

## Electrocardiographic Finding in Behcet's Disease

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### Abstract

The incidence and nature of cardiac involvement in Behcet's disease are not yet clearly documented. We use electrocardiography to define cardiac involvement in Behcet's patients. Fifty five patient with Behcet's disease forty five men and ten women with mean age  $37 \pm 13$  years and fifty five normal subjects are taken and electrocardiography done For them and show means QT dispersion and mean corrected QT dispersion values were significantly greater in the patient with Behcet's disease .

### الخلاصة

تعنى هذه الدراسة بالتغيرات التي تحصل في التخطيط الكهربائي للقلب لدى المرضى المصابين بمرض بهجت حيث تم أخذ خمسة و خمسون مريض مصابين بمرض بهجت و مقارنتهم بخمسة و خمسين من الأشخاص الأصحاء حيث تم إجراء التخطيط الكهربائي لهم و تم قياس مسافة QT و كذلك المسافة المعدلة QT حيث وجد إن مقدار التشتت في مسافة QT و المسافة المعدلة هي اكبر لدى المرضى المصابين بمرض بهجت مقارنة بالأشخاص الأصحاء.

### Introduction

Behcet's disease is known as a chronic relapsing , inflammatory process manifesting recurrent oral and genital ulcerations . Eye inflammation , skin leasion , Joint , central nervous system , large vessel and gastro intestinal system involvement are also seen in this disorder (Adamantiades , 1931; Behcet, 1973; Wechsler *et al.*, 1999). Initially described by dermatologist Hulusi Behcet and ophthalmologist Benediktos Adamantiades.

Venous and or arterial vasculitis may occur and it will increase mortality. (Duffy, 1990; Koc *et al.*, 1992).

The disease is most prevalent in Mediterranean region, the Middle East and the Far East, its prevalence is increasing in Western countries due to Migration Patterns.

The incidence and nature of cardiac involvement in Behcet's disease are not yet clearly documented.

QT dispersion (maximum QT minus minimum QT interval ) was originally proposed as an index of the spatial dispersion of ventricular recovery times in an attempt to distinguish myocardium that is homogenous from myocardium that displays in homogeneity .

QT normal value  $\leq 440$  ms. Prolong QT dispersion has sensitivity and specificity for ventricular arrhythmia and increase mortality and sudden death .

Increment of 10 ms in QT dispersion increase the risk of coronary death or nonfatal myocardial infarction . (Malik , 2000 ; Malik , 2002 ; Gavrilescu , 1978 ) .

### Methods and materials

Fifty five Behcet's disease patient (45 men and 10 women with mean age  $37 \pm 13$  years where randomly selected from the regular out patient clinic in Merjan teaching hospital who are diagnosed as a case of Behcet's disease from period January 2008 to 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 . resting 12 lead electrocardiogram done for them . QT interval were measured manually from the onset of QRS to the end of T wave. In the presence of a U wave. The QT intervals were measured to the nadir of the curve between the T and U waves. the corrected QT interval was calculated by Bazett's formula .

$$QT_c = \frac{QT \text{ interval}}{\sqrt{R-R \text{ interval}}}$$

Dispersion parameters were calculated as the difference between maximal and minimal values of QT and corrected QT.

QT means ventricular depolarization to complete repolarization it starts from beginning of Q wave to the end of T wave .

Other ECG parameters recorded are within normal value ( P wave , P-R , R wave , Q wave , S wave , etc. ).

### Criteria

Recurrent oral ulceration : minor aphthous , major aphthous or herpetiform ulceration at least 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 vasculitis .
3. Skin lesions : erythema nodosum , pseudofolliculitis , popliteal pustular lesions, acneiform nodule .
4. Positive pathergy test.

