Amphetamine Abuse among Patients with First Episode of Acute Psychosis

Ashraf El-Tantawy [1,2],Yasser Raya[1,3], Abdulhameed Al-Yahya[1] and Ihab El-Desoky[4,5]

[1]Department of Psychiatry, Faculty of Medicine, Al-Qassim University, KSA [2]Department of Psychiatry, Faculty of Medicine, Suez Canal University, Suez, Egypt. [3]Department of Psychiatry, Faculty of Medicine, Zagazig University, Sharkia, Egypt [4]Departments of Pharmacology, Faculty of Medicine, Assiut University, Egypt [5]Departments of Pharmacology, Faculty of Medicine, Al-Qassim University, KSA

ABSTRACT

Introduction: Amphetamine abuse may be associated with risk for psychosis and may have a causative role in the development of psychosis.

Aim of the Study: To Identifying the prevalence of amphetamine abuse among patients with first episode of acute psychosis and the difference between amphetamine psychosis and other psychosis regarding clinical profile, personality dimensions and disorders.

Subjects and Methods: One hundred and six patients hospitalized for first episode of acute psychosis to a psychiatric emergency service were screened first for amphetamine in urine. ICD-10 criteria for acute psychosis and personality disorders were used for diagnosis after applying a Semi structured Psychiatric Interview.

Results: We found that patients with amphetamine psychosis were more than third of the totalpatients with a first episode of acute psychosis. Patients with amphetamine psychosis have antisocial and borderline personality disorders. The patients with amphetamine psychosis have paranoid features regarding their clinical profile which has sudden onset and sudden remission.

Conclusion: Urine screen for amphetamine must be routine for each patient with acute psychosis particularly in areas where amphetamine abuse is common. Clinicians must be trained on how to differentiate between amphetamine psychosis and other psychoses regarding clinical profile, personality disorders and demographic characteristics because amphetamine psychosis requires a different management.

Key words: Amphetamine, Substance abuse, Acute psychosis, Personality disorders.

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INTRODUCTION

The concept of acute psychosis challenges the traditional Kraepelinian dichotomy. Clinical experience suggests that this condition is heterogeneous with the only similarity being the acuteness of onset[1,2]. Assuming that those who present with acute psychosis confirm to a homogeneous group does not fit with the clinical reality[3]. In a longitudinal follow-up, acute psychoses are separated into different categories; many resolve rapidly; some resolve only to recur again in a similar fashion and others present differently over time to be reclassified as schizophrenia or mood disorders. It is therefore difficult to identify demographic or other characteristics that define this group and to predict the response to medication, course and outcome. Acute onset is well known to be a good prognostic factor in both schizophrenia and mood disorders[1,2].

There is strong evidence that substance abuse is associated with greater risk for developing psychosis. More systematic examination of this issue is likely to throw light on the neurobiology of psychosis and possibly help the vulnerable population in primary prevention[4-6]. Amphetamine abuse is associated with the development of psychosis with schizophrenia-like symptoms by stimulating the release of dopamine[7-9]. A recent cross-national study, confirmed the observation of high prevalence of delusions (77.4%) and hallucinations (72.6%) among persons with methamphetamine psychosis, also showed that a substantial proportion of them experience negative symptoms[9-14].

A considerable percentage of patients with acute psychosis presenting to the emergency department of psychiatric services are due to substance misuse. Drug use among psychiatric patients frequently goes undetected[15-17], the rate being as high as 72% at acute admission[18]. Amphetamine use disorders are common among patients who present to psychiatric emergency services[6,19-21]. The prevalence of substance dependence in psychiatric outpatient in Saudi Arabia was 22.6%[22]. Twenty percent of patients admitted to a private hospital in Western Province of Saudi Arabia for detoxification were amphetamine abuse[23]. Amphitamine

dependence constitutes more than 50% of patient dependent on substance and 16% of patients admitted to a major mental hospital in Eastern Province of Saudi Arabia[24]. Among firstadmissions to the specialized addiction treatment Amal Hospital of Dammam, over two decades (1986-2006), a total of 12,743 patients were admitted. In the second decade, amphetamine problems was increased from 12.1% to 48.1%[25].

