Echocardiographic Finding in Behcet's Disease

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Abstract
Behcet disease is multisystemic chronic inflammatory disorder of unknown etiology with diffuse clinical manifestations including those involving the cardiovascular system. Transthoracic echocardiography were performed in 55 Behcet's disease patients (45 men and 10 women, with mean age 37 ± 13 years) and 55 normal subject. Echocardiography done for patient with Behcet's disease and normal subjects and the results shows diastolic dysfunction in patient with Behcet's disease according to E/A ratio (E: early diastolic velocity, A: Late diastolic velocity with atrial contraction) and isovolumic relaxation time (IVRT), deceleration time (DT). The study show reverse E/A ratio, prolong IVRT and DT.

Introduction
Behcet disease initially described by dermatologist Hulusi Behcet and ophthalmologist bendiktos adamantiades, Adamantiades - Behcet disease (ABD) is a multisystemic, chronic inflammatory disorder of unknown etiology. Adamantiades, 1931; Behcet, 1937) in addition to the classical clinical triad of oral and genital ulcerations and eye lesions, clinical manifestations in many other locations including the cardiovascular system have been described (Morelli et al., 1997) venous and or arterial vasculitis may occur (Duffy, 1990; Koc et al., 1992) cardiac involvement may occur (Wecher et al., 1999). The disease is most prevalent in the Mediterranean region, the middle east and the far east, its prevalence is increasing in western countries due to migration patterns. It has been shown that ventricular arrhythmias are more common in (B.D) patients than others (Bowles et al., 1985). In (B.D) there is involvement of right side of the heart and left ventricle and left atrium like intracardiac thrombus involving right side, and left side, pulmonary artery aneurysms (Vanhaleweyk et al., 1990; Madanat et al., 1993; Le thi et al., 1997; Bay Kan et al., 2001; Houman et al., 2002) myocarditis in B.D have been reported, systolic dysfunction does not appear to be prominent finding in cardiac B.D, diastolic dysfunction appear in B.D due to filling abnormalities (Higashihiara et al., 1982; Komsuoglo et al., 1994) inter atrial septal aneurysm, mitral valve prolapse and mitral regurgitation also noticed in B.D these cardiovascular finding suggest that systemic vasculitis may cause weakening of endocardial or myocardial tissue (Morelli et al., 1997; Bozkurt et al., 2006).

Pericardial disease in B.D appears to be relatively uncommon, several cases report have described symptomatic and asymptomatic pericarditis and pericardial effusion in patients with B.D which generally resolved with anti-inflammatory therapy (Vaiopoulos et al., 1995; Cakir et al., 2004).
Methods and materials

Fifty five Behcet's disease patient (45 men and 10 women with mean age 37 ± 13 years) where randomly selected from the regular out patient clinic in Merjan teaching hospital in period from January 2008 till January 2010. Behcet's disease was diagnosed according to the criteria reported by the international study group for Behcet's disease. Fifty five normal subjects were selected and matched to the patient for sex, age and body surface area. They were all free of cardiac or any systemic disease. All subjects were screened by means of careful history, physical examination, routine laboratory tests. All patients and controls underwent TTE (Transthorasic Echocardiography) examinations.

Both routine M-mode and two dimensional echocardiographic studies were performed in all patients, all cardiac chamber and valves and left ventricular systolic. And left ventricular diastolic functions were evaluated according to E/A ratio (E/A < 1 D.D.), DT > 220 ms, IVRT > 100 ms

Echo cardiography:

Standard two–dimensional and Doppler echocardiography was used to study all subjects. We used, Phillips En-visor version C.O.2 Netherlands B.U.2005 probe (2- 4 MHZ) Parasternal and apical projections were obtained according to the recommendations of the American society of echo cardiography (ASE). (Schiller et al., 1989)

Pulsed-wave Doppler of transmitral left ventricular. Inflow was performed in the apical four chamber view, with sample volume placed at the level of the mitral valve tips. Global left ventricular diastolic function measurements including peak velocities of E and A wave and their ratio E/A, deceleration time of E wave (DT) and IVRT were determined. All patients treated by corticosteroid during acute attack.