### Results

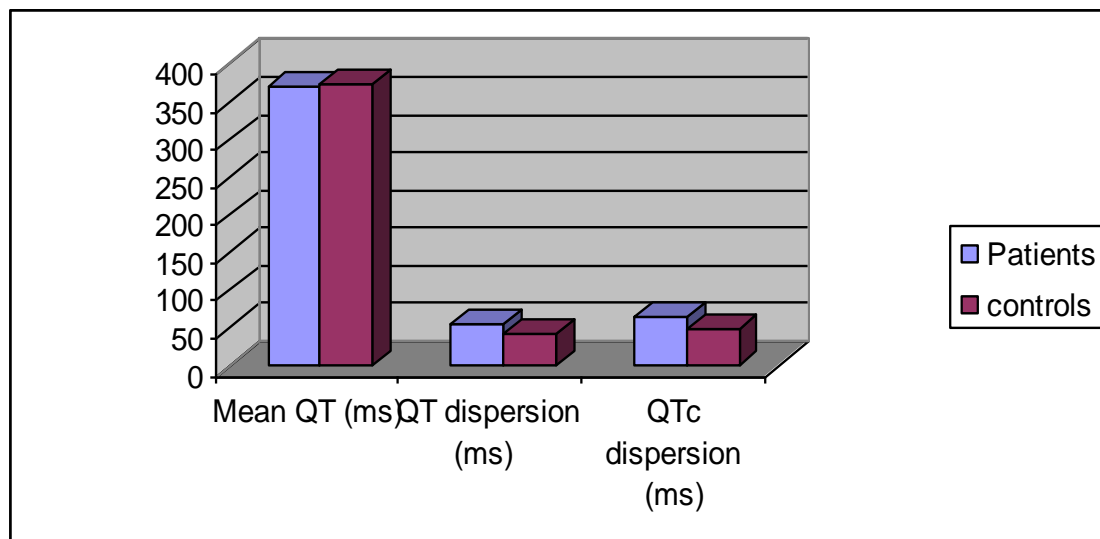
Mean QT in patients as compared with control there is no significant difference.

The QT dispersion in patient as compared with control had higher result in Behcet's disease and there is significant difference with  $P < 0.001$ .

The corrected QT dispersion the result is significantly increased in patient with Behcet's disease as compared to the control and  $P < 0.001$ . (As shown in table 1)

Table 1:-

QT value	Patients	controls	P
Mean QT (ms)	370 ± 40	384 ± 40	N.S
QT dispersion (ms)	55 ± 2	41 ± 4	< 0.001
QTc dispersion (ms)	66 ± 2	48 ± 2	< 0.001



## Discussion

In our study, we found that QT dispersion and corrected QT dispersion parameters are significantly greater in patients with Behcet's disease than control subjects and this finding also in many other studies which show same results. In Behcet's disease, the disease process affecting the intra mural or small coronary arteries and giving rise to the myocardial ischemic and replacement fibrosis (Cagluueri *et al.*, 1993; Goldeli *et al.*, 1997; Bonnar *et al.*, 1999; Aytemir *et al.*, 1998; Gemici *et al.*, 2000).

Increase sympathetic tone , changes in excitation contracting coupling and myocardial fibrosis may lead to dispersion of repolarisation.

Myocardial fibrosis , as well as coronary ischemia due to vasculitis are the mechanisms of QT dispersion . (Lu-Lis *et al.*, 1985; Matsumoto *et al.*, 1991; Koc *et al.*, 1992; Ozkan *et al.*, 1992; Huong *et al.*, 1995; Kobayashi *et al.*, 2000) .

Arterial involvement in Behcet's disease characterized pathologically by neutrophilic vasculitis of vasavasorum , which in turn leads to distraction and necrosis of elastic fibers and smooth muscle cells in media (Comess *et al.*, 1983; Koh *et al.*, 1994; Kobayashi *et al.*, 2000; Gurgun *et al.*, 2002;) .

Silent myocardial ischemia that is defined as objective documentation of myocardial ischemia in the absence of angina or anginal equivalent's has also been reported in patient with behcet's disease (Shimizu *et al.*, 1979; Nojiri *et al.*, 1984; Yazici 1993; Gullu *et al.*, 1996).

The initial concept that QT dispersion is an index of inhomogeneity was supported by the link between the dispersion of ventricular recovery times and the genesis of arrhythmias it was generally believed that the standard 12 leads ECG contained information about regional ventricular repolarization ; thus when increased QT dispersion in heart with ventricular recovery time were heterogeneous the QT dispersion directly reflects the dispersion of ventricular recovery times (Malik , 2000 ; Malik , 2002 ; Gavrilescu , 1978 ) .

## Conclusions

- Behcets disease is chronic relapsing inflammatory process .
- Electro cardiographic finding show significant difference in QT dispersion and corrected QT dispersion , as compare to control .

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