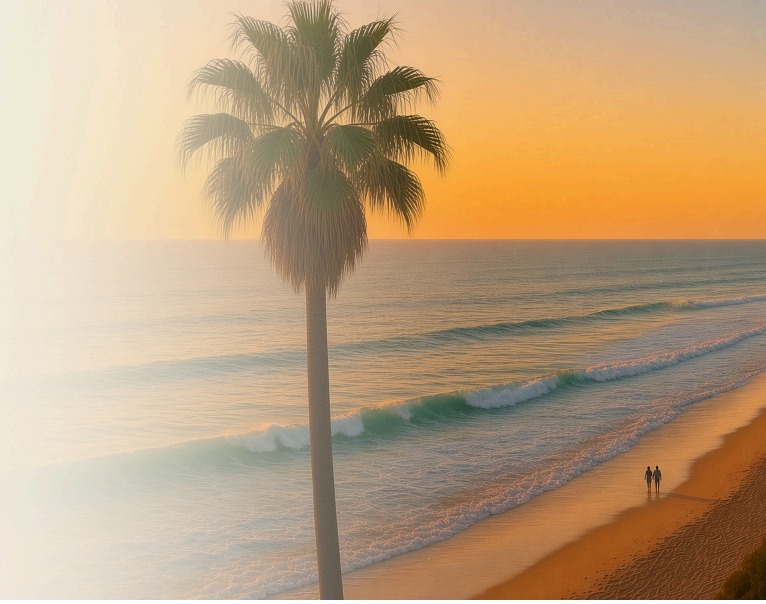
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Multifocal Atrial Tachycardia

MAT is a fast, uneven heartbeat. It usually shows up because the body is sick from something else, most often the lungs.

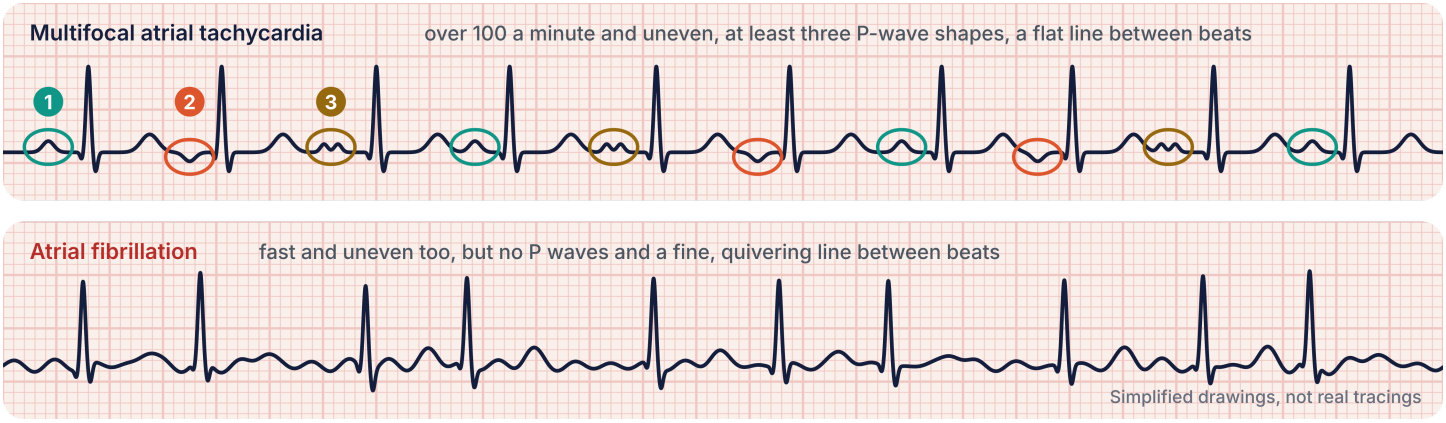
Over 100
beats a minute in MAT, with the timing between beats uneven

3 or more
different P-wave shapes in the same ECG lead, the fingerprint of MAT

100 or below
beats a minute in its harmless cousin, wandering atrial pacemaker

WHAT'S HAPPENING

Several spots firing at once



Each heartbeat should start in one place, the sinus node, the heart's built-in pacemaker. In MAT several spots in the upper chambers fire on their own, taking turns and competing. Each beat leaves a small bump on the ECG called a P wave, and its shape depends on where the beat started. On a single strip MAT is easy to mistake for atrial fibrillation, so a proper 12-lead ECG makes the call.

