

## High caffeine intake can lead to arrhythmias

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Coffee is routinely consumed in countries within the Mediterranean basin. Coffee, an infusion of ground, roasted coffee beans, is the most widely consumed behaviourally active substance in the world. It contains several hundred different substances including, antioxidants, carbohydrates, lipids, vitamins, minerals, phenolic compounds and alkaloids. Nevertheless, the effects of coffee on the cardiovascular system have been mainly related to caffeine. Acute and chronic caffeine intake appears to have only minor negative consequence on health. However, high levels of caffeine intake have been related to ventricular arrhythmias.

Epidemiologic studies have already underlined the beneficial role of the Mediterranean dietary pattern on mortality, coronary artery disease, lipid metabolism and on blood pressure. The diet of people living in Mediterranean area, where olive oil is the principal source of dietary fat,



encompasses all the beneficial dietary characteristics presented in previous studies. Little information is available on relationship between adherence to <u>Mediterranean Diet</u> and atrial fibrillation (AF).

"We aimed to investigate the relationship between diets and atrial fibrillation, one of the most common arrhythmias, and we focused on <u>coffee</u> and caffeine intake" explained Prof Mattioli from the University of Modena, Italy."We selected patients presenting with a first detected episode of AF. Nutrition habits were investigated by a self administered food frequency questionnaire that included 116 items, followed by an interviewer-administered 24 h diet recall questionnaire."

The adherence to Mediterranean Diet was assessed using a Mediterranean Score. The Mediterranean Diet is usually represented in the form of a pyramid, the base of which refers to foods which are suggested to be consumed most frequently (non-refined cereals and products, olive oil, vegetables and fruits) and the top of the pyramid to those foods to be consumed rarely (red meat and meat products). The score ranged from 0 to 55. Higher values of score indicate greater adherence to the Mediterranean diet.

Interviewers investigated coffee consumption and other sources of caffeine (i.e. soda drinks, cola, chocolate, tea). Coffee consumption was specifically estimated and we evaluated: type of coffee consumed (filtered or boiled), number of daily cup of espresso coffee, American coffee, decaffeinated and cappuccino.

Coffee intake was divided in 4 categories: low habitual (from 1 cup/day), medium habitual (2-3 cups/day), heavy habitual (more than 3 cups/day) and non-habitual (0 cup/day).

<u>Caffeine intake</u> was estimated adding the caffeine from other sources evaluated as number of chocolate snacks, number of cans of cola soda



usually consumed, intake of tea and type of tea.

Findings include:

- Total calorie intake was similar in patients with arrhythmia and in control patients. The intake of calories was normal in both groups.
- Adherence to Mediterranean Diet was significantly lower in patients that developed atrial fibrillation. Patients that developed arrhythmias achieved a total calories intake similar to patients that did not develop AF, but the quality of food was different and the Mediterranean diet score was lower. Patients with arrhythmia had higher consumption of red meat, and full fat dairy.
- Estimated intake of total antioxidants from food was lower in patients with atrial fibrillation.
- Source of antioxidants were different in patients with atrial fibrillation. Patients with atrial fibrillation had higher intake of antioxidants from coffee compared to other source (vegetables, fruits, wine).
- Patients with atrial fibrillation had higher intake of caffeine compare to control.
- Patients with high intake of caffeine and coffee are more likely to develop <u>atrial fibrillation</u>.

In this population the adherence to Mediterranean Diet is scarce. In addition, the antioxidant intake from coffee is higher than antioxidant



intake from vegetables and fruits. High antioxidant levels in coffee were reported in several studies. A major issue is whether the antioxidants from coffee are bioactive. Many epidemiologic studies found that coffee is associated with reduced early oxidative stress. Thus, coffee may contain several bioactive compounds, some of which may be beneficial, whereas others may increase the risk of disease. A second point is the synergistic and antagonist interactions between food components of diet and the complex of nutrients intake.

"Our study suggests that high intake of coffee increase the risk of arrhythmias in people without known cardiac disease", concludes Prof Mattioli.

Source: European Society of Cardiology (<u>news</u> : <u>web</u>)

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