Psychiatrists treat those patients as functional psychosis in absence of drug screen. Lack of detection can lead to misdiagnosis, inappropriate medication and failure to use appropriate interventions[26]. Those patients as they misuse drugs, they misuse the hospital resource or become, under diagnosed and poorly treated. They are criminal and their crimes may be hidden under the term functional psychosis or schizophrenia. Substance abuse decreased significantly after 12 months of early intervention services; early intervention services may be able to detect and to reduce substance use among first episode psychosis patients before it becomes a more serious disorder[27]. Patients' self-reports of amphetamine use may not be reliable and patients may underreport drug use[28-31]. So, it is important to improve diagnostic approaches in the Emergency Department[32]. Although, urine drug testing is an expensive and a problematic method as patients often are unwilling or unable to provide samples, it is cost effective and more accurate than clinical interviews, patients' self-reports and diagnostic questionnaires[13,33].

Cluster A personality disorders as well as cluster C dimensional scores, in particular the avoidant personality score were higher for the schizophrenia patients. Cluster B personality disorders were higher for patients with non-schizophrenia psychoses[34,35]. A century ago, a relationship between a withdrawn, detached personality type and the development of schizophrenia was proposed[36]. This dimension of personality was conceptualized as "schizoidea" or schizoid personality[36,38,39]. Schizoid temperament, existed on a continuum ranging from being cold and insensitive to being nervously sensitive[39]. Expanding beyond these conceptualizations of schizoid traits, Meehl[40] posited a model of personality organization reflecting the latent liability to schizophrenia, namely schizotypy that included the four fundamental symptoms of cognitive slippage, interpersonal aversiveness, anhedonia and ambivalence.

Amphetamine psychosis is a toxic reaction closely resembling schizophrenia which may occur after chronic, short-term or single large-dose amphetamine use. Onset of symptoms with IV usage can occur within 30-75 minutes. With oral ingestion, the syndrome may be seen as early as 36 to 48 hours in apparently sensitized subjects by as little as 55 to 75 mg of dextroamphetamine. The syndrome is characterized as a paranoid psychosis, six years after the introduction of amphetamine as a decongestant and narcoleptic[41]. Patients with amphetamine psychosis provided extremely detailed information about their paranoias. The most important clinical sign is the lack of disorientation and positive schizophrenic-like symptoms. Delusions of persecution, hallucinations and ideas of reference are the most common symptoms. Auditory and visual hallucinations are the most common hallucinations. The most obvious symptoms of withdrawal were dysphoria followed by sleepiness. Importantly, they noted that it was difficult or nearly impossible for an experienced psychiatrist to differentiate between amphetamine psychosis and paranoid schizophrenia[7-9,13,42].

AIM OF THE STUDY

1. Identifying the prevalence of amphetamine abuse among patients with first episode of acute psychosis admitted to the psychiatric emergency service of Buraydah Mental Health Hospital, Al-Qassim, KSA.
2. Examining the psychotic symptoms and other clinical and demographic data that differentiate between amphetamine psychosis and other psychoses.
3. Detecting personality disorders or dimensions that affect the prognosis.
4. Clarifying the importance of urine drug screening in dealing with those patients.

SUBJECTS AND METHODS

All patients with first episode of acute psychosis presenting to the psychiatric emergency service of Buraydah Mental Health Hospital, Al-Qassim, Saudi Arabia (n=106) during two months duration, were included in the study after providing informed consent from their relatives. We collected demographic and clinical information from the patients and their relatives.

Urine screen for amphetamine:
The screening for amphetamine was conducted with standard latex agglutination immunoassays and confirmatory tests were done for positive screens. Cut off concentrations for positive results were similar to those in recommendations from the National Institute on Drug Abuse (≥1000 ng/ml)[43].

Psychiatric Evaluations:
1. Semi Structured Psychiatric Interview.
2. ICD-10: Diagnosis was based on ICD-10 Criteria for acute psychosis and personality disorders[44].
3. Positive and Negative Symptoms Scale (PANSS) for schizophrenia: The assessment of symptoms and severity of psychosis was done by application of commonly used rating scale; PANSS for schizophrenia[45]. This instrument yields a total score (PANSS-TS) and has subscales yielding data on overall general psychopathology (PANSS-GPS), positive symptoms of psychosis (PANSS-PS) and negative symptoms (PANSS-NS). Symptoms experienced in the 7 days before the assessment are considered in determining PANSS ratings, which are made on 7-point scales ranging from none (0) to severe (6).
4. The Eysenck Personality Questionnaire Revised (EPQ-R): It was used for detection of personality dimensions[46]. The EPQ-R-Saudi Form which was used in this study assesses four domains of normal personality

as construed by the Four-Factor Model: Neuroticism, Extraversion, Psychoticism and Lie. This revised form consists of 115 items; 27 items for neuroticism, 29 items for extraversion, 38 items for psychoticism and 21 items for lie. The Saudi Form was found to be reliable and valid in the Saudi population.

