

Actinomyces-Induced Lung Abscess and Empyema After the Treatment of Idiopathic Focal Segmental Glomerulosclerosis

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ABSTRACT In adults, focal segmental glomerulosclerosis occurs in approximately 35% of nephrotic syndrome cases. Proteinuria can be reduced using steroids or immunosuppressive drugs in patients with focal segmental glomerulosclerosis (FSGS) with proteinuria at the nephrotic level. However, depending on the corticosteroid treatment, immunosuppression develops and opportunistic infections are predisposed. Actinomyces, one of the opportunistic infections, is a rare bacterial lung infection. Clinically, it has been most frequently in the cervicofacial region by 50-60%, then in the abdominal region by 25% and in the thoracic region by 15%. In our case of FSGS diagnosed with renal biopsy, after the steroid use, empyema and bronchopleural fistula (BPF) were developed. In this study, we report a case of successful management of actinomyces and complications after tube thoracostomy and decortication with antibiotherapy treatment.

Keywords: Glomerulosclerosis, focal segmental; actinomyces; thoracic surgery

In adults, focal segmental glomerulosclerosis occurs in approximately 35% of nephrotic syndrome cases.¹ End stage renal failure occurs in patients in approximately six to eight years.² At the present time, one of the most important agents used in the treatment of these patients is corticosteroids.³ Immunosuppression is caused by corticosteroid therapy and predisposes to opportunistic infections. Actinomyces, an opportunistic infectious disease, is difficult to diagnose and results in a chronic infection that can lead to fistula formation caused by gram-positive anaerobic bacteria and is at risk of spread. Actinomyces is non-spore-forming bacteria that feature of obligatory facultative anaerobes with varying cellular morphology and exhibits branched filaments.⁴

The most common form of disease is cervicofacial (50%) infectious. Abdominal and pelvic involvement rate is 20%, whereas 15% of cases constitute thoracic actinomyces.

Actinomyces is located in the normal flora of the oral cavity, gastrointestinal and genital tract and cannot exceed the normal mucosal barrier.⁵ In this study, we present a case of abscess with an actinomyces developed after steroid treatment and the treatment of complications.

CASE REPORT

Proteinuria was detected in a 40-year-old male patient who applied to clinic for hypertension. FSGS was diagnosed with renal biopsy. Steroid therapy was started because of proteinuria. The patient with proteinuria of 3 g/day and serum albumin <2.5 g/dL. Complete remission observed after the steroid

treatment. Then steroid treatment was gradually reduced. After seven months he applied to the hospital with complaints of fever and shortness of breath. General condition was moderate, TA was 140/85 mmHg, fever was 39.6°C on physical examination findings of case. In laboratory tests, leucocyte was found to be 19×10^3 ml and sedimentation was found to be 147 mm/s. Posterior-anterior chest x-ray showed a cavitary lesion of approximately 4 cm in the upper lobe of the right lung and an increased density in the right lung lower-zone (Figure 1). Computed tomography of the thorax revealed a 39x36 mm cavitary lesion in the right upper lobe of the lung and a pleural effusion with a diameter of seven mm and a width of two cm. It was labeled with ultrasonography (USG) before thoracentesis. Pleural fluid was sampled. Acid resistant bacils (ARB) was negative (-) and 46% lymphocytes and 54% leucocytes were observed. The number of cells is 500 mm^3 . There was not reproduction in non-specific culture. Biochemical analysis of the fluid revealed that albumin was 2.4 g/dL (blood: 3.6), total protein was 5.7 g/dL (blood: 7.1), LDH was 950 U/L (blood: 260), ADA was 97.8 U/L (blood: 24.4).

Fiberoptic bronchoscopy (FOB) did not showed endobronchial lesion. Malignancy findings were not detected in aspiration and brush samples. ARB were not seen. In the pathological examination of the FOB samples, actinomycosis colony group compatible with filamentous (actinomycosis) bacteria was observed in the necrotic zone. Upon receiving this result, crystallized penicillin iv and then benzidine penicillin should be started orally, but this treatment was not started because of FSGS diagnosis. Tube thoracostomy was performed due to empyema. Massive air leakage was observed. It was decided that the cavitary lesion was perforated. However, surgical intervention was not considered for the massive air leak and the general condition of the patient is not stable at the first stage due to reproduction of actinomycosis. Antibiotic therapy and pleural lavage were applied. Treatment of steroids and antibiotics (tazobactam + piperacillin with clindamycin) was continued during the lavage procedure. Three weeks after applying the tube thoracostomy, the control thorax

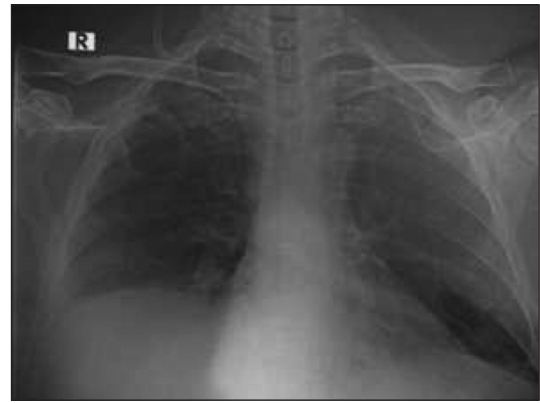


FIGURE 1: Posterior-anterior chest x-ray showed a cavitary lesion of approximately 4 cm in the upper lobe of the right lung and an increased density in the right lung lower-zones.

computerized tomography was performed because of the clinical improvement. When the cavitary lesion was found to be completely retracted, pleural thickening was observed (Figure 2). Total decortication was applied. Parietal pleura and visceral pleura were reported as hyalinize fibrosis and chronic inflammation. The patient discharged on the fifth postoperative day (Figure 3) and remained well in the ten month follow-up.

