Evaluation of QRS voltage variability (Shora sign) as a diagnostic criteria of atrial fibrillation

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Introduction

Aim of work

To evaluate the importance of QRS voltage variability (Shora sign) as a diagnostic criteria of atrial fibrillation as compared to the conventional ECG diagnostic criteria.

Patients and Methods

* Patient selection

This case-control study will include:

- Group 1: 200 consecutive patients presented to out-patient clinics with paroxysmal, persistent, long standing persistent or permanent AF.
- Group 2: 200 consecutive patients presented to out-patient clinics with any diagnosis rather than AF.

* Inclusion criteria

Patients will be enrolled in this study if they:

- Are 18 years old or older.
- Supply an informed consent.

* Exclusion criteria

Patients will be excluded from this study if they refuse to be involved in the study.

* Method:

After providing informed consent, all patients will be subjected to the following:

1. **Proper history taking for the presence of cardiovascular risk factors:**
    a. Smoking
    b. Hypertension
    c. Diabetes mellitus
    d. Dyslipidemia
    e. Family history.

2. **Complete physical examination:**

a. General examination.
b. Local cardiac examination.

3. **12 lead surface ECG and rhythm strip of lead I for 6 seconds to evaluate QRS voltage changes.**

4. **Transthoracic echocardiography:** Echocardiographic examination will be done for all patients using a 2.5 MHz mechanical transducer with the patient in the left lateral position from multiple windows. The following will be evaluated:
   a. Ejection fraction (EF) by M-mode.
   b. LV dimensions.
   c. Segmental wall motion abnormalities (SWMA) index.
   d. Valvular stenosis or regurgitation.
   e. Left atrium dimension.

*** Study endpoints**

The primary endpoint is the presence of more than 0.1mV change in QRS voltage in at least 3 successive beats in lead I.

Statistical analysis

Data will be statistically described in terms of mean ± standard deviation (± SD), median and range, or frequencies (number of cases) and percentages when appropriate.

Comparison of numerical variables between the study groups will be performed using Student t test for independent samples in comparing 2 groups.

For comparing categorical data, Chi square ($|^2$) test will be performed. Exact test will be used instead when the expected frequency is less than 5.

p values less than 0.05 will be considered statistically significant.

Accuracy will be represented using the terms sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV).

All statistical calculations will be performed using computer program SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 15 for Microsoft Windows.

References