Criteria

Recurrent oral ulceration: minor aphthous, major aphthous or herpetiform ulceration at lest three times in a twelve month period plus two of the following

1. Recurrent genital ulceration.
2. Eye lesions: anterior uveitis, posterior uveitis, cells in vitreous on slit-lamp, retinal vasculites.
4. Positive pathergy test.

Results

The echocardiographic results are presented in tables 1 and 2 the mean values of the right ventricular and left ventricular end – diastolic and end – systolic dimensions, left ventricular ejection fractions, and left atrial diameters were similar in patients and controls.

Table 2 show significant difference between patients and controls where the patients show diastolic dysfunction as compare to controls in patients E/A ratio reverse and prolong DT and IVRT.
Table 1

<table>
<thead>
<tr>
<th></th>
<th>Pt.</th>
<th>cont.</th>
<th>P</th>
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<tbody>
<tr>
<td>RV.cm</td>
<td>2.2±1</td>
<td>1.9±2</td>
<td>NS</td>
</tr>
<tr>
<td>AOD.cm</td>
<td>3.21±0.1</td>
<td>3.21±0.1</td>
<td>NS</td>
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<tr>
<td>LVEDD.cm</td>
<td>4.61±0.2</td>
<td>4.61±0.2</td>
<td>NS</td>
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<tr>
<td>LVEDD.cm</td>
<td>2.80±0.1</td>
<td>2.80±0.1</td>
<td>NS</td>
</tr>
<tr>
<td>LA.cm</td>
<td>3.20±0.2</td>
<td>3.20±0.2</td>
<td>NS</td>
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<tr>
<td>LVEF %</td>
<td>68.1±3</td>
<td>69.2±4</td>
<td>NS</td>
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Table 2

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<th>Pt.</th>
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<tr>
<td>E/A ratio</td>
<td>0.84±0.2</td>
<td>1.4±0.1</td>
<td>Sig &lt; 0.0001</td>
</tr>
<tr>
<td>IVRT</td>
<td>105±23.5</td>
<td>83.5±25.2</td>
<td>Sig &lt; 0.0001</td>
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<tr>
<td>DT</td>
<td>255±31.2</td>
<td>190.8±31.2</td>
<td>Sig &lt; 0.0001</td>
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</table>

Discussion

The incidence and natural history of cardiac involvement Behcet's disease not yet clearly documented cardiovascular manifestations have been reported in 7 – 46 % of cases with Behcet's disease and mortality occurs in up to 20 % of those patients with marked vascular involvement.

Echocardiography is a useful, non invasive diagnostic tool for the detection of cardiac involvement in Behcet's disease.

Systolic dysfunction does not appear to be a prominent finding in Behcet's disease our study shows diastolic dysfunction in Behcet's disease goes with several studies which demonstrated diastolic dysfunction and filling abnormalities by Doppler consisted with early diastolic dysfunction including prolonged isovolumic relaxation time, prolonged deceleration slope, reversed E:A ratio.

This finding explain as a part of systemic vasculitis which may cause weakening of endocardial and myocardial tissue and replaced by fibrosis (due to myocardial ischaemia Ozkan et al., 1992; Ikono midis et al., 2004; Tunc et al., 2005;) . The disease affecting
the intramural and small coronary arteries and giving rise to myocardial ischaemia and replacement fibrosis (Calguneri et al., 1993). The myocardial fibrosis as well as coronary ischaemia due to vasculitis are the mechanism of the diastolic dysfunction in those patients (Mastumoto et al., 1991; Gemic et al., 2000).

Other cardiovascular involvement not appear in our study it may be due to small sample need to be increase number in future

**Conclusion**

- Behcet's disease is multisystemic disorder.
- Cardiovascular system had been involve in Behcet's disease.
- Echocardiographic examination shows diastolic dysfunction in Behcet's disease.

**References**


