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INTERFERON INDUCED CARDIOMYOPATHY: CASE REPORTS

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ABSTRACT

There are few reports concerning interferon induced myocardial dysfunction. A known case of multiple myeloma who was receiving interferon alpha (IFA) for 14 months was brought to the emergency room in frank pulmonary edema. After treatment of heart failure and discontinuation of interferon alpha, he remained asymptomatic thereafter. Another case of chronic active hepatitis on IFA complained of dyspnea that became asymptomatic after cessation of IFA.

Keywords: cardiomyopathy, interferon.

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INTRODUCTION

Interferon alpha is a leukocyte-derived glycoprotein used to treat malignant disorders and perhaps HIV infections. Cardiac toxicity, usually consisting of hypotension, tachycardia, and transient arrhythmias, occurs in about 10 percent of patients.[1] There are some reports that several patients have developed congestive heart failure and the clinical picture of dilated cardiomyopathy during interferon alpha therapy. In some patients, cardiomyopathy resolves rapidly with discontinuation of interferon.[1,2] To our knowledge, the following may be the first cases of interferon alpha-related cardiomyopathy in Iran.

CASE REPORTS

Case 1

A 69 year old man with no previous history of organic heart disease was brought to the emergency department with severe dyspnea. He was a known case of multiple myeloma who was receiving interferon alpha (IFA), 5 million I.U. weekly for the past 14 months. In the last two months he had experienced dyspnea after each IFA injection, requiring medical treatment.

On physical examination he looked restless and tachypneic with overt perspiration. Blood pressure and heart rate were 140/90 mmHg and 90 bpm, respectively. A summation gallop with systolic murmur was heard on cardiac auscultation. Diffuse rales were heard over both lungs.

ECG showed sinus rhythm with ST-T changes. Chest X-ray disclosed marked cardiomegaly with a pattern of frank alveolar edema on both lungs. Echocardiography revealed symmetric left ventricular hypertrophy with enlargement of cardiac chambers and an ejection fraction of about 45%. Two-plus MR was detected.

The patient was hospitalized in the CCU and pulmonary edema was treated with conventional treatment. IFA was discontinued. After 72 hours, the patient was in NYHA function class II with only an S4 and few rales at lung bases. He was discharged after a week on digoxin, furosemide and captopril. Lungs were clear on chest X-ray with slight decrement of the cardiothoracic ratio.

After 2 months the CT ratio decreased more (Fig. 1) and EF was 60% in echocardiography.

Case 2

A 57 year old woman with no history of structural heart disease with recent dyspnea came to the outpatient clinic. She was a known case of chronic active hepatitis on corticosteroid and IFA injection, 3 million I.U. three times a week for the past 9 months. Conventional treatment for heart failure improved her situation partially and it was only after cessation of IFA that she became asymptomatic.

