Current Thoracic Surgery

To cite this article: Güvenç EC, Üçvet A, Gürsoy S, Samancılar O, Arabacı B, Yağcı T, Erol Y. Granulomatous disease in patients operated due to provisional diagnosis of lung cancer. Curr Thorac Surg 2018;3(2): 51-54.

Original Article

Granulomatous disease in patients operated due to provisional diagnosis of lung cancer

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ABSTRACT

Background: The granulomatous reaction is a response that can occur in many infective, toxic, allergic, autoimmune, neoplastic, and etiologically unknown conditions. Hundreds of different agents that can cause this response. The most common granulomatous disease in Turkey and in developing countries is mycobacterial infection-related tuberculosis. This study was carried out to show the prevalence of patients operated in our clinic due to provisional diagnosis of lung cancer and diagnosed with granulomatous disease.

Materials and Methods: 380 patients who underwent diagnostic and therapeutic videothoracoscopy or thoracotomy due to provisional diagnosis of malignancy, and were diagnosed with granulomatous disease in consequence of histopathological examination between the years of 2011 and 2016 were included in the study. Patients were examined with regard to their clinical characteristics.

Results: Granulomatous disease was detected histopathologically in 28 (7.3%) of them. The final histopathological diagnosis was tuberculosis in 20 patients (71.4%), sarcoidosis in 3 patients (10.7%), infection in 2 patients (7.1%), rheumatoid nodule in 2 patients (7.1%), and allergic angiitis in one patient (3.5%).

Conclusions: In regions where tuberculosis is frequent, such as Turkey, granulomatous diseases should be considered in the differential diagnosis of lesions suspicious for malignancy.

Keywords: granulomatous disease, tuberculosis, sarcoidosis, lung cancer

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DOI: 10.26663/cts.2018.00010
Received 05.07.2018 accepted 17.08.2018

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Introduction

It is difficult to make the pathological and clinical differential diagnosis of granulomatous lung diseases. There are hundreds of different agents that can cause granulomatous diseases. These agents can be classified as bacterial, chlamydial, fungal, helminthic infections, metals, organic salts, foreign bodies, and etiologically unknown diseases. The most common granulomatous disease in Turkey and in developing countries is mycobacterial infection-related tuberculosis. These diseases may mimic malignancy. Therefore, a differential diagnosis is essential. Either transthoracic fine needle aspiration biopsy (TFNAB), endobronchial ultrasonography (EBUS), transbronchial biopsy (TBB), videothoracoscopic biopsy (VATS) or thoracotomy can be performed for the diagnosis of granulomatous lesions. In this study, we aimed to determine the incidence of granulomatous disease in patients who could not be diagnosed through TFNAB and TBB, and had a high suspicion of malignancy, who underwent surgical resection.

Materials and Methods

380 patients who were operated due to the provisional diagnosis of lung carcinoma between January 2011 and December 2016 were analyzed retrospectively. The cases were assessed according to gender, age, surgical treatment method, and results of histopathological diagnosis. In the preoperative period, patients were asked to have a posteroanterior chest X-ray (PA CXR), computed tomography (CT), pulmonary function tests (PFT), routine blood tests, and patients with a high suspicion of malignancy were asked to have PET-CT. Patients' information was analyzed retrospectively.

Results

Of 380 patients operated for diagnosis, 236 patients (62.1%) were diagnosed with intraoperative lung carcinoma, whereas 116 patients (30.5%) had other benign tumors, and 28 patients (7.3%) had granulomatous disease. The mean age was 49 (13-66); 14 patients (50%) were women and 14 (50%) were men. All 28 patients had thorax CT. The mean diameter of the masses was 2.05 ± 0.51 cm (0.5 to 4 cm). 22 patients underwent preoperative positron emission tomography (PET-CT). The mean value of SUVmax was 5.26 ± 4.25 (2.4-19).

