



# Increased Early Sodium Contemporary Provokes Familial Atrial Traumatic Inflammation and Decreases Effectiveness of Sodium Channel Block

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## DESCRIPTION

Atrial Fibrillation (AF) is the most common cardiac arrhythmia. Atrial fibrillation often develops due to the complication of cardiovascular disease in combination with existing atrial substrates. Familial early-onset AF allows identification of this substrate. Pathogenic manifolds of genes encoding ion channels are associated with familial atrial fibrillation. A point mutation M1875T in the *SCN5A* gene, which encodes the  $\alpha$ -subunit of the cardiac sodium channel Nav1.5, is associated with increased atrial excitability and familial atrial fibrillation. The development of a new mouse model with the Scn5aM1875T mutation allowed us to study this atrial substrate in detail. Methods and Results: Left atrial cardiomyocytes from newly generated Scn5aM1875T + / mice showed a selective increase in early (peak) cardiac sodium current measured by patch clamp. Microelectrode recordings of the intact left atrium showed larger action potential amplitudes and faster peak velocities at upstroke. The line was investigated using optical mapping. When challenged with the sodium channel blocker flecainide, Scn5aM1875T + / left atrium had less conduction velocity reduction than the corresponding wild-type atrium. Electrocardiography and echocardiography, and *in vivo* analysis using cardiac histology, ruled out overt hypertrophy or heart failure in young adults.

## SIGNS AND SYMPTOMS

People with atrial fibrillation (A-fib) are unaware of their symptoms. People with symptoms of atrial fibrillation may have the following signs and symptoms:

Sensations of fast, fluttering, or throbbing heartbeats (palpitations)

- Chest pain
- Dizzy
- Malaise
- Sleepiness

- Decreased training ability
- Dyspnea
- Weaknesses

## CAUSES OF ATRIAL FIBRILLATION

Problems with the coronary heart's shape are the maximum not unusual place motive of atrial traumatic inflammation. Possible reasons of atrial traumatic inflammation include:

- Coronary artery sickness
- Heart assault
- Heart illness that you are born with (congenital coronary heart illness)
- Heart valve troubles
- High blood pressure
- Lung diseases
- Physical pressure because of surgery, pneumonia or different illnesses

## RISK FACTORS

Things which can boom the danger of atrial traumatic inflammation (A-fib) include:

### Age

The older someone is, the more the danger of growing atrial traumatic inflammation.

### Heart sickness

Anyone with coronary heart sickness – along with coronary heart valve troubles, congenital coronary heart sickness, congestive coronary heart failure, coronary artery sickness, or records of coronary heart assault or coronary heart surgery – has an expanded danger of atrial traumatic inflammation.

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### High blood pressure

Having excessive blood pressure, especially if it is now no longer properly managed with life-style adjustments or medications, can boom the danger of atrial traumatic inflammation.

### Thyroid sickness

In a few human beings, thyroid troubles may also cause coronary heart rhythm troubles (arrhythmias), together with atrial traumatic inflammation.

### PREVENTION

- Caregiving for a person with atrial traumatic inflammation
- Show extra associated content
- Associated Procedures
- Ablation therapy
- Atrial traumatic inflammation ablation
- AV node ablation