DISCUSSION

Interferon alpha (IFA) is produced by leukocytes in

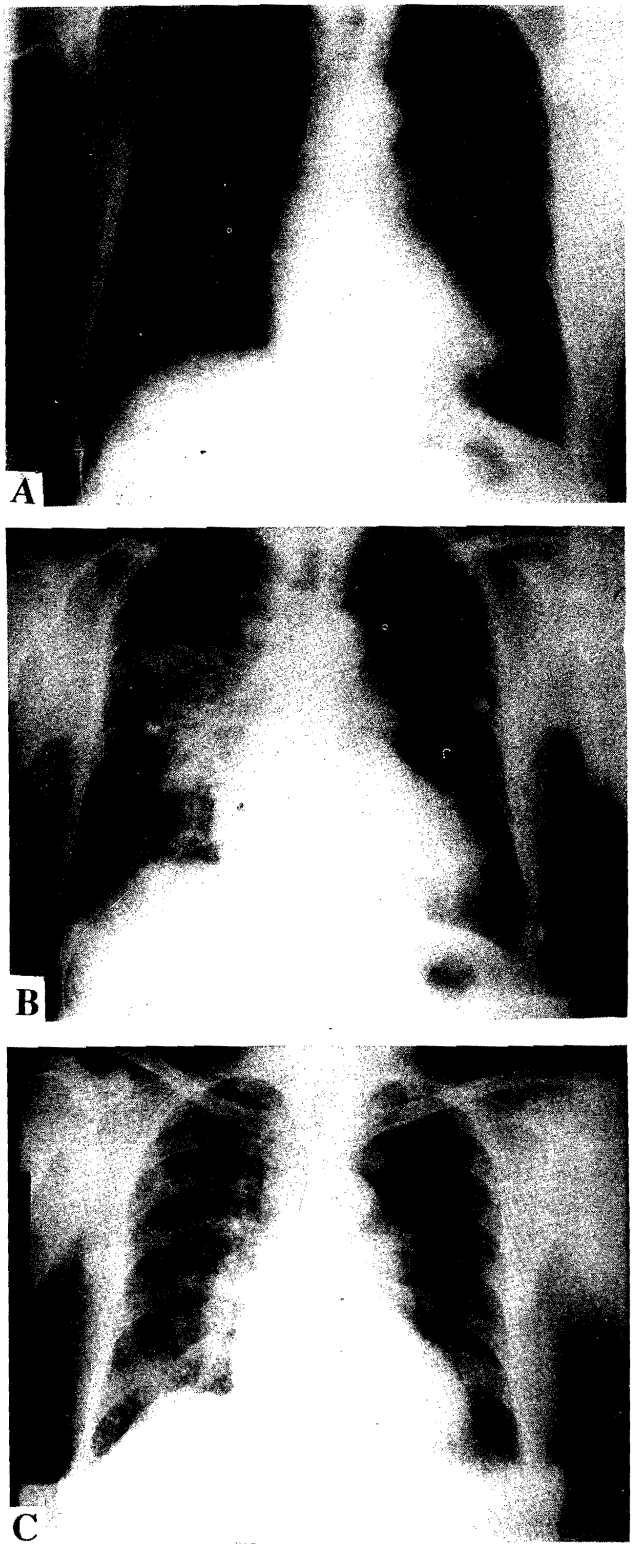

Fig. 1. Chest X-rays before (A), during (B), and after (C) discontinuation of interferon therapy.

response to viral infection and is believed to play an important role in host defense. It is reported to be effective in patients with AIDS-associated Kaposi's sarcoma, renal cell carcinoma, disseminated melanoma, multiple myeloma, non-Hodgkin's lymphoma, chronic myelogenous leukemia, carcinoid syndrome, and hairy cell leukemia.

The main dose-limiting adverse affects of IFA are fatigue, neutropenia, and thrombocytopenia. A flu-like syndrome with fever, chills and myalgia, mild hepatic toxicity with elevation of aminotransferases that resolves despite continuation of therapy, and neurologic and neuropsychiatric effects are other reported side effects.[3]

Cardiovascular side effects of IFA have rarely been reported; they have included transient hypotension or hypertension and reversible arrhythmias that are not life-threatening.[4,5]

Although IFA therapy has not been clearly shown to cause congestive heart failure, in one report two patients with cancer who were treated with the drug had congestive heart failure.[1] In another report Deyton et al. described three patients with AIDS manifested as Kaposi's sarcoma in whom congestive cardiomyopathy developed after prolonged high-dose IFA therapy.[2] All three patients remained free of cardiac symptoms 14-25 months after discontinuing IFA or lowering the dose.

Dilated cardiomyopathy was reported in association with AIDS in three patients, all of whom died with severe cardiac dysfunction.[6] The authors speculated that HIV infection may have been responsible for the cardiac disease.

Kura et al. reported the first case of IFA-related cardiomyopathy in Japan in a patient with renal cell carcinoma with pulmonary metastasis treated with IFA.[7] They achieved partial recovery 4 months after cessation of IFA.

In our patients IFA toxicity appears to be the most likely explanation for cardiac dysfunction, given the temporal relation between IFA therapy and the development and resolution of clinical, laboratory or pathological evidence of other causes of depressed cardiac function. Furthermore, our patient's ejection fraction increased after discontinuation of IFA.

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