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An isolated T wave

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A 25-year-old woman was referred for evaluation because of occasional episodes of palpitations. A routine ECG was performed using a GE MAC 5500 ECG machine. The ECG showed a T wave that was not preceded by a P wave or QRS complex (*Figure 1*). The ECG was otherwise normal.

Ventricular repolarisation must be preceded by depolarisation. As the T wave is the surface ECG manifestation of ventricular repolarisation, its occurrence without a preceding QRS complex can only mean that the ECG machine has failed to register this. We conclude that the ECG machine omitted to record a period of 250 ms that

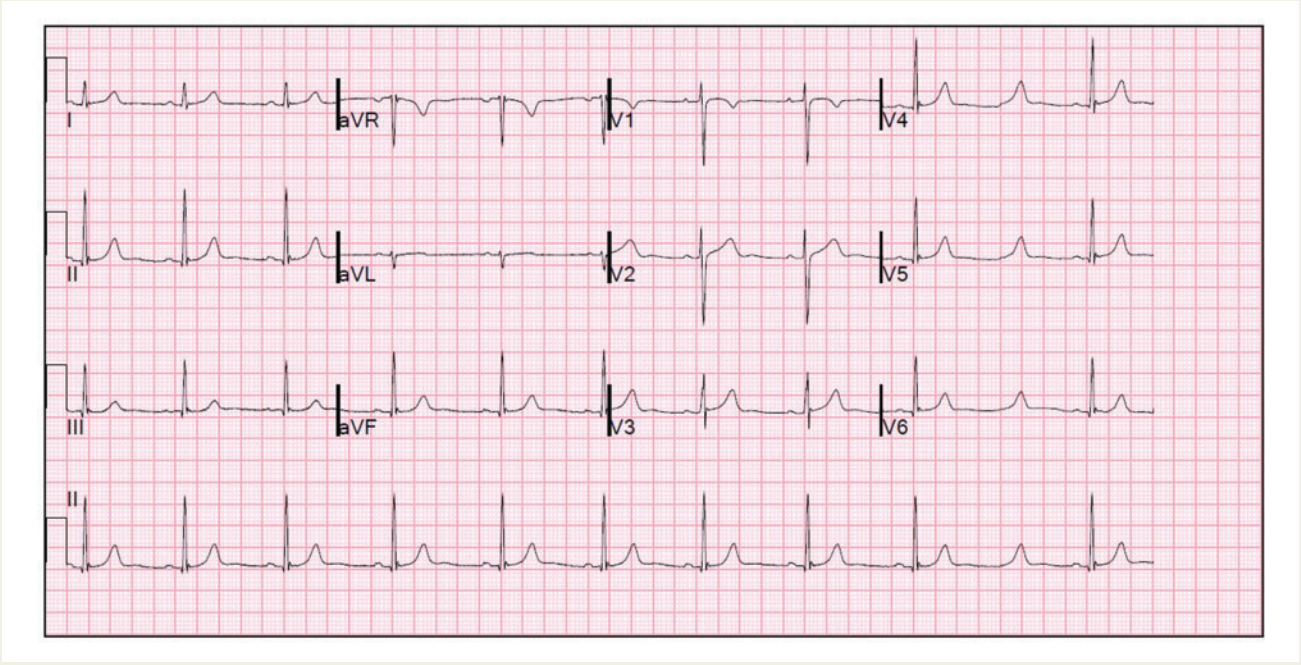

Figure 1 12-lead ECG showing the isolated T wave.

Measurement of the RR intervals showed that the interval encompassing the isolated T wave was approximately 250 ms shorter than twice the mean of the four previous RR intervals (*Figure 2*). Measurement of the T–T interval showed that the missing 250 ms belonged to the interval preceding the apparently isolated T wave.

encompasses the P wave and QRS complex, which should have accompanied the isolated T wave.

A well-maintained digital ECG machine failed to register the P wave and QRS complex of one cardiac cycle. No explanation other than artefact could explain the findings. This ECG artefact

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Figure 2 Measurement of the R-R and T-T intervals, showing that the missing 250 ms belonged to the interval preceding the isolated T wave.

phenomenon has not been previously described. A similar transient failure of data collection falling at a different part of the cardiac cycle could produce an impression of atrioventricular block or shortening of the PR or QT interval, with potential clinical consequences. Observation of any discrepancy in the RR interval could be easily dismissed as sinus arrhythmia.

Non-physiological artefacts of the surface ECG were more common in the era of analogue recording equipment but in the digital era, an understanding of how artefacts can still be produced on an ECG is important as well as the fact that all machines are subject to error.[1,2]

Consent: The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidance.

Conflict of interest: none declared.

References

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2. Knight BP, Pelosi F, Michaud GF, Strickberger SA, Morady F. Physician interpretation of electrocardiographic artifact that mimics ventricular tachycardia. *Am J Med* 2001;**110**:335–338.