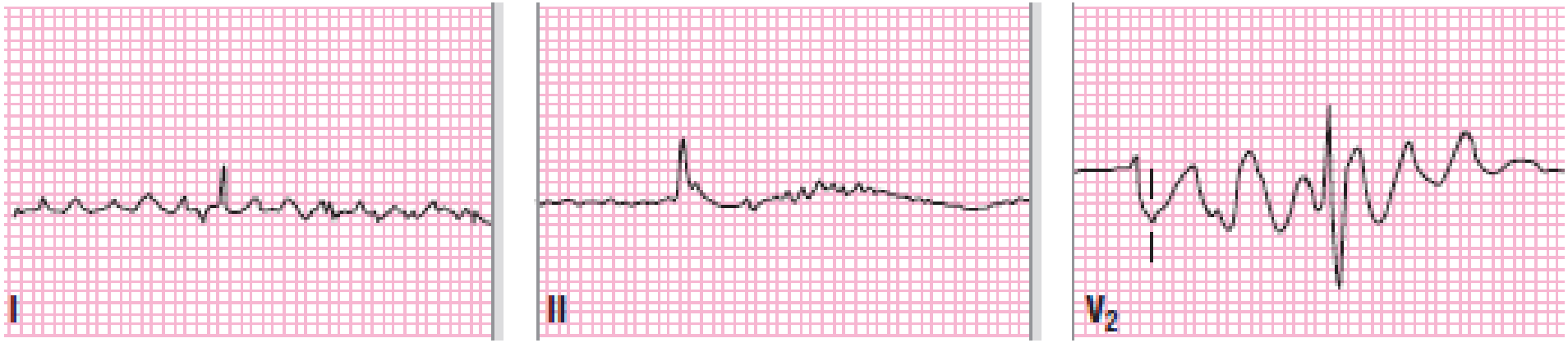
## • Artifact




Artifact can interfere with the correct ECG diagnosis, especially rhythm interpretation. All 12 leads of the ECG need to be assessed carefully if artifact is present to determine if a hidden P wave is present.

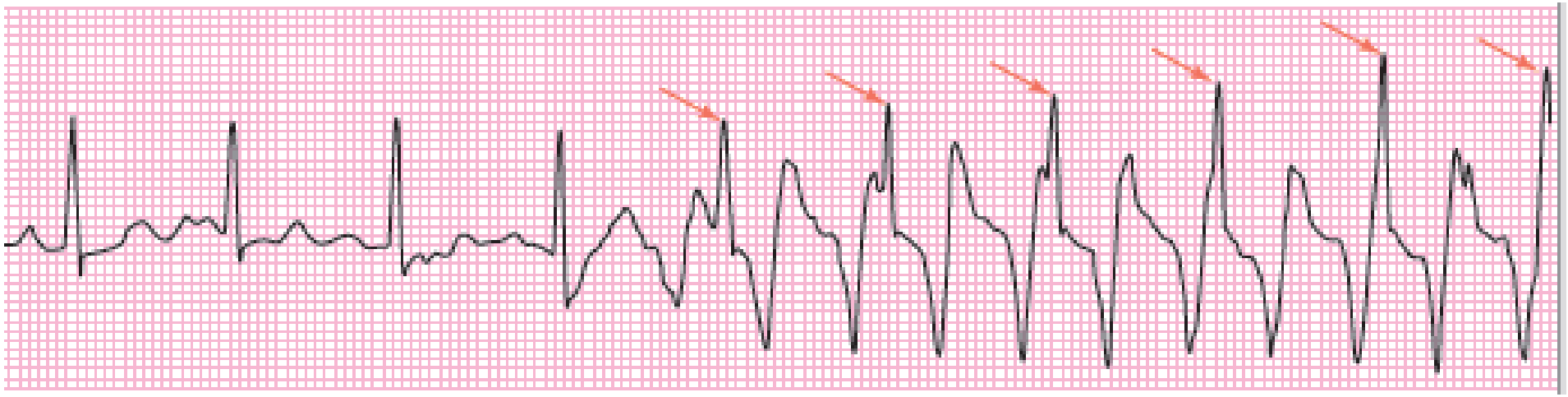
Causes include:

- **AC electrical interference** (60 cycles per seconds): Due to an unstable or dry electrode, poor grounding of the ECG machine or excessive current leakage from an ECG machine too close to other electronic equipment. Rapid sine-wave changes make assessment of P waves and ST segment shifts unreliable.
- **Wandering baseline**: Due to an unstable electrode, deep respirations, or uncooperative patient. Evaluation of P waves, QRS voltage, and ST segment shifts are unreliable.
- **Skeletal muscle fasciculations** (e.g., shivering, anxiety with muscle tension)
  - Commonly due to **tremor** (most prominent in limb leads)
  - Parkinsonian tremor simulates atrial flutter with a rate of ~ 300 per minute (4–6 cycles per second)
  - Physiologic tremor rate is 500 per minute (7–9 cycles per second)