Table 1. Demographic characteristics of the patients in the study group.

	n	%
Sex		
Male	14	50
Female	14	50
Histopathological diagnosis		
Tuberculosis	20	71.4
Sarcoidosis	3	10.7
Infection	2	7.1
Rheumatoid nodule	2	7.1
Allergic angiitis	1	3.5
Operation		
Wedge resection	22	78.5
Lobectomy	3	10.5
Incisional biopsy	2	7.1
Segmentectomy	1	3.5

Seven patients (25%) were operated via VATS, and 21 patients (75%) were operated via thoracotomy. The mass was completely excised in 26 patients (92.8%), while incisional biopsy was performed on 2 patients (7.1%). Wedge resection was performed on 22 patients (78.5%), lobectomy on 3 patients (10.7%), and segmentectomy on 1 patient (3.5%).

The final histopathological diagnosis was tuberculosis in 20 patients (71.4%), sarcoidosis in 3 patients (10.7%), infection in 2 patients (7.1%), rheumatoid nodule in 2 patients (7.1%), and allergic angiitis in one patient (3.5%). Lobectomy was performed on 2 (7.1%) patients in order to achieve complete resection due to the presence of accompanying hemoptysis and cavitary lesion, and on 1 (3.5%) patient due to frozen section examination reported to be suspicious for malignancy. Diaphragmatic laceration developed during operation in one (3.5%) patient and primary repair was performed. Prolonged air leak (longer than 7 days) was observed in 3 (10.7%) patients. Postoperative mortality was not detected.

Discussion

Granulomatous lung diseases are a heterogeneous group of disorders which have a wide spectrum of pathologies with variable clinical findings and outcomes. Precise clinical evaluation, laboratory tests, pulmonary function tests, radiological imaging including high-resolution computed tomography (HRCT), and often histopathological evaluation contribute to make the diagnosis of

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granulomatous lung diseases [1]. There are hundreds of different agents that can cause a granulomatous reaction. These agents can be categorized into bacterial (tuberculosis, leprae, salmonella, brucella, syphilis, Q fever, cat scratch disease), chlamydial (lymphogranuloma venereum), fungal (histoplasmosis, blastomycosis, coccidiomycosis), helminthic (schistosomiasis, filariasis, trichinosis) infections, metals (berylliosis, zirconium), organic salts, foreign bodies (silicosis, asbestosis), and etiologically unknown diseases (sarcoidosis, Crohn's disease, Wegener's granulomatosis, primary biliary cirrhosis). The most common granulomatous disease in Turkey and in developing countries is mycobacterial infection-related tuberculosis [2,3]. The presence of a large number of macrophages and lymphocytes in granulomatous diseases is associated with high uptake of 18F-fluoro-2-deoxy-d-glucose (FDG) mimicking lung cancer on PET imaging [3,4]. The radiological characteristics of granulomatous diseases, therefore, may not be distinguishable from lung carcinoma [4,5]. In our study, 236 (62.1%) of 380 patients who were operated due to provisional diagnosis of malignancy were diagnosed as lung carcinoma, whereas 28 (7.3%) patients were diagnosed as granulomatous disease. Twenty-two of the 28 patients were found to be at high risk of malignancy and PET-CT was requested, and pathologic FDG uptake was observed in 18 patients.

Methods such as CT-guided TFNAB, TBB, VATS, and biopsy via thoracotomy could be performed to take histopathologic samples [6]. In our clinic, to make a diagnosis, seven of 28 patients who could not be diagnosed through TFNAB and TBB underwent VATS and 21 patients underwent thoracotomy.

Cases in which lobectomy was performed due to cavitary lesions and hemoptysis have been reported in the literature [7]. In our clinic, lobectomy was performed in one (3.5%) patient since malignancy could not be eliminated and on 2 (7.1%) patients in order to achieve complete resection due to accompanying hemoptysis, as well as the presence of cavitary lesion. The most common postoperative complication in the surgery of granulomatous diseases is prolonged air leak [8]. In our series, this rate was 10.7% with 3 patients.

Tuberculosis is an important health problem in developing countries such as Turkey [9]. The most diagnosed granulomatous disease in our clinic was also tuberculosis, with a rate of 71.4%. It was observed that tuberculosis was the most common disease in this patient group. It should not be forgotten that granulomatous diseases, especially tuberculosis, might mimic malignancy and cause delays in diagnosis and treatment [10].

In conclusion, granulomatous diseases should be considered in the differential diagnosis of lesions suspicious for malignancy and patients must be carefully examined in terms of tuberculosis.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support.

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