DISCUSSION

Focal segmental glomerulosclerosis is located among primary glomerulopathies and can progress up to chronic renal failure. Focal segmental glomerulosclerosis can be detected as a primary disease or it may develop due to secondary causes such as drugs (bisphosphonate, interferon etc.), substance-use (heroin, hashish etc.), obesity, sickle cell anemia, renal dysplasia, HIV, Parvovirus-B19⁶ Actinomycosis was first described as a fungus by Israel in 1878, and it was determined that actinomycosis species are bacteria that are not fungus in 1950.⁷ Despite the decrease in pulmonary actinomycosis after antibiotherapy, it is difficult to diagnose it because of its involvement with many diseases.⁸ Immunodeficiency, trauma to the face area, poor hygiene of the oral cavity are the causative factors as the underlying chronic diseases. The long-term steroid use of the patient is one of the causative factors of actinomycosis. The most common clinical symptoms are cough, expectorating, chest pain, fever, weight loss and night sweat-

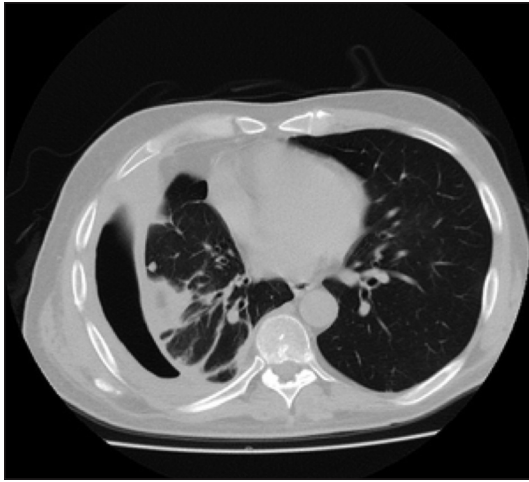


FIGURE 2: The cavitary lesion recovered but pachypleuritis developed.

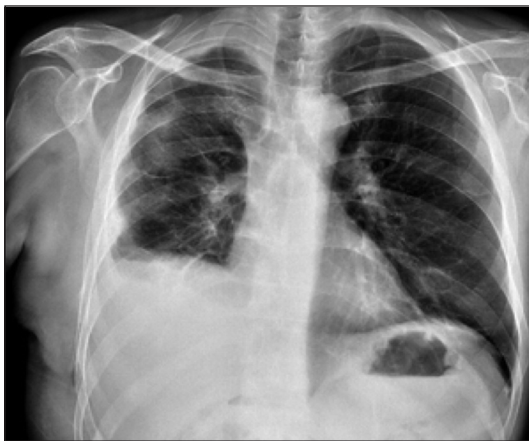


FIGURE 3: The cavitary lesion recovered but pachypleuritis developed.

ing.⁹ While fever, weakness, fatigue and painful cellulitis are seen in the acute phase of the disease, lymphadenopathy occurs in the late period of the disease.¹⁰

Fiberoptic bronchoscopy is not usually diagnostic for pulmonary actinomycosis unless there is a marked endobronchial lesion. For the diagnosis of pulmonary actinomycosis, lung biopsy is necessary to obtain histologically and microbiologically appropriate uncontaminated samples.¹¹ Rarely, surgery can be performed on hemoptysis, which create a life risk that cannot be controlled and can occur with infection.¹² Antibiotic treatment is needed for a long time after the surgical resection in actinomycosis.¹³ Inadequate antibiotic treatment

after surgery may cause to complications such as bronchopleural fistula and empyema.

The most common radiologic appearance in patients with actinomycosis is infiltration (53%), abscess or infected cavity (24%). Consolidation, multiple nodules, cavitation, pleurisy, infiltrations can be seen in thorax computerized tomography.¹⁴ The cavitary lesion, pneumonic infiltration and pleurisy were seen in our case. Pulmonary actinomycosis cannot be accurately diagnosed by positron emission tomography (PET-CT) after thoracic CT for this lesion misdiagnosed with lung cancer. In the literature, it has been reported that a case who applying surgical operation due to diagnosis of squamous cell carcinoma was found to have a lesion showing 18-FDG involvement in PET-CT after 18 months. In the patient who was diagnosed with actinomycosis by biopsy of the endobronchial lesion, there was no involvement in PET / CT after antibiotic treatment for two months.¹⁵

In our case, empyema and massive air leakage were observed due to actinomycosis-related lung abscess perforation. A massive air leak is usually a condition that requires surgery. However, supportive treatment and pleural lavage were performed because the general condition of the patient was poor and the diagnosis of lung abscess was new. Three weeks later the general condition of the patient improved. The patient was treated without requiring any resection except decortication due to only empyema is caused by pachypleuritis.

As a result, actinomycosis which is rarely observed in patients receiving immunosuppressive treatment and in the differential diagnosis of cavitary lesions should be considered. Opportunistic infections before early surgical intervention should be kept in mind in the event of massive air leak in these patients.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Onur Derdiyok; **Design:** Onur Derdiyok; **Control/Supervision:** İrfan Yalçınkaya; **Data Collection and/or Processing:** Onur Derdiyok; **Analysis and/or Interpretation:** Cansel Atinkaya Öztürk; **Literature Review:** Deniz Gürer; **Writing the Article:** Onur Derdiyok; **Critical Review:** Cansel Atinkaya Öztürk; **References and Fundings:** Deniz Gürer; **Materials:** İrfan Yalçınkaya.

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