WHY IT HAPPENS

A sign that points somewhere else

A bad lung flare
Severe lung disease, especially a bad COPD flare with low oxygen and high pressure in the lung circulation.

Other heart and lung problems
Pulmonary hypertension, coronary artery disease and heart valve problems.

Magnesium and medicines
A low blood magnesium level, or theophylline when its blood level climbs too high.

MAT rarely appears in an otherwise healthy heart out of the blue. The strained, oxygen-starved upper chambers become irritable and start firing from several spots. Some inhaled and intravenous medicines used to open airways and support blood pressure can do it too.

Treat the cause

MAT is your heart reacting to a body under strain, with several spots in the upper chambers firing fast and out of step. Settle the strain, and the heartbeat usually settles with it.

HOW MAT IS TREATED AND WHAT TO ASK ARE ON THE BACK

HOW MAT IS TREATED

The fix is treating the illness behind it

WHAT WORKS

Treat the illness underneath	This is the first move every time, getting on top of the COPD flare, the infection, the low oxygen, or whatever set this off. When the lungs improve, the oxygen comes up and the body settles, the heart rate usually follows on its own.
Magnesium	Correcting a low magnesium level helps. Magnesium given through the vein can calm the rhythm even when the blood level looks normal, so it is a low-risk step.
Adjust a trigger medicine	When a medication like high-dose theophylline is the trigger, lowering or stopping it is part of the fix.

SLOWING THE RATE

while the cause is treated

Verapamil	A calcium channel blocker that acts on the AV node, the electrical gateway between the upper and lower chambers. It can slow the rate and sometimes settle the rhythm. Dr. Rasch tends to choose it when the heart's pumping strength is preserved and there is no problem with the heart's own pacemaker or conduction.
Beta-blockers	These can also slow the rate. They are used carefully, because many people with MAT have the kind of severe lung disease where these drugs need real caution.

THE WRONG TOOLS FOR MAT

A shock (cardioversion)	It does not work for MAT. There is no single short circuit to reset, so a shock has nothing to snap back into line.
Rhythm drugs and ablation	The standard rhythm-steadying drugs are generally unhelpful here, and catheter ablation has no real role. None of these touch what is driving the rhythm.

IF MAT IS ON YOUR REPORT

Questions to ask	Ask what was going on when it showed up, whether your lungs and oxygen are where they should be now, and whether anything, such as a magnesium level or a medication dose, is worth checking.
Tests that can help	An echocardiogram is often reasonable to look at the heart's structure. A stretch of rhythm monitoring can show whether the rhythm has resolved as you have recovered.
If you faint	Call 911. Fainting needs emergency care, especially during exertion, without warning or with an injury.

WILL IT GO AWAY?

In most cases, yes, as the underlying illness improves. When it lingers or keeps returning, that usually means the heart or lung condition behind it is still active and needs ongoing attention. MAT and atrial fibrillation can also show up in the same person.

READ THE FULL ARTICLE

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For education only, and not a substitute for advice from your own physician. Sources include the 2015 ACC/AHA/HRS SVT guideline, Kastor (NEJM 1990), Schwartz and colleagues (Journal of Emergency Medicine 1994), the 2020 AHA statement on drug-induced arrhythmias and the 2023 ACC/AHA/ACCP/HRS atrial fibrillation guideline.

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