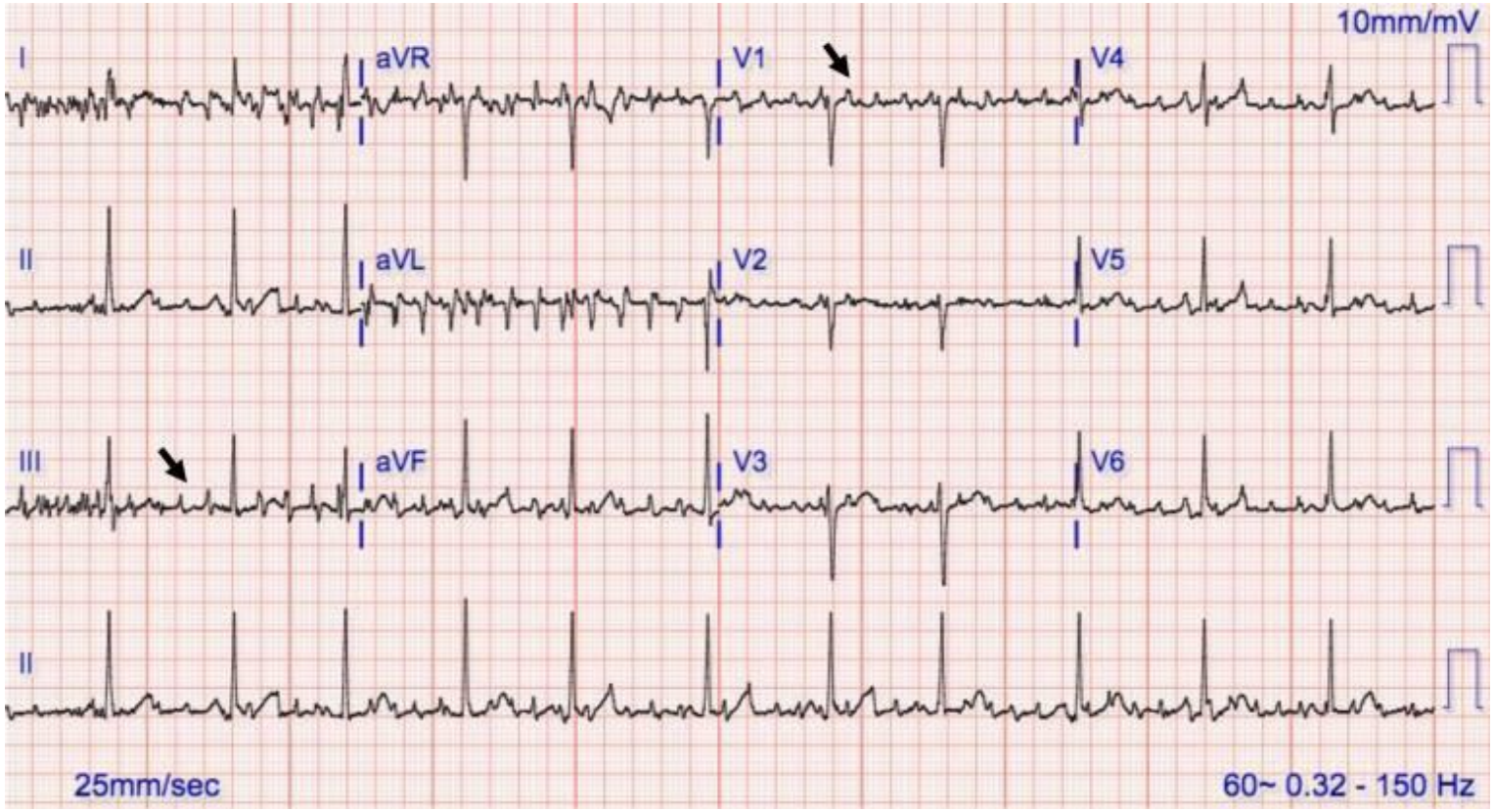
- **Poor standardization**: 1 mV signal is not recorded, underdamped, or overdamped; ECG recorded at half-standard or double standard. Voltages may be inaccurate.

  **ECG recorded at double-speed or half-speed**

- **Cautery**: Pronounced baseline interference
- **IV infusion pump**: May give appearance of rapid P waves
- **Rapid arm motion** or lead movement (e.g., brushing teeth or hair): Can simulate VPCs, ventricular tachycardia (VT), or Torsades de Pointes (TdP); often mistaken for VT on telemetry or Holter monitoring.



*QRS complexes (arrows on tracing below) "march" through the artifact*




Parkinsonian tremor at 5 cycles/second, mimicking atrial flutter waves at 300/minute.