Electrocardiographic Tremor Artifact: *Pseudo Atrial Fibrillation/Flutter!*

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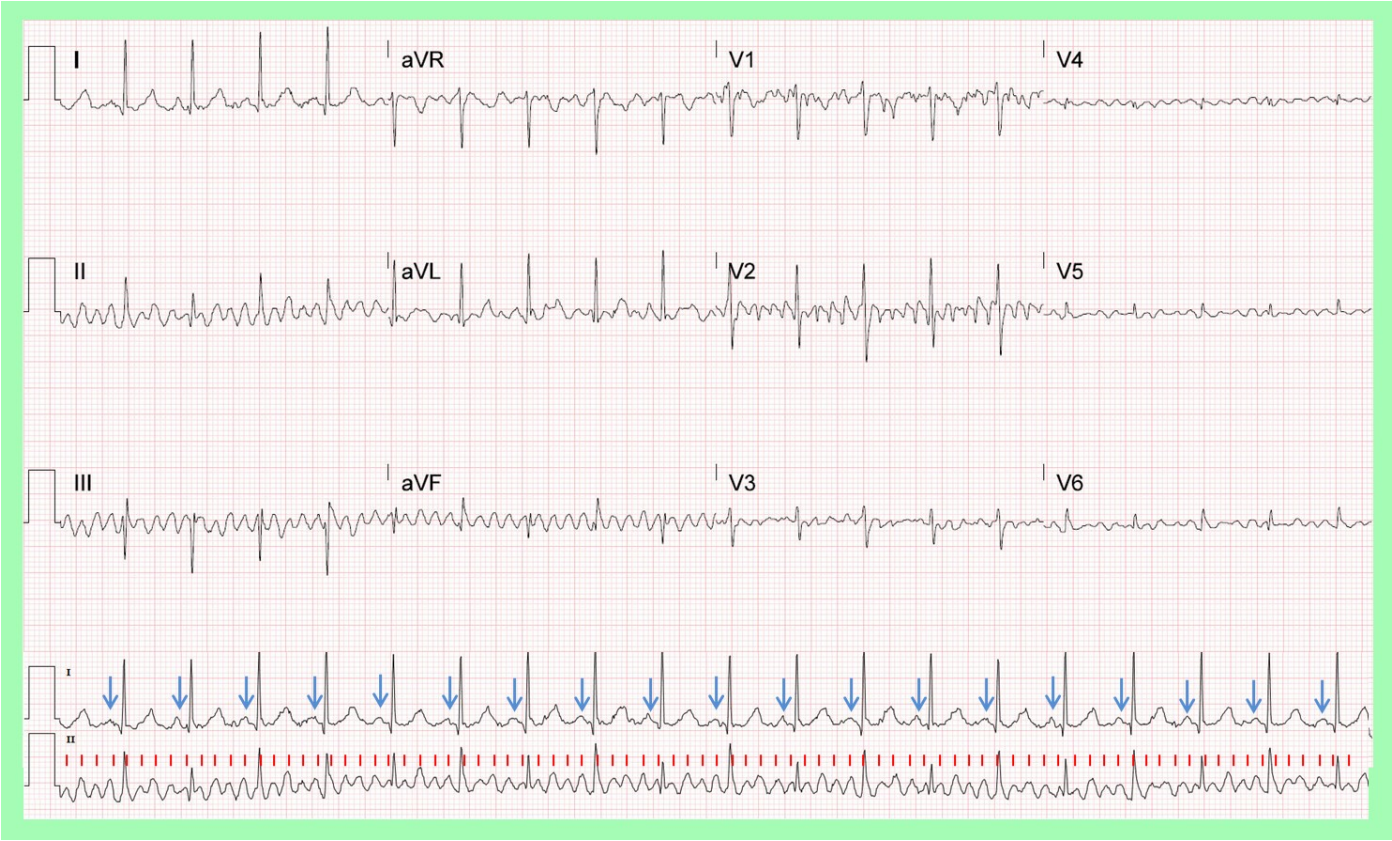

Description

The above electrocardiogram (ECG) was performed in the setting of shivering and upper respiratory tract infection (URI). It reveals fibrillatory waves (red lines) at an atrial rate of approximately 550 beats per minute (BPM). This was concerning for atrial fibrillation or fast atrial flutter (which was the automated reading by the ECG machine), with a regular ventricular response at 116 BPM.

Closer examination of the ECG tracing, however, reveals discrete P waves in lead I (blue arrows) at an atrial rate of 116 BPM, matching the ventricular rate, indicative of sinus tachycardia. The fibrillatory waves were attributed to a tremor artifact due to the URI, mimicking atrial fibrillation/flutter as misinterpreted by the EKG machine.

Discussion

For over 100 years, the electrocardiogram has emerged as an invaluable and highly cost-effective tool in cardiology for diagnosis, risk stratification, prognostication and treatment or toxicity monitoring [1]. Nevertheless, the technology has been fraught with various intrinsic and extrinsic recording and interpretation errors and artifacts which may lead to inappropriate diagnosis and therapeutic decisions if not recognized and corrected.

Lead misplacement errors have been reported with a frequency of 6 – 7 % in a hospital setting [2, 3], often caused by an extrinsic error related to faulty lead placement. Intrinsic errors can be related to implanted devices causing the appearance of an arrhythmia, such are a

ISSN 2689-291X https://doi.org/10.13140/RG.2.2.25517.81124

bladder pacemaker [4], or inability to detect pacemaker spikes in certain devices [5].

While arm lead reversals are among the most common and easily recognizable lead placement errors [6], even by automated ECG machine readings, other precordial lead reversal may not be as obvious and will require closer scrutiny [7]. Baseline artifacts often triggered by tremor can mimic atrial flutter [8] in addition to atrial fibrillation and ventricular arrhythmia [9]. It is imperative to recognize such ECG artifacts to avoid an erroneous diagnosis which may lead to inappropriate treatments such as unnecessary anticoagulation.

Manuscript submitted Dec 2; accepted Dec 16, 2024

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https://cardiofellows.com/newsletter-december-2024.html

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KEYWORDS: Electrocardiography; Artifact; Pseudo-Fibrillation. Pseudo-Flutter

Reference this article as:

As Sayaideh M, Rahman M, Ruiz B, Odigwe C, Nagaraj S, Parks A, Malik H, Riad M, Omar B, Malozzi C, Manoharan S. Electrocardiographic Tremor Artifact: *Pseudo Atrial Fibrillation/Flutter!* Cardiofel Newslet 2024. Dec; 7(12):28– 29.