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SHORT COMMUNICATION

Cancer and tuberculosis: case series

Y. Abul[1], E. Eryuksel[1], M. Balci[1], F. Yumuk[2], S. Karakurt[1], B. Ceyhan[1]

[1]Department of Pulmonary and Critical Care and [2]Department of Oncology, Marmara University Hospital, Istanbul, Turkey

Summary

Tuberculosis is seen with an increased frequency in cancer patients. Possible reasons of reactivation are thought to be related to chemotherapy and insufficient nutrition together with compromised immune system. The diagnosis of tuberculosis may be missed in cancer patients and may be diagnosed with newly developed radiological and clinical findings during treatment. In this case, tuberculosis should be considered and related diagnostic work up should be completed. Also, PPD test should be applied to cancer patients and if needed isoniazid prophylaxis should be initiated.

We present herein 4 cancer patients diagnosed with pulmonary tuberculosis. Two patients suffered from solid malignancies (lung cancer) and 2 from non-solid malignancies (acute myeloid leukemia).

Key words: cancer, PPD, prophylaxis, tuberculosis

Introduction

It has been reported that tuberculosis reactivation occurs frequently during the course of malignancies [1,2]. The contributing factors may be related to negative local or systemic effects of cancer chemotherapy, radiotherapy or malnutrition on the immune system [3,4].

Tuberculosis may be detected during diagnostic work-up or treatment of cancer patients. Primary malignancy may be misdiagnosed as tuberculosis or sometimes both primary malignancy and tuberculosis may be present concomitantly [5,6]. In this report, we present 4 patients who developed tuberculosis reactivation during diagnostic work-up or chemotherapy of different malignancies and were treated successfully.

Case 1

A 29-year-old female developed fever, weight loss and night sweats while receiving chemotherapy with gemcitabine, carboplatin and docetaxel for non-small cell lung cancer. The patient had progressively increasing dyspnea and hemoptysis during the last 3 months. She was admitted to the intensive care unit with hypoxemia and hypercapnia and was put on mechanical ventilation. A thoracic CT scan revealed cavernous lesions of the left lung (Figure 1A) and sputum examination revealed acid-fast bacilli (AFB). Isoniazid, rifampicin, ethambutol and pyrazinamide were

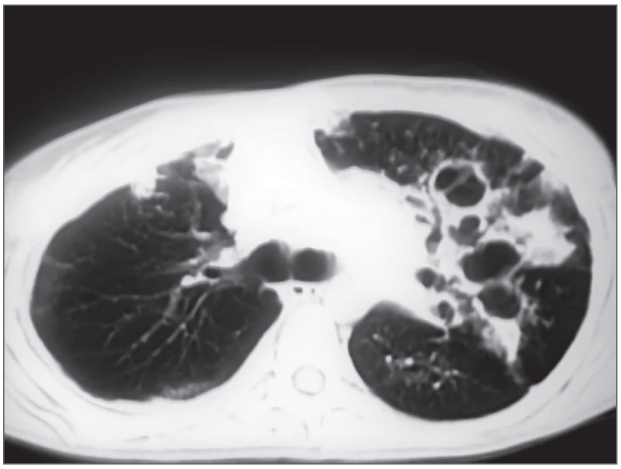

Figure 1A. Cavernous lesions and a dense lesion located in the upper region of the left lung in a patient with non small cell lung cancer.

Correspondence to: Emel Eryuksel, MD. Marmara University Hospital, Department of Pulmonary and Critical Care, Altunizade, 81190 Istanbul, Turkey.
Tel: +90 216 3262162, Fax: +90 216 4280335, E-mail: emeleryuksel@yahoo.com

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started. During treatment the need for mechanical ventilation progressively diminished and the patient was extubated. With antituberculosis treatment, clinical and radiological improvement were obvious (Figure 1B). The patient died due to progression of lung cancer after 9 months.