Study Procedure:

Every patient admitted to the emergency department with a 1st episode acute psychosis was ordered to give urine sample for amphetamine screening and were assessed and diagnosed as per ICD-10 criteria. Out of 106 patients screened for amphetamine in urine, 34 patients were positive for amphetamine. Once a clinical diagnosis was made and the inclusion criteria were fulfilled, all the 106 patients were counseled to be a part of the study. Once the patient becomes stable and the acute psychotic features were controlled, the patient was assessed for fitness of completing the psychological assessments regarding PANSS, EPQ-R and Personality disorders.

Statistical Analysis:

Data collection and calculations were performed with a personal computer using the SPSS statistical software program, version 13 (SPSS, 2002). Analyses comparing the patients with amphetamine psychosis with those with other psychoses were done. Significance of differences between the two groups were evaluated with chi-square tests for categorical variables (Fisher's exact test where appropriate) and't tests for continuous variables.

RESULTS

Thirty-four of the 106 first episode acute psychosis patients (32.1%) were identified as amphetamine psychosis by a positive urine drug screen.

Table 1 shows the demographic features of the two groups; the amphetamine psychosis group and the other psychoses group. No significant difference regarding age, marital status, education, employment or the socioeconomic status among the three groups. All the amphetamine psychosis patients were males and also, males outnumbered females among the other psychoses group.

Table 1: Demographic Characteristics in Patients with Amphetamine Psychosis and Patients with other Psychoses.

Demographic Characteristics	Amphetamine Psychosis (n= 34)		Other Psychoses (n= 72)		P value
	Mean	SD	Mean	SD	
Age (years)	23.3	9.4	19.8	7.1	0.19
	N	%	N	%	
Sex Male	34	100.0**	45	62.5	‹0.01
Female	0	0.0	27	37.5	
Marital status Married	15	44.1	31	43.1	0.23
Not married	19	55.9	41	56.9	
Education					
‹ 12 years education	29	85.3	66	91.7	0.72
› 12 years education	5	14.7	8	8.3	
Employment Employed	9	26.5	26	36.1	0.17
Unemployed	25	73.5	46	63.9	
Socioeconomic status Low	7	20.6	17	23.6	
Moderate	22	64.7	47	65.3	0.14
High	5	14.7	8	11.1	

* Significantly high as p ‹0.05, ** Significantly high as p ‹0.01

Table 2 shows the normal personality dimensions of the two groups. The amphetamine psychosis group has higher scores regarding neuroticism and lie scales than the other psychoses group. The other psychoses group has higher scores regarding psychoticism scale.

Table 2: Eysenck Personality Domains (EPQ-R-Saudi Form) of Patients with Amphetamine Psychosis and Patients with Other Psychoses.

Personality Domains	Amphetamine Psychosis (n= 34) (Mean ± SD)	Other Psychoses (n= 72) (Mean ± SD)	P value
Neuroticism Scale	19.6 ± 7.6**	11.6 ± 7.3	‹0.01
Extraversion Scale	11.7 ± 6.6	10.4 ± 7.8	0.81
Psychoticism Scale	6.1 ± 3.5	11.9 ± 5.3**	‹0.01
Lie Scale	7.9 ± 4.1*	3.9 ± 6.8	‹0.05

* Significantly high as p ‹0.05, ** Significantly high as p ‹0.01.

As Table 3 shows, personality clusters A and B showed significant differences. Cluster A dimension scores were significantly higher in the other psychoses group (19.4% vs. 14.7%) and cluster B scores were higher in the group with amphetamine psychosis (38.2% vs. 8.3%). In particular, the Schizoid personality disorder and Schizotypal personality disorder were significantly more frequent among the other psychoses group and antisocial personality disorder and borderline personality disorder were more frequent in the amphetamine psychosis group. No significant difference among the amphetamine psychosis group and the other psychoses group regarding paranoid, histrionic, narcissistic and cluster C personality disorders. Overall, personality disorders were significantly higher among the amphetamine psychosis group (73.5%) than the other psychoses group (44.4%) with p value < 0.01.

