

A Look at Atrial Fibrillation, Stress, Anger & Beta-Blockers



By *Chuck Dinerstein, MD, MBA* — June 4, 2019



Courtesy of Gerd Altmann from Pixabay
[1]

Atrial fibrillation is an abnormal heart rhythm where the atrium's contractions are not synchronized to the contractions of the ventricle; the atrial chamber quivers more than contracts. It impacts roughly 2 million Americans annually and can result in the development of clots that break off and cause strokes. Like other medical conditions, the underlying disturbances in electrical function can be made worse or set off by stress and anger. The mind-body connection in this instance is through our autonomic nervous system (ANS), the portion of our nervous system that unconsciously controls so many of our vital functions.

The fight or flight response, releasing catecholamines to prepare us for danger, increasing our attention, preparing our legs to take us far away is mediated through the sympathetic nervous system, one of the ANS's two balancing systems. The other component, the parasympathetic helps us "chill out," the balancing act of sympathetic and parasympathetic adjusts our response. Stress and anger heighten sympathetic activity and decrease parasympathetic activity.

While sympathetic tone increases heart rate, parasympathetic tone increases the interval before the heart is receptive to the signal to contract, resulting in a slowing of the heart rate. Beta-blockers are a group of medications that blunt the sympathetic response by blocking the messages received by beta-adrenergic receptors in the brain and more peripherally in the heart; they mimic the parasympathetic and lengthen the heart's pause before responding to electrical signals to contract.

The question asked by researchers is whether beta blockers could "attenuate the triggering effect of anger or stress on atrial fibrillation?" Fair warning, it is a small study and should be viewed as

exploratory rather than definitive.

Ninety-five patients with symptomatic atrial fibrillation were studied over a year wearing a device that captured symptomatic atrial fibrillation lasting more than 5 minutes. [1] When the patients experienced symptoms, they recorded which of six different emotions [2] occurred in the 30 minutes preceding onset in a small electronic diary. The patients also wore a continuous heart monitor for 24 hours once a month in the hopes of identifying periods of atrial fibrillation that were not symptomatic, but there were so few and of such short duration that the findings were of no value and they remained unreported. In a non-randomized manner, half of the patients were treated with beta-blockers, and the rest were not.

Episodes of anger and stress did not differ between the two groups, and as expected, these emotions increased the likelihood of atrial fibrillation in both groups. Beta-blockers seemed to attenuate the response by the heart; anger and stress were acting as triggers for 77% of the atrial fibrillation experience by those on beta-blockers and 93% for those not taking the medication. Put in other terms, anger or stress preceded symptomatic atrial fibrillation five-fold higher in patients not receiving a beta-blocker. More importantly, beta-blockers did not act as an "emotional sedative," the incidences of anger or stress were essentially the same in both groups; beta-blockers acted on our physiologic response.

Atrial fibrillation diminishes the quality of life, by its symptoms and its sequelae. We do not have a stellar record for treatment, pharmaceutical management has 50% success rate, and ablation (a medical term used to describe electrocuting heart tissue to remove abnormal "wiring") has a 50 to 80% success rate. So, we can use a bit of help here.

The reason I bring the paper to you is to make a comparison to another small exploratory study treating atrial fibrillation with two sessions of yoga twice a week. Compared to what might be a 20% reduction in symptomatic atrial fibrillation from beta blockers, these study patients reduced their episodes from 3.8 to 2.1 during a three month period, where study patients acted as their own control before beginning their yoga practice. By my calculation, that is a 44% decrease, and many of those patients were on beta-blockers throughout the study. Eleven patients, 22%, had no episodes of atrial fibrillation at all during the period of yoga intervention.

How does yoga produce this effect? I suspect that it lies in the fact that yoga, as prescribed in the study and frequently practices, involves regulating our breathing, and breathing is one of the mechanisms under our control that can regulate the autonomic nervous system.

Big Pharma has no dog in this race; there is no blockbuster beta-blocker on the horizon. The current medications work well, and their cost is low, at least relative to the medicines in Big Pharma's pipeline. Which approach should we take? Should we offer Yoga as an adjunctive treatment, or should we pile on another med?

Medications are easier to take; they certainly do not take up 2 hours of your week as the yoga training required. But yoga has few side effects other than the aches from overdoing. Beta-blockers have several side-effects for the most part mild, like dizziness or drowsiness. Is there a

role for complementary medicine in atrial fibrillation? Is it time for a randomized study?

[1] This is the same arrhythmia that Apple Watches are being trained to identify, but the devices employed are calibrated for research, not edutainment.

[2] Happiness, sadness, anger, anxiety, stress, and impatience.

Source: Effects of beta-blockers on triggering of symptomatic atrial fibrillation by anger or stress
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Effect of Yoga on Arrhythmia Burden, Anxiety, Depression, and Quality of Life in Paroxysmal Atrial Fibrillation Journal of the American College of Cardiology DOI: 10.1016/j.jacc.2012.11.060

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