Case Report

Amiodarone Pulmonary Toxicity: Chest Radiography and CT Findings in an Asymptomatic Patient

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Abstract. Amiodarone is an iodinated (approximately 37% iodine) benzofuran derivative that is highly effective in the treatment of ventricular and supraventricular arrhythmia. It is one of the most important cardiovascular drugs that cause pulmonary toxicity. In this report we present a patient of 77 year old male with bilateral patchy infiltration noted on chest radiography during his routine control. He was using amiodarone for four years. He had no symptoms and his radiography was cleared after discontinued amiodarone for four months.

Key words: amiodarone, pulmonary, toxicity

The most serious adverse reaction of amiodarone is pulmonary toxicity that may cause death. It occurs in 5-15 percent of patients [(1,2]. The clinical manifestations of toxicity may vary according to the baseline pulmonary reserve. Interestingly our case had no clinical manifestation although he had intense radiographic findings.

Case presentation

A 77 year-old man was referred to our department for evaluation of bilateral patchy infiltration noted on chest radiography (Fig. 1) during his routine control by a cardiology specialist, which is also confirmed on CT scan of the chest (Fig. 2).

He had a cardiac by-pass surgery 4 years ago and was receiving amiodarone therapy by then. He denied any complaints such as cough, chest pain, fever, dyspnea, night sweats, and fatigue or weight loss. He only complained of exercise limitation. He did not have pets or exposure to tuberculosis.

His past medical history was positive for a coronary artery by-pass surgery 4 years ago and duodenal peptic ulcer perforation with peritonitis 20 years ago. He smoked 50-pack year before he quit 11 years ago. He was a retired soldier.

No significant abnormality was detected on lung examination. An apical systolic murmur (2/6) was heard on cardiac examination and atrial fibrillation and non-specific ST-T changes were detected on EKG. The temperature, pulse, respirations, and the blood pressure were in normal ranges. The patient appeared healthy.

The urine was normal. His erythrocyte sedimentation rate was 70 mm/h. The rest of the laboratory examinations such as WBC, hemoglobin, platelet count, and serum chemistry were normal.

His room air arterial blood gases showed a minimal hypoxemia (PaO2:70%). His carbon monoxide diffusion was 82% of predicted value and the rest of the pulmonary function tests were normal. Results of thyroid function tests and tests for rheumatologic disorders were also normal. A chest radiograph revealed cardiomegaly and bilateral but especially on the right side alveolar opacities (Figure 1). The CT scan of the chest showed bilateral high-attenuation parenchymal-pleural lesions (Figure 2).

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Flexible bronchoscopy was normal and there was no endobronchial abnormality. Bronchoscopic lavage was negative for routine bacterial Gram’s stain and cultures and for acid-fast bacilli. Cytology of bronchial washing was negative for malignancy. Transbronchial biopsy was non-diagnostic.

Amiodarone was discontinued and 4 months later the chest film and chest CT were cleared and the diffusion capacity of carbon monoxide was improved (109% of predicted value). Chest x-ray and thoracic CT, taken 4 months later are shown (Fig. 3 and 4).

Discussion

Amiodarone is an iodinated (approximately 37% iodine) benzofuran derivative that is highly effective in the treatment of ventricular and supraventricular arrhythmia [3]. It has neurological [4], ophthalmologic [5], cutaneous [6], thyroid [7], hepatic [8], and pulmonary [9] toxic effects.

Amiodarone is a classic example of a cardiovascular drug that causes pulmonary toxicity. Pulmonary toxicity is seen in approximately 5-15 percent of patients in different patterns, including chronic interstitial pneumonitis [1], bronchiolitis obliterans [10], acute respiratory distress syndrome [11], and solitary pulmonary mass [12] and its degree of severity is changeable which can occasionally be life-threatening. Lower doses rarely cause adverse reactions but in patients receiving more than 400mg/day pulmonary toxicity usually occur [1,2,9]. The mechanisms of amiodarone lung toxicity are not clear but some suspected mechanisms are immunologic disorders, direct toxicity to the lung cells, and effects of free radicals [2].

Two thirds of the patients have subacute presentation with cough; dyspnea, hypoxemia, a raised erythrocyte sedimentation rate, as in this case, and diminished carbon monoxide diffusing capacity are usually noted. The diagnosis is usually based on the exclusion of the other similar clinical presentations such as pneumonia, congestive heart failure, and pulmonary embolism. There is not any specific or pathognomonic test for amiodarone toxicity.

Chest radiographic and CT findings may be different in every patient. Nodular densities those may mimic metastatic lung disease, airspace opacities, subpleural parenchymal nodules and exudative pleural effusions may be seen [13]. In our case bilateral diffuse patchy alveolar infiltrates improved by discontinuation of amiodarone (Fig. 4).

Gallium scan is almost always positive in amiodarone pulmonary toxicity, but because this test is also positive in all inflammatory lesions it is non-specific. There is no specific test to predict the pulmonary toxicity of amiodarone but fall in the carbon monoxide diffusing capacity during treatment is common. Bronchoscopy may be helpful in excluding infection. Bronchoalveolar lavage and biopsy specimens may contain foam cells. Although this is not pathognomonic, the absence of them makes the diagnosis of pulmonary toxicity unlikely [1,2].

Several options are available when amiodarone pulmonary toxicity has been detected. Stopping the amiodarone treatment by substituting another suitable antiarrhythmic drug (like in our case), withholding the drug for several days and after that reducing the dose to the lowest effective level is the second choice, and finally non-pharmacological treatments such as implantation of an automatic cardioverter defibrillator may be tried. Corticosteroid therapy, beginning with prednisone 40-60mg/day and a maintenance treatment up to 6 months to preclude the relapse may be necessary in patients with bronchiolitis obliterans organizing pneumonia or in severe cases [14].

References


