Cardiovascular complications among individuals with amphetamine-positive urine drug screening admitted to a tertiary care hospital in Riyadh

Mohammad Alghamdi [a,*], Bader Alqahtani [b], Sultan Alhowti [b]

[a] King Abdul-Aziz Medical City-Riyadh and King Abdullah International Medical Research Center, Ministry of National Guard Health Affairs, Riyadh
[b] College of Medicine, King Saud bin Abdul-Aziz University for Health Sciences, Riyadh

[a,b] Saudi Arabia

Background: **Amphetamine-type stimulants (ATS) are the most commonly used illicit drugs in Saudi Arabia. Frequency and outcome of ATS-related cardiovascular (CV) complications in the Saudi community have not been previously studied.**

Aim: **We aimed to determine the incidence and the clinical outcomes of CV complications among individuals with amphetamine-positive urine drug screening (APUDS) tests admitted to a tertiary care facility in Riyadh, Saudi Arabia.**

Methods: **Retrospective review of consecutive cases with APUDS and concurrently positive cardiac biomarkers admitted to King Abdul-Aziz Medical City in Riyadh, Saudi Arabia, between January 2006 and December 2013. The laboratory database was queried to identify patients with positive APUDS and abnormal cardiac biomarkers. Clinical data were extracted from the electronic medical records.**

Results: **A total of 7450 urine drug screening tests were performed during the study period, out of which 720 (9.6%) were positive for ATS (APUDS group). Forty-two cases in the APUDS group were documented to have CV complications. All cases were men with a median age of 39 years (range, 21–60 years). Acute coronary syndrome/myocardial infarction was the most frequent clinical presentation (n = 31, 74%), predominantly in the form of ST-elevation myocardial infarction. Other less frequent complications included myopericarditis, cardiomyopathy, and arrhythmia. Coronary procedures were performed in 30 cases. Median hospital stay was 5 days (range, 1–28 days) and in-hospital mortality was 7.2%.**

Conclusion: **APUDS is frequently encountered in young Saudi men presenting to the emergency department of our institution. Individuals with APUDS are at increased risk of CV complications and in-hospital mortality. The most frequent APUDS-related CV complication is acute coronary syndrome.**

Keywords: Amphetamine, Cardiovascular, Complications, Drug abuse, Saudi Arabia, Urine drug screening

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* Corresponding author at: King Abdul-Aziz Cardiac Centre, Ministry of National Guard Health Affairs, P.O. Box 22490, Riyadh 11426, Saudi Arabia.
E-mail address: Ghamdim1@ngha.med.sa (M. Alghamdi).

P.O. Box 2925 Riyadh – 11461KSA
Tel: +966 1 2520088 ext 40151
Fax: +966 1 2520718
Email: sha@sha.org.sa
URL: www.sha.org.sa

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Introduction

Drug abuse is a major concern all over the world. It is estimated that 246 million people used illicit drugs in 2013 [1]. Like many other wealthy countries, the Kingdom of Saudi Arabia (SA) is frequently a target of drug smugglers. In its 2014 annual report, the international narcotics control board, clearly indicates that this is an increasingly serious problem in SA and other Gulf countries [2]. Long coastal areas of SA and sharing borders with eight neighboring countries in addition to its sociodemographic characteristics and its strategic geographical location are among the reasons behind targeting SA as a destination country of choice. Drug abuse is most frequently a problem of youth who constitutes the vast majority of the Saudi population, where 27% of them are younger than 25 years and those who are younger than 55 years represent 73% [3]. Health-related consequences of drug abuse are numerous and well documented. A strategic plan and dedicated resources are needed to increase public awareness, implement prevention programs, and initiate early treatment of the users. Published studies about drug-related health issues in Arab countries are limited and may underestimate the magnitude of the problem [4,5]. There is a great need for more research in this field at national and regional levels.

Amphetamine-type stimulants (ATS) refers to a group of psychostimulant drugs that are related to the parent compound amphetamine and includes amphetamine sulfate, amphetamine hydrochloride, methamphetamine, and phenethylamines [6]. ATS group is currently the most commonly abused substance in SA [7,8]. In recent years, the frequency of amphetamine use among Saudi people aged ⩽40 years has markedly increased [8]. About 65% of patients in drug rehabilitation programs in SA are reported as addicted to ''Captagon'' [9,10]. Captagon is originally a brand name of fenethylline, a synthetic stimulant that has been banned since 1986. Counterfeit versions of Captagon contain amphetamine as the active ingredient and represent the main source of ATS in SA [10]. SA is the main country of destination for Captagon tablets, which accounts for approximately 30% of all global amphetamine seizures and for 80% of the total weight seized in the region [10]. This fact reflects vigilance and collaborative efforts of different government authorities against drug smuggling; however, it may raise a concern that large quantities of drugs may continue to cross borders via unseized smuggling attempts.

Abbreviations

ACS	Acute Coronary Syndromes
APUDS	Amphetamine Positive Urine Drug Screening
CKMB	Creatinine Kinase MB
ICD	International Classification of Diseases
MAP	Methamphetamine
PCI	Percutaneous Coronary Interventions
STEMI	ST Elevation Myocardial Infarction
UDS	Urine Drug Screening
WRS	Water Restraint Stress

ATS are known as potent sympathomimetic amines that lead to several central nervous system and cardiovascular (CV) system adverse effects [11]. Acute central nervous system manifestations of ATS abuse include euphoria, talkativeness, anxiety, restlessness, agitation, seizures, and coma. Long-term abuse may lead to loss of weight, pulmonary hypertension, cardiomyopathy, and paranoid psychosis [12]. For social considerations and privacy reasons, a history of drug abuse may be denied by many users at the time of clinical presentation. ATS abuse is commonly suspected in young individuals presenting with acute neuropsychiatric manifestations or cardiac complications. Suspected cases are frequently tested for presence of ATS or any of their metabolites in the urine via urine drug screening (UDS).

The medical literature is deficient in publications on ATS from the Gulf and Arab regions. Most of the available literature is focused on the addiction and psychiatric aspects. Very little scientific work has been published on nonpsychiatric ATS-related health problems, including CV complications [5]. The outcome of our study is expected to enhance the medical staff and public awareness of potential ATS-related CV complications.

This study aimed to determine the incidence and outcomes of ATS-related CV complications in patients admitted to King Abdul-Aziz Medical City in Riyadh, Saudi Arabia over a period of 8 years. As a secondary objective, we aimed also to evaluate the demographic profile of amphetamine-positive UDS (APUDS) population as well as the trends of UDS and its positivity rate for ATS over the study period.

Materials and methods

This hospital-based, retrospective, case-series, study was approved by the King Abdullah Inter-