Case 2

A 47-year-old male with small cell lung carcinoma - being under chemotherapy with cisplatin and etoposide together with radiotherapy - was admitted to the hospital because of cough, weight loss and night sweats. Lung CT scan revealed a consolidated area unresponsive to previously given antibiotic treatment. Bronchoscopic examination was denied by the patient. PPD was 8 mm and sputum examination was negative for AFB. Empirical antituberculosis treatment was initiated and after 5 weeks of treatment, clinical and radiological improvement were apparent. The patient died after 1 year due to lung cancer progression.

Case 3

A 30-year-old male with acute myelocytic leukemia (M4) was admitted to the hospital with neutropenic fever. The patient was under chemotherapy with idarubicin and cytosine arabinoside. A pulmonary CT scan, carried out at another hospital because of fever, had revealed a consolidated area of the right lung, so broad spectrum antibiotic treatment had been initiated at that center (Figure 2A). Since the lesion was unresponsive to this therapy, fine-needle aspiration biopsy was done which revealed AFB. Isoniazid, rifampicin, ethambutol and pyrazinamide were initiated, but after development of resistance to isoniazid and ethambutol, the treatment was switched to rifampicin, levofloxacin, pyrazinamide and streptomycin. After 2 weeks of treatment clinical improvement was remarkable and after 5 weeks of treatment radiological improvement was seen (Figure 2B). The patient died due to his primary disease after 6 months.

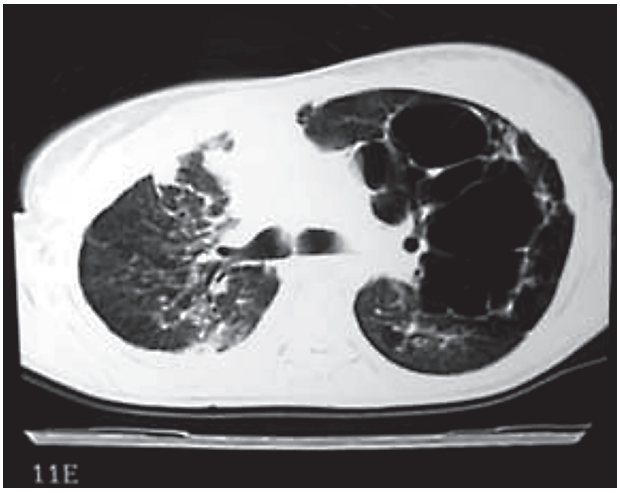

Figure 1B. Same patient; thinning of the cavernous lesions and regression of the upper left lobe dense lesion.

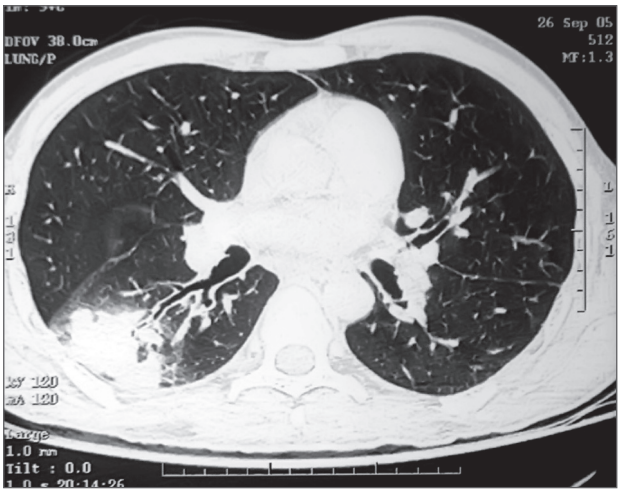

Figure 2A. A patient with acute myelocytic leukemia (M4). A right lower lobe dense lesion is seen.

