess (arrow). **C.** Axial contrast-enhanced CT mediastinal window image reveals significantly smaller empyema(arrows).

INFORMED CONSENT

Informed consent was obtained from the patient.

DISCUSSION

Dental extraction is a procedure that can result in lethal outcomes if not done properly at the appropriate time, and under appropriate conditions. The cause of fatal infections after dental extraction is oral flora containing aerobic and anaerobic microorganisms which may cause life-threatening complications in the setting of immunosuppression. The presence of diabetes mellitus in our patient may be an underlying cause for spreading of infection along the neck and mediastinal soft tissues resulting in descending necrotizing mediastinitis (DNM) (9). DNM is caused by odontogenic infections in 60% to 70% of patients (10). Diagnosis of DNM can be difficult due to its rare occurrence, and non-specific developing symptoms. Infectious involvement of mediastinum can be caused by progress of process from the submandibular space, and spreading along the carotid sheath, parapharyngeal, and retropharyngeal space (9).

Infection after dental extraction can be firstly spread into the head and neck via cervical fascia followed by involvement of mediastinum, pleura, lung parenchyma and abdomen. Extensive fascial communication between the gums, neck, and mediastinum and facilitating factors as gravity, respiration and negative intrathoracic pressure constitute underlying reasons which have role in spreading deep neck infection to the mediastinum (11). In our patient, after dental extraction, parapharyngeal abscess formation occurred firstly after deep neck infection presented with the symptoms of erythema, crepitation in the neck and difficulty in swallowing.

Imaging plays a crucial role in DNM and mediastinal abscesses caused by dental extraction, and deep neck infection. Chest X-rays demonstrate widened mediastinum with or without evidence of a pleural effusion in the setting of DNM. Cervicothoracic CT can reveal gas, and pus collections extending along the cervicothoracic fascia with accompanying abscesses. In our patient inflammatory imaging findings of DNM was shown by CT. CT imaging of DNM not only demonstrates the cause, severity, and extension of the inflammation but also uncommon complications of DNM can be depicted such as Lemierre's syndrome. Lemierre's syndrome was suggested to be occurred secondary to compression of jugular vein by adjacent parapharyngeal abscess or hematogenous dissemination of infection (12). Lemierre's syndrome occurred in our patient secondary to adjacent severe inflammation. Potential complications of jugular vein thrombophlebitis were reported as pulmonary embolism, cerebral abscess, and septic shock (13). These findings were not present in our patient. In our case, empyema and infectious involvement of lung parenchyma were caused by spread of infection to the pleural space, and peribronchial space, and alveoli, respectively. In our patient, mediastinal abscess was observed to extend partially under the diaphragm; but abdominal abscess was not observed.

Treatment of DNM, and mediastinal abscess cannot be achieved with solely antibiotic administration due to low success rate of antibiotics in decreasing the mortality rate of DNM. Interventional drainage of the mediastinal abscess is necessary in most of the cases for recovery.

In conclusion, oral infection may rapidly descend into the mediastinum across the cervical fascial planes, and spaces. Dental extraction as most frequent cause of oral infection may cause coexisting and individually life-threatening complications including deep neck infection, neck abscesses, mediastinitis, mediastinal abscess, empyema, and pneumonia.

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