

Dietary supplements and Side Effects: Resistant Atrial Fibrillation Jack3d: Resistant Atrial Fibrillation

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ABSTRACT

Dietary supplements, also known as food or nutritional supplements, are intended to compensate for nutrient deficiencies or to maintain the proper nutrient balance in the diet. As dietary supplements are not permitted by law to be marketed as a treatment, prevention, or cure for any disease; only drugs are permitted to make such claims physicians should be aware of the fact that individuals using these supplements could affect their health. A 22-year-old man presented to the emergency department with palpitations and dyspnea of recent onset (>2 hours). His medical history revealed nothing noteworthy. His physical examination revealed tachyarrhythmia. His electrocardiography revealed an AF speed of 130 beats per minute (ECG). In this case, a young man who was using Jack3D and diagnosed with atrial fibrillation has been presented which has been unique.

Despite the fact that natural products in food supplements are more expensive than synthetic ones, the majority of people prefer them. This could be because they believe natural products are more beneficial and safe for their health. As a result, this is a significant public health issue that also poses a financial risk.

Keywords: supplements, side-effects, community health

Dietary supplements also referred to as food or nutritional supplements, are intended to make up for nutrient deficiencies or to keep the right balance of nutrients in the diet. They are the source of nutrients with nutritional or other physiological effects, such as vitamins, minerals, and other substances. They are offered in a form that enables dosing (tablets, capsules, liquids in specified doses).

¹ Multicomponent dietary bodybuilding supplements comprise as herbal preparations for the public. ² Its herbal origin is emphasized while told that has no adverse effect on the promotion. ³ Furthermore, the most frequently reported side effect of supplementary products is ranged from "jaundice and liver failure" to "a seizure with tachycardia and hypertension"

and also "transient ischemia attack". ⁴ One of these products is Jack3D which consists of arginine alpha-ketoglutarate, creatine monohydrate, beta-alanine, caffeine, 1,3-Dimethylamylamine HCl, Schizandrol A, Citric Acid, Natural Flavors, Silicon Dioxide, Acesulfame Potassium, Sucralose, Vegetable Stearate, Beta Carotene. ⁵

When the heart's atria receive errant electrical impulses, which cause rapid and ineffective atrial contraction followed by irregularly irregular ventricular contractions, Atrial fibrillation (AF) happens. In normal sinus rhythm, both the atria and ventricles contract in unison. Atrial fibrillation (AF) in young patients without structural heart disease is rare. ⁶ Therefore, when the arrhythmia is present in

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this population, reversible causes must be identified and resolved. The most frequent causes of atrial fibrillation are hypertension, coronary artery disease, heart valve disease, chronic lung disease, heart failure, cardiomyopathy, congenital heart disease, and pulmonary embolism. Less frequent causes of atrial fibrillation include thyroid disorders and pericarditis. The use of illegal drugs or stimulants, acute alcohol intoxication, excessive caffeine use, electrolyte imbalance, metabolic disorders, infections, or genetic factors are less frequent causes of atrial fibrillation.⁷ When acute atrial fibrillation detected in a patients EKG , converting to sinus rytm in 48 hours and cardiac rate control is important for cardiac wellbeing . First and second line therapies are for medical cardioversion and rate control. The third line therapies are atrioventricular node ablation , peacemaker and crt . Af treatment has shown in the Fig 1.¹²

developed persistent AF depends on the use of Jack3D, making it an unique example.

CASE

A 22-year-old Caucasian man came to the emergency department complaining of palpitations and dyspnea of abrupt and recent onset (> 2 hours). There was nothing significant in his medical history. His blood pressure was 130/80 mmHg, his pulse was 126/min and arrhythmic, his respiratory rate was 18/min, and his temperature was 36,50C. Tachyarrhythmia was detected in his physical examination. 130 beats/min AF speed was observed in his electrocardiography (ECG). In the emergency department diltiazem and metoprolol applied to the patient , the EKG rythm was still atrial fibrillation . Because of first – line treatment failure. The patient was admitted to the cardiology service for the purpose

This case is noteworthy in that a young man who

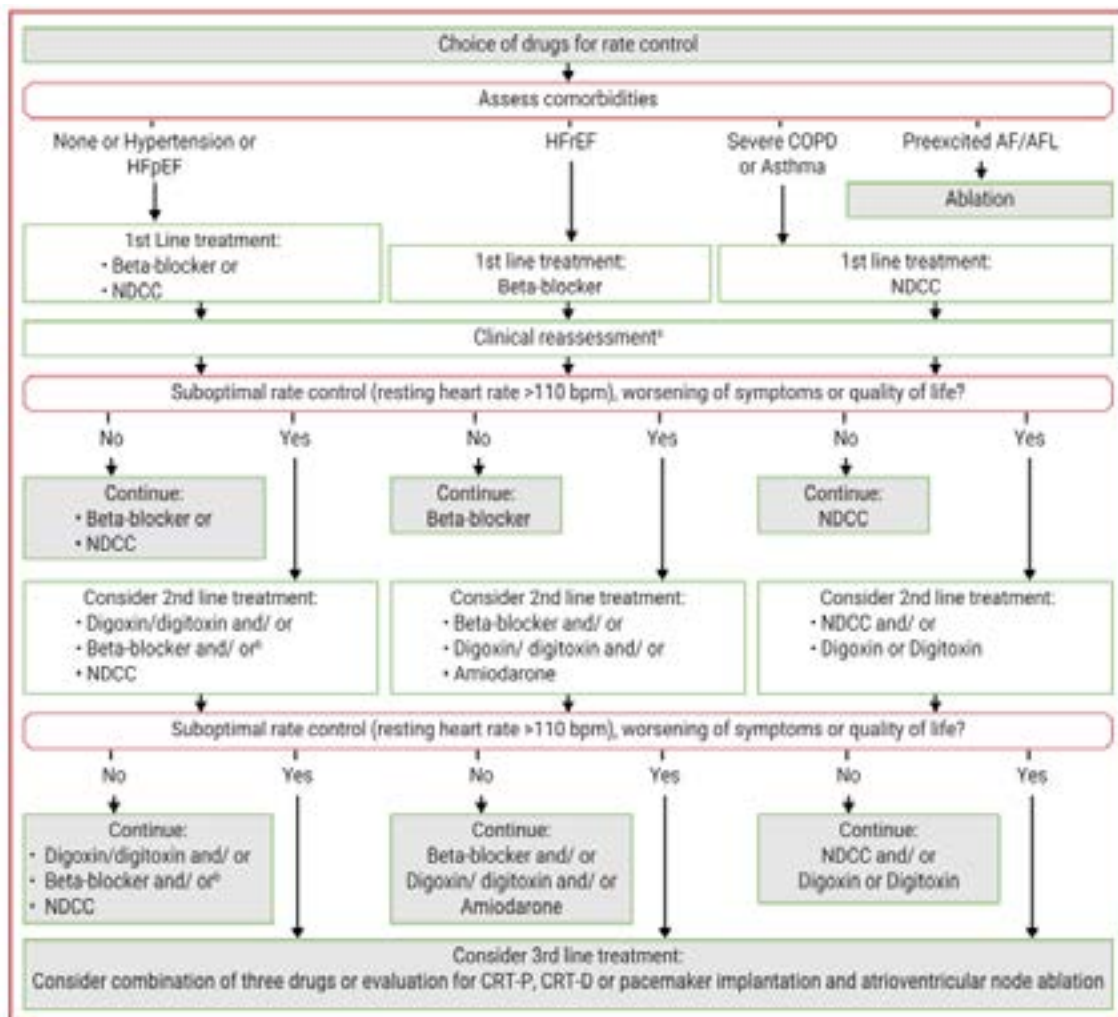


Fig 1. Atrial-Fibrillation-Management

of further evaluation and treatment. No structural cardiac pathology was detected by the transthoracic echocardiography. Amiodarone (Cordarone) infusion (%5 dextrose 100cc, 2 ampuls 1 hour period) was applied and continued for 24 hours period (%5 dextrose 100cc, 8 ampuls). The patient converted to normal sinus rhythm after the second line therapy was started. On direct questioning about herbal products and dietary supplements, he revealed that he took Jak3d which was a bodybuilding supplement.

DISCUSSION

Self-administration of supplements is causing increasing concern because it can frequently be indiscriminate, and unhealthy, and act as a gateway drug to more dangerous drugs and substances.⁸ Zeijon *et al* revealed that “Protein, DMAA, Caffeine, Creatine, Methasteron, Testosterone, Anabolic steroid, Synephrine, Methylstenbolone, Nandrolone, Citrus aurantium” were the most reported supplements for adverse effects.³ In Turkey, especially in the Trakya region, “Glucosamine Chondritin, Biotin (vitamin B7), Coenzyme Q-10, Panax Ginseng, St. John’s Wort, Vitamin B12, Vitamin C, Vitamin D3, Multivitamins, Iron, Calcium, Magnesium, Zinc Folic Acid (vitamin B9), Fish Oil (Omega 3, 6, 9 Fatty acids)” was reported as most frequently used supplements.⁹ Campbell *et al* reported that the reason to use supplements were “Key themes that influenced supplement use were weight loss, body image, nutrition, training, education, challenges, need, and time.”⁸ The concept that all ingredients derived from plants are safe for consumption has led to a recent rise in the use of supplements.¹ The main purpose of multi-component dietary supplements for bodybuilders is to increase muscle mass. Numerous studies have shown that using the compound creatine and arginine-alfaketoglutarate increases muscle endurance, and that performing multiple Wingate tests shows an improvement in muscle power. However, it is important to not undervalue the risk of fatal side effects in young adults, particularly cardiovascular side effects.^{3, 5} According to a research which was published in 2021; especially 1,3-dimethylamylamine is the most detected supplement in doping samples. So we can say that 1,3-dimethylamylamine has a very common use as doping in the athletics.¹¹ In our case, it’s not clear whether JACK3D which have ingredients caused

atrial fibrillation (AF). If 1,3-dimethylamylamine supplement is responsible for AF, all athletics who use doping have a high risk for atrial fibrillation. This needs further study.

The market for dietary supplements is estimated to be worth USD 120 billion, and in recent years, it has grown by about 6% annually. Asia, North America, and Europe are the primary sales regions.¹ The respondents of the Çoskun’s research prefer mostly natural products in food supplements, despite the fact that they cost more than synthetic ones. This could be a result of their belief that natural products are more beneficial and secure for their health.⁹ So this is an important public health problem that is also an economic threat.

Furthermore, during COVID-19, supplements are used and but for the purpose of preventing or treating COVID-19, there are currently insufficient data to support either recommendations for or against using specific vitamins, minerals, herbs, or other botanical ingredients as dietary supplements.¹⁰

CONCLUSION

As new challenges mean also new options, physicians should be aware of the “history of supplement use” without bias.

Authors’ Contribution

Study Conception: ÖG,; Study Design: AKU,; Supervision: ÖG, AKU; Materials: AKU,; Data Collection and/or Processing: ÖG, AKU,; Statistical Analysis and/or Data Interpretation: ÖG, AKU,; Literature Review: ÖG, AKU,; Manuscript Preparation: ÖG, AKU and Critical Review: ÖG, AKU.

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