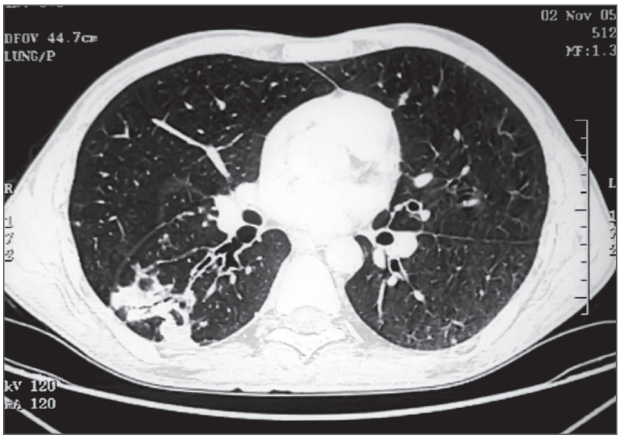

Figure 2B. Same patient; regression of the lesion.

Case 4

A 31 -year- old male with acute myeloblastic leukemia (M2), having treatment with cytosine arabinoside, was admitted to our outpatient polyclinic with neutropenic fever unresponsive to antibiotic and antifungal treatment. Lung CT scan revealed an extensive miliary pattern of lung lesions. The patient had no other complaints apart from high fever. Bronchoscopy was done without specific macroscopic findings. The bronchoalveolar lavage didn't reveal tuberculosis bacilli. PPD was 5 mm and sputum

examination was negative for AFB. However, since the radiological findings were consistent with tuberculosis, empirical antituberculosis treatment including isoniazid, rifampicin, ethambutol and pyrazinamide was initiated. After 4 weeks of treatment, radiological and clinical improvement were apparent. Later, bone marrow transplantation was carried out and the primary disease was put under long-term complete remission.

Discussion

WHO estimates that 30% of whole world population is infected with mycobacterium tuberculosis. Each year nearly 8 million new cases of active tuberculosis are diagnosed and 2 million of all annual deaths are due to tuberculosis [7]. In Turkey, a report published by the Ministry of Health in 2007 revealed that the incidence of tuberculosis in Turkey has an increasing tendency. In 2005, 20500 patients were diagnosed and 91 % of these cases were new ones [8].

In regions with a high prevalence of tuberculosis, primary infection is seen more frequently. The immune system of the patients limits the infection and latent infection develops without clinical manifestations or with nonspecific findings. In cancer patients, chemotherapeutic agents have a detrimental effect on the immune system with an increased risk of tuberculosis. Such an association has been shown in studies on lung cancer, head and neck cancers, lymphoma and leukemia patients. For hematological malignancies, the frequency of tuberculosis has been reported as 0.76-2.6% [9]. This increased frequency is common in malignancies with T-cell involvement. Two of our cases were AML patients.

Tuberculosis may be diagnosed during diagnostic work-up or during treatment of malignancies. Tuberculosis may lead to difficulties or mistakes in the diagnosis of primary malignant disease, while sometimes both diseases may exist concomitantly. Also, in some patients tuberculosis may occur during the course of malignancy due to the detrimental effects of chemotherapy on the immune system. Extensive miliary pattern was detected in case 4 with lung CT during chemotherapy. Since it was a typical radiological finding for tuberculosis, antituberculosis treatment was immediately initiated and the response was favorable.

In some cases diagnosis may be delayed due to atypical course of tuberculosis. In cases 2 and 3 there were consolidated lesions unresponsive to antibiotic or antifungal treatment. Since the radiological lesions were not typical for tuberculosis, those patients were treated with other treatments rather than antituberculosis therapy for a long period of time. But just after the initiation of antituberculosis therapy, clinical response was obtained immediately.

It has been suggested to do a tuberculin skin test and to start prophylactic isoniazid for cancer patients before initiating immune suppressive therapy due to the increased risk of tuberculosis [10]. None of our cases had either a tuberculin skin test or isoniazid prophylaxis.

As a conclusion, the risk of tuberculosis is higher in cancer patients. For this reason, when a malignancy is diagnosed, tuberculin skin test should be performed and isoniazid prophylaxis should be considered, if needed. In order to prevent delay in diagnosis and treatment, it is important to keep in mind that tuberculosis may develop typically or atypically during the course of malignancy.

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