Table 3: Personality Disorder among Patients with Amphetamine Psychosis and Patients with other Psychoses.

Personality Disorder	Amphetamine Psychosis (n= 34)	Other Psychoses (n= 72)	p value
Cluster A	5 (14.7%)	14 (19.4%) *	‹0.05
Paranoid	3 (8.8%)	6 (8.3%)	0.15
Schizoid	1 (2.9%)	5 (6.9%)*	‹0.05
Schizotypal	1 (2.9%)	3 (4.2%)*	‹0.05
Cluster B	13 (38.2%) **	5 (6.9%)	‹0.01
Antisocial	5 (14.7%) **	1 (1.4%)	‹0.01
Borderline	4 (11.8%) **	1 (1.4%)	‹0.01
Histrionic	2 (5.9%)	1 (1.4%)	0.11
Narcissistic	2 (5.9%)	2 (2.8%)	0.23
Cluster C	7 (20.6%)	13 (18.1%)	0.09
Avoidant	4 (11.8%)	7 (9.7%)	0.15
Dependant	2 (5.9%)	5 (6.9%)	0.23
Obsessive	1 (2.9%)	1 (1.4%)	0.09
Any Personality Disorder	25 (73.5%) **	32 (44.4%)	‹0.01

* Significantly high as p ‹0.05 ** Significantly high as p ‹0.01.

Table 4 shows the symptom profile to identify presenting symptoms that indicate ordering drug screen, we found that psychosis due to amphetamine has higher prevalence than other psychoses regarding ideas of reference (50.0% vs. 13.9%), suspiciousness (44.1% vs. 11.1%), depression (44.1% vs. 12.5%), paranoid hallucinatory psychosis (38.2% vs. 19.4%), suicidal ideation (38.2% vs. 23.6%), suicidal attempt (32.4%vs. 20.8%), paranoid delusions (29.4% vs. 16.7%), autonomic signs such as dilated pupils, increased pulse or blood pressure (29.4% vs. 6.9%), visual hallucinations (26.5%vs. 18.1%), auditory hallucinations (73.5% vs. 65.3%), emotional lability (11.8% vs. 6.9%) and violent behavior (20.6% vs. 16.7%).

Table 4: Presenting Symptom in Patients with Amphetamine Psychosis and Patients with other Psychoses.

Presenting Symptoms	Amphetamine Psychosis (n= 34)		Other Psychoses (n= 72)		Total Acute Psychoses (n= 106)		P value
	N	%	N	%	N	%	
Auditory hallucinations	25	73.5 *	47	65.3	82	77.4	‹0.05
Visual hallucinations	9	26.5 **	13	18.1	22	20.8	‹0.01
Paranoid hallucinatory psychosis	13	38.2 **	14	19.4	27	25.5	‹0.01
Paranoid delusions	10	29.4 **	12	16.7	22	20.8	‹0.01
Ideas of reference	17	50.0 **	10	13.9	27	25.5	‹0.01
Suspiciousness	15	44.1 **	8	11.1	23	21.7	‹0.01
Violent behavior	7	20.6 *	12	16.7	19	17.9	‹0.05
Bizarre behavior	3	8.8	11	15.3 *	14	13.2	‹0.05
Suicidal ideation	13	38.2 **	17	23.6	30	28.3	‹0.01
Suicidal attempt	11	32.4 **	15	20.8	26	24.5	‹0.01
Emotional lability	4	11.8 *	5	6.9	9	8.5	‹0.05
Depression	15	44.1 **	9	12.5	24	22.6	‹0.01
Autonomic signs	10	29.4 **	5	6.9	15	14.2	‹0.01

* Significantly high as p ‹0.05, ** Significantly high as p ‹0.01.

Regarding clinical characteristics (Table 5), we found that the duration of illness (weeks) was shorter among the amphetamine psychosis group (mean 0.8±0.9) than the other psychoses group (mean 2.1±1.7). PANSS scores were significantly higher among the other psychoses group, PANSS-TS (76.27±10.53); PANSS-PS, PANSS-NS or PANSS-GPS (19.33±7.32, 18.63±6.45 and 39.31±9.27) than among the amphetamine psychosis group, PANSS-TS (58.43±8.73); PANSS-PS, PANSS-NS or PANSS-GPS (15.61±4.71, 11.34±4.11 and 28.49±5.61). Also, we found that sudden onset, sudden remission, poor family support and history of parental substance abuse are associated with the amphetamine psychosis group more than the other psychoses group. Parental mental illness was associated with the other psychoses group more than the amphetamine psychosis group.

