

# How well do psychiatric trainees interpret electrocardiographs

## A cross-sectional survey

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The consensus statement by the Royal College of Psychiatrists recommended that patients on high dose antipsychotic medication receive regular electrocardiographic monitoring to identify prolongation of the QT interval. A survey of trainee psychiatrists in three hospitals investigated the accuracy with which trainees could identify this abnormality and found only 20% could do so.

Prolongation of the QT interval on the electrocardiograph (ECG) is thought to indicate predisposition to malignant tachyarrhythmias and sudden death (Thomas, 1994). High doses of antipsychotic drugs may be associated with abnormally prolonged QT intervals (Warner *et al.*, 1996). In 1994 the Royal College of Psychiatrists published the consensus statement recommending regular electrocardiographic monitoring of all patients on high-dose antipsychotic medication (Thompson, 1994). Although some electrocardiograph machines now provide automated analysis of the results, in many hospitals it will be up to the psychiatrist (usually the trainee) to determine whether a patient has QT interval prolongation by reading the trace. A previous study of the ability of doctors from a variety of specialities, excluding psychiatry, to interpret ECGs showed that 76% were unable to define the QT interval (Montgomery *et al.*, 1994). Our study aimed to identify the accuracy with which trainee psychiatrists detected ECG abnormalities including QT prolongation.

### The study

Psychiatric trainees at three hospitals were given an anonymous questionnaire at induction meetings or academic sessions. These were completed at the time without conferring or reference to textbooks, each trainee having as much time as they wanted to answer the questionnaire. Trainees were made aware that the origin of this study lay in the consensus statement recommending regular ECG monitoring of patients on high dose antipsychotic medication. Respondents

were asked to give their grade (senior house officer (SHO) or registrar), year of qualification and clinical experience prior to beginning psychiatric training. They were then asked to rate four standard 12-lead anonymised ECG traces: (1) an acute anterior myocardial infarct with ST elevation and T inversion in leads V2 to V5 (ECG 1); (2) prolonged QT interval of 480 msec (normal <420 msec) (ECG 2); (3) right bundle branch block (ECG 3); (4) a normal ECG (ECG 4).

QT intervals are rate dependent and should be corrected for heart rate using the formula  $QTc = (QT / \sqrt{\text{cycle length}})$ , where cycle length is the interval in seconds between two successive R waves. Our trace showing prolonged QT interval (Fig. 1) had a rate of 60 beats per minute, giving a cycle length of one second, so no correction for rate was necessary for the ECG used in this study.

Trainees were asked to state whether each ECG was normal or abnormal. If they judged a trace

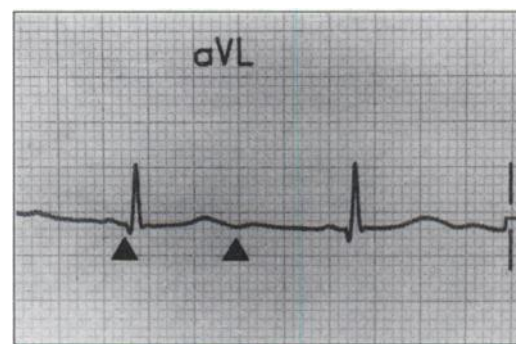


Fig. 1. Part of an electrocardiographic trace used in this study. The QT interval is measured from the beginning of the QRS complex to the point where the T wave meets the isoelectric line (shown by the two arrowheads). This ECG, running at 25 mm/sec has a QT length of 12 mm, giving an interval of 480 msec (normal 420 msec).

abnormal, information about the type of abnormality was requested. The answers were liberally marked, for example any answer indicating that ECG 3 had an intraventricular conduction defect was marked correct even if right bundle branch block was not mentioned. The questionnaires were marked independently by two of the authors, a psychiatrist and a cardiologist; agreement between raters was 100%.

### Findings

Of the 31 questionnaires distributed, 30 were returned, 13 from registrars and 17 from SHOs. The median interval between qualification and this study was four years (range 2–11) and 71% of the sample had postgraduate clinical experience prior to commencing psychiatry. Eighty-seven per cent of respondents identified the abnormalities in the trace showing the myocardial infarct, 80% identified bundle branch block and 80% correctly stated ECG 4 as normal. Only 20% identified the prolonged QT interval in trace 2. Previous clinical experience outside psychiatry was not associated with better success at identifying QT interval prolongation ( $P=0.43$ , Fisher's exact test) but registrars were significantly more likely than SHOs to rate this ECG correctly ( $P=0.04$ , Fisher's exact test).

### Comment

The psychiatric trainees in this small survey were very good at identifying myocardial infarction, bundle branch block and a normal ECG. The accuracy with which trainees identified QT interval prolongation was low despite the fact that respondents were aware that the study was being undertaken in the light of the consensus statement on high dose medication, and a trace with a noticeably long QT was used. Although

many psychiatrists may be aware of the problems associated with QT interval prolongation, they may be unfamiliar with seeing the abnormality in practice and this may account for the low detection rate. Registrars may be better able than SHOs to identify QT prolongation because of greater awareness of the toxicity of psychotropic drugs. Accurate detection of QT interval prolongation is important as its presence may indicate the need to review the type or dose of psychotropic medication. If the recommendation in the recent consensus statement is to be followed, it would be advisable for psychiatrists to have guidance on the identification of ECG abnormalities possibly associated with psychotropic medication.

### References

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