Cardiac involvement in idiopathic inflammatory polymyositis

Adnan Anoze
Department of Medicine
College of medicine Al –Nahrain University
E-mail- adnan anoze @ yahoo .com

Abstract

Back ground: Idiopathic inflammatory polymyositis primarily affect skeletal muscle. Heart muscle has been reported in patients with polymyositis.
Objectives: This study was done to assess the involvement of heart in polymyositis
Method: Forty eight patients with a diagnosis of polymyositis were examined for heart involvement .Chest – X-ray, electrocardiography and echocardiography have been performed.
Result: Cardiomegally found in 63% of patients. ECG –changes including left ventricular hypertrophy, and ST-segment and T-wave abnormalities in 80% Diminished ventricular contractility found in 83%.
Conclusion: Analysis of the results showed that the involvement of the heart in polymyositis is a common problem
Key words: Heart muscle, polymyositis

Introduction

Idiopathic inflammatory myopathis primarily affect skeletal muscle. The common features of these diseases are weakness of inflammatory changes in skeletal muscle. Patients with polymyositis have symmetrical proximal muscle weakness in all extremities [1, 2. Onset of polymyositis may be more difficult to determined [3].

The estimated prevalence of idiopathic inflammatory polymyositis is approximately one case per 100,000 individuals [4, 5]. The disease is seen in all age groups .Typically idiopathic inflammatory polymyositis begins insidiously over 3-6 months with no identifiable precipitating event. Pelvic and shoulder girdle musculature are most affected, but weakness of neck muscles particularly the flexors are also common [6, 7]. Inflammatory myositis may occur with another established rheumatic diseases, most commonly scleroderma or and systemic lupus erythematosus [SLE] resulting in mixed connective tissue disease [8, 10]. The etiology of inflammatory muscle disease remains unknown. The most widely accepted hypotheses suggest multiple factors .One possible cause is that an initial insult by a virus or any other infectious agent or an environmental toxin leads to muscle damage in a genetically susceptible host [11, 12, 13].

Patients and Method

Forty eight patients with polymyositis were studied in AL-Kadhimiyia Teaching Hospital during period from January to November 2007 in the rheumatology department. All of the patients were females, their age ranged from 43 to 62 years with a mean of (52 ±4). All patients had proximal weakness of the muscles. All patients had weakness Of the pelvic girdle while only 28 patients had weakness of the shoulder girdle .For all patients electromyography has been done and proved to be myopathic .An abnormal creatine phosphokinase [CPK] level had been recorded for all patients but the level differ from patient to another .Muscle biopsy performed for all patients The biopsy is taken from the quadriceps muscles. The histopathology of muscle biopsies showed a perivascular infiltration of inflammatory cells composed largely of lymphocytes with plugged capillaries .Test of acute phase reactants, the erythrocytes sedimentation rate (ESR) and C-reactive protein levels are abnormal in only 38 patients (75%).All patients were suffering from polymyositis for at least two years.

Cardiac studies:

1-All patients had chest –X –ray.
2-An electrocardiography (ECG) had been done for all patients.
3-Echocardiography (ECHO) also performed for all patients.
The control group is compared of 48 women their age ranged from 40 to 60years with a mean of 50±3. All of them were healthy selected randomly and they had no muscle weakness. Statistical comparisons were carried out using the nonparametric Mann Whitney U test.

Results

The patients were either asymptomatic or had mild exersional dyspnea. On physical examination the blood pressure is normal in all patients .Two patients died suddenly during the period of the study. Table (1): summarizes results of investigations

Chest X-ray: showed evidence of cardiomegally in 36 patients (67%) of patients the heart is often markedly enlarged. The cardiomegally was noted in patients who suffered from polymyositis for more than 3 years while those who suffered from polymyositis for less than 3 years they did not show evidence of cardiomegally. The ECG is variably abnormal in 36 patients (75%) it showed a pattern of left ventricles hypertrophy, ST. segment and T wave abnormalities are prevalent in 38 patients (80%).Right or left bundle branch block was present in 3 patients (6%). Atrial and ventricular premature beats are frequent in 30 patients. 63%established atrial fibrillation (AF) found in 2patients [4%].Echocardiography changes (ECHO): Cardiac chamber enlargement with diminished ventricular contractility is seen in 40patients (83%).

Table (1): Results of investigations

EMG	1-Increased insertional activity 2-Fibrillations 3-Spontaneous bizarre high frequency discharges 4-Polyphasic motor unit potentials of low amplitude
CPK	High for all patients
Muscle biopsy	Perivascular infiltration of inflammatory cells
ESR	Abnormal in 75% of patients
C reactive protein	Abnormal in 75% of patients

The chest X-ray ECG and echocardiography of the control group were completely normal

Table (2): Cardiac abnormalities

Chest X-ray	Cardiomegally	36[63 %]	P<0.005
ECG changes	1-left ventricular hypertrophy 2-ST. segment and T- wave abnormalities	38[80 %]	P<0.004
	3-B.B.B. Left and right	3[[6%]	P<0.05
ECHO	1-Chamber enlargement 2-Diminished ventricular contractility	40[83 %]	P<0.004

P<0.05 is significant

Discussion

Idiopathic inflammatory polymyositis which primarily affect skeletal muscles, the heart muscle also involved. This is observed when patients with polymyositis examined for cardiac involvement.

Gonzalez –Lopez et.al [15] advised to evaluate the heart in condition by routine diagnostic studies despite they reported that clinically significant involvement of heart muscle is unusual. Our findings are completely different indicating that the cardiac muscle involvement is a common problem.

Robert-L Wortmann [9] reported that cardiomyopathy with congestive heart failure can develop but he did not mention the extent of involvement and the percentage of involvement of patients. In our study the cardiac involvement is common as 63% had Cardiomegally on conventional chest X –ray, ECG changes very obvious in 80% of patients. Echocardiography showed diminished ventricular contractility in 83%of patients while two patients died suddenly within a year probably due to heart involvement which agrees Ohato S. study [14].

Conclusion

Analysis of the results of the study showed that the involvement of the heart is a common problem as the heart involvement comes in different presentations of cardiac affection in a way like heart enlargement or electrocadiographic abnormalities or echocardiographic abnormal changes.

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