Table 5: Clinical Characteristics in Patients with Amphetamine Psychosis and Patients with other Psychoses.

Clinical Characteristics	Amphetamine Psychosis (n= 34)		Other Psychoses (n= 72)		Total Acute Psychoses (n= 106)		P value
	Mean	SD	Mean	SD	Mean	SD	
Illness duration (weeks)	0.8	0.9	2.1	1.7*	2.7	1.9	‹0.05
Drug in urine (ng/ml)	6189.83	634.71**	174.54	23.21	2103.97	194.37	‹0.01
PANSS PANSS-NS	11.61	4.71	21.33	7.32**	18.21	6.51	‹0.01
PANSS-PS	18.34	4.11**	15.63	6.45	16.50	5.15	‹0.01
PANSS-GPS	28.49	5.61	39.31	9.27**	35.84	7.99	‹0.01
PANSS-TS	58.43	8.73	76.27	10.53**	70.55	8.34	‹0.01
	N	%	N	%	N	%	p
Sudden onset	29	85.3 **	15	20.8	44	41.5	‹0.01
Sudden remission	30	88.2 **	12	16.7	42	39.6	‹0.01
Poor family support	28	82.4 *	49	68.1	77	72.6	‹0.05
Parental substance abuse	9	26.5 *	11	15.3	20	18.9	‹0.05
Parental mental illness	4	11.7	31	43.1 **	35	33.0	‹0.01

PANSS= Positive and Negative Symptoms Scale. PANSS-NS= Positive and Negative Symptoms Scale, Negative symptoms scale. PANSS-PS= Positive and Negative Symptoms Scale, Positive symptoms scale. PANSS-GPS= Positive and Negative Symptoms Scale, General psychopathology scale. PANSS-TS= Positive and Negative Symptoms Scale, Total score. * Significantly high as $p < 0.05$, ** Significantly high as $p ‹ 0.01$.

DISCUSSION

There is a high rate of amphetamine psychosis (32.1%) among patients with 1st episode of acute psychosis. We recommend hospitalization of patients for the purpose of clarifying the diagnosis at least in the psychiatric emergency service, in which amphetamine abuse is common. This tendency may be consistent with the finding of higher rates of amphetamine psychosis among patients with acute psychosis [4,6,12,21,22,33,48].

In our study, all patients with amphetamine psychosis were males, a result consistent with all previous studies that were done in Saudi Arabia[13,22,23,49-51], with except of few females in private hospitals This could be explained by the more availability of amphetamine and other substances to males than females. This finding in Saudies might indicate the strong culture input i.e., socially and religious wise, that might hinder females to abuse or at least to forward for treatment. The age, marital status, degree of education, employment and socioeconomic status did not differ between amphetamine psychosis and other psychoses. We are in agreement with the review on 12,743 patients with the first admission to the specialized treatment Amal Hospital of Dammam, KSA, because of drug abuse over two decades (1986-2006)[25]. The majority were in their 2nd decade of age (83%), never married (60%), with low education (81%) and unemployed. Also, similar results were found in Al-Qassim, KSA[49].

Regarding the normal personality dimensions of the two groups, we are in agreement with Abdel-Gawad and Osman[23], that the amphetamine psychosis group has higher scores regarding neuroticism and lie scales than the other psychoses group. The other psychoses group has higher scores regarding psychoticism scale than the amphetamine psychosis group. The differential association of cluster B dimensions with amphetamine psychosis (antisocial and borderline) and of cluster A dimensions with the other psychoses group (schizoid and schizotypal), are similar to those of earlier studies[48,52-60] and may partly be explained by the similar neurobiology of these conditions[61]. For example, increased dopaminergic function in schizotypal personality disorder has been related to psychosis-like symptoms and abnormalities in the serotonergic system have been found in individuals with borderline personality disorder and antisocial personality disorder. We found no significant difference among the amphetamine psychosis group and the other psychoses group regarding cluster C personality disorders. So, our results could not confirm the previous developments in this area of research[40,58,59,62-64]. However, to date, the search for such etiological subtypes of schizophrenia has not been fruitful[34,65].

