

الكشف عن التغيرات في كهربائية القلب لدى ماضغي القات المزمنين

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Detection of cardiac electrical abnormalities induced in chronic Qat chewers

Thesis submitted for partial fulfillment of Master degree of cardiology

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الملخص العربي

تعتبر عادة مضغ القات من العادات المتأصلة لدى بعض المجتمعات مثل المجتمع اليمني وبعض شعوب أفريقيا كاثيوبيا، تنزانيا، الصومال و كينيا .ولهذه العادة أبعاد كثيرة مؤثرة منها الاجتماعية والصحية.و يصنف القات ضمن المحظورات في كثير من بلدان العالم و لا يسمح بتداوله الا في بعض البلدان مثل اليمن, الصومال, اثيوبيا وغيرها من الدول الأفريقية.

إن للقات تأثيرا سميّا يبدأ عندما تمضغ أوراقه و أغصانه.وبالنسبة إلى آثار القات على القلب والجهاز الدوري فهي لم تحظى بالكثير من الدراسات مقارنة بما حظت به آثاره على الجهاز العصبي المركزي , ولكن هذه الدراسات أوضحت أن للقات خاصية شبيهة بالأمفيتامين ويظهر هذا التأثير جليا في تزايد معدل نبض القلب وكذلك في ارتفاع معدلات الضغط الدموي.

هدف هذه الدراسة الكشف عن التغيرات في كهربائية القلب لدى ماضغي القات المزمنين.ومن أجل تحقيق هذا الهدف تم عمل مجموعتين، المجموعة الأولى وتشمل 50 حالة من ماضغي القات المزمنين ، و المجموعة الثانية شملت 20 حالة غير ماضغة للقات وهي المجموعة الضابطة.

جميع الحالات في هذه الدراسة خضعت إلى تقييم شمل التاريخ المرضي ،الفحص الإكلينيكي بما في لك من إحتساب عدد النبض ،قياس الضغط الدموي و الناتج المزدوج ،بالإضافة إلى الفحص بواسطة رسام القلب الكهربائي، إجراء موجات صوتية على القلب، و تركيب مراقب القلب الكهربائي لمدة 24 ساعة.

وقد أوضحت هذه الدراسة بأنه لا يوجد أي إختلافات في المعدلات الإبتدائية للنبض و الضغط الانقباضي و الانبساطي و الناتج المزدوج لدى الماضغين أو غير الماضغين للقات. غير أن هذه المعايير شهدت إرتفاعا ملحوظا لدى الماضغين خلال فترة عملية مضغ القات.

أما بالنسبة لمقدار التباين لفترة QT فلم يكن هناك أي إختلاف إحصائي لدى كل من الماضغين و غير الماضغين. كما لم يوجد إختلاف لدى الماضغين خلال فترة عملية مضغ القات.

وكانت نتائج مراقب القلب الكهربائي لمدة 24 ساعة قد أوضحت إرتفاعا ملحوظا في معدل النبض (المتوسط و الأقصى) و في إستمرارية فترات التزايد في معدل النبض لمدة أطول بالإضافة إلى وجود عدد أكبر من النبضات بطينية المصدر لدى ماضغي القات.

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List of abbreviation

BP: blood pressure

CAD: coronary artery disease

CBF: coronary blood flow

DBP: diastolic blood pressure

ECG: electrocardiogram

HCM: hypertrophic cardiomyopathy

HR: heart rate

MAX: maximum

MIN: minimum

NPE: norpseudoephedrine

PVC: premature ventricular contraction

QTd: QT dispersion

QTp d: QT peak dispersion

RPP: rate pressure product

SBP: systolic blood pressure

SCD :sudden cardiac death

SD : standard deviation

SVE :supraventricular ectopic

WHO : world health organization

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Introduction

Introduction

Qat (or Khat) is a plant grown mainly in East Africa and Southwest Arabia. It has intoxicating effects when the leaves and bark are chewed. Main areas of commercial cultivation have traditionally been in Yemen, Ethiopia and Kenya. Qat is legal in a few countries like Yemen, Somalia, Ethiopia, and Tanzania, but is restricted in many countries under a misuse of drug act. Qat contains more than 40 alkaloids, glycosides, tannins, amino acids, vitamins and minerals (*Halbach,1972*).

It has pleasurable central stimulant properties, which are commonly believed to improve work capacity and counteract fatigue. Early clinical observations had suggested that qat has amphetamine-like properties, and subsequent chemical analysis confirmed that the fresh leaves contain alkaloids (phenylalkylamines) such as cathine and cathinone, the latter being structurally related and pharmacologically similar to amphetamine. The main effect of khat is an increase in energy, alertness and a feeling of relaxation (*Kalix,1990*).

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A number of other constituents, including cathidine, eduline and ephedrine, have been identified, but it is unlikely that any of these, except tannin, play a role in khat's effects (*Giannini et al., 1986*).

The effects of qat on the cardiovascular system are a source of growing concern. A work on Yemeni healthy adult volunteers provided evidence that qat chewing produced a significant rise in arterial systolic and diastolic blood pressure and pulse rate. The peak effect on the arterial blood pressure and pulse rate was reached three hours after starting to chew, followed by a decline one hour after spitting out the leaves. These changes run parallel with the changes in plasma cathinone levels during and after qat chewing (*Halket et al., 1995*).

Similar blood pressure changes have also been observed in smaller numbers of subjects when pure cathinone in gelatine capsule was taken orally. These observations support the suggestion that cathinone is the constituent that is mainly responsible for the increasing arterial blood pressure and pulse rate parameters during qat chewing. The likely mechanism is the release of catecholamines (such as noradrenaline) from presynaptic storage sites mimicking stimulation of the

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sympathetic nervous system (sympathomimetic).(*Hassan et al.,2005*).

The effect of qat chewing on blood pressure and cardiac rhythm among Yemeni patients with hypertension and ischaemic heart disease was explored using 24 hour ECG Holter monitoring and ambulatory blood pressure monitoring. The study showed the expected progressive increase in blood pressure and heart rate and abnormalities developed on the ECG in 20% of patients with ischaemic heart disease (*Al-Motarreb et al., 2002*).

CHAPTER 1

Qat (khat)

HISTORY

Qat is the name generally used for *Catha edulis*, a dicotyledonous evergreen shrub of the family *Celastraceae* (**Kennedy, 1987**) [also spelled qat, kat, cat or ghat; The Amharas call it ‘tchat’ and the Gallas ‘Jimma’; in Kenya khat is known as ‘miraa’; Qat is probably the most correct transliteration of the Arabic word] (**Al-Hebshi and Skaug , 2005**).

The first scientific description of Qat as *Catha edulis* was in *Flora Aegyptiaco-Arabia* by the Swedish botanist Peter Forskal, who died in Arabia in 1768 (**Peters, 1952**). Qat was thought to be the only representative of the genus *Catha* (**Paris & Moyse, 1958**), however, **Revri** in **1983** showed that the genus contains another member, *Catha spinosa*, which is found only in Yemen.