We are in agreement with previous studies, which showed that amphetamine psychosis is characterized by paranoid psychosis[7,9,13,33,41,42,48,66,67]. We recommend that physicians have to order drug screen for patients of acute psychosis

with ideas of reference, suspiciousness, depression, paranoid hallucinatory psychosis, suicidal ideation, suicidal attempt, paranoid delusions, autonomic signs such as dilated pupils, increased pulse or blood pressure, visual hallucinations, auditory hallucinations, emotional lability and violent behavior. Other clinical characteristics that indicate ordering drug screen for amphetamine are sudden onset of psychosis, shorter duration of episode and history of parental substance abuse. Positive symptoms were more prominent in amphetamine psychosis but other psychoses had more severe psychiatric symptoms, a finding that is not limited to positive symptoms but also includes negative symptoms and general psychopathology. This may be explained by the fact that amphetamine increase release of dopamine[10,22,68]. Negative symptoms were less in amphetamine psychosis which can be explained by the positive effect of amphetamine on alleviating negative symptoms[9-12,14,69-72].

Our finding that 33% of all patients with 1st episode acute psychosis had a parent with a mental illness suggests the possibility of a distinct vulnerability to psychosis among those with amphetamine psychosis that may predispose them to the develop chronic psychotic illness over time, although there were no differences by diagnostic classification. Parental substance abuse in both diagnostic groups (18.9%) suggests that familial substance abuse should be studied further in relation to both types of psychosis. Although the two groups differed on many dimensions, the differences were only in a few study variables. These are parental substance abuse (greater in the amphetamine psychosis group). We are in agreement with Cornish, et al.[73], that the diagnostic distinction between the two groups is important, because each disorder requires a different treatment. For example, subjects with amphetamine psychosis may need different medications, no medications or brief medication and they may be more susceptible to the adverse effects of antipsychotic medications. Although psychotomimetic drug use may precipitate a chronic schizophrenic illness[74], an accurate diagnostic assessment is particularly significant in the early stages of psychotic disorder, when the diagnostic picture is often clouded by the presence of substance use and differential therapeutics are appropriate.

To our knowledge, the strength of our study is focused on the use of standard tools in distinction between the amphetamine psychosis and other acute psychotic disorders and also the personality assessments. The limitation of our study was that subjects with amphetamine psychosis and other psychoses must be followed up carefully and undergo reevaluation over time.

CONCLUSION

There is a high rate of amphetamine psychosis (32.1%) among patients with 1st episode schizophrenia. We recommend hospitalization of patients for the purpose of clarifying the diagnosis. This study confirms that urine screen for amphetamine must be routine for each patient with acute psychosis especially in areas where amphetamine abuse is common. The diagnostic differences between amphetamine psychosis and other psychoses are very important, as amphetamine psychosis requires a different management. Clinicians must be trained on how to differentiate between amphetamine psychosis and other psychoses regarding clinical, personality and demographic profile. This study also extends the previously reported association of personality disorders with amphetamine psychosis and other psychoses. Detecting the prevalence of amphetamine abuse among patients of acute psychosis and clarifying the psychotic features related to this disorder will decrease the budget and help in legal and forensic aspects and it will also increase the doctors' awareness and efficiency in dealing with those patients.

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Corresponding Author:

Ashraf Mohamed Ali El-Tantawy, Assistant Professor of Psychiatry, Department of Psychiatry.Faculty of Medicine, Suez Canal University, Egypt and Department of Psychiatry, Faculty of Medicine, Al-Qassim University, KSA .
E mail: Tantawy99@hotmail.com

الملخص العربى

اساءة استخدام الأمفيتامين بين مرضى النوبة الأولى للذهان الحاد

أشرف طنطاوي، ياسر ريه، عبد الحميد اليحيى، إيهاب الدسوقي

يوجد دليل قوى على أن إساءة إستخدام الامفيتامين يعد معامل خطورة كبير للإصابة بالذهان كما أن له دور مسبب فى احداث الذهان. تم فحص ١٠٦ مريض منوم من خدمة الطوارى النفسية بمستشفى الصحة النفسية ببريدة - القصيم- المملكة العربية السعودية بسبب نوبة الذهان الأولى وذلك لتحديد نسبة ذهان الأمفيتامين والاختلاف بينه وبين الذهانات الأخرى من حيث نمط الشكل الاكلينيكى وابعاد واضطرابات الشخصية. وقد تم فحص بول جميع مرضى أول نوبة ذهان لمادة الأمفيتامين. وقد تم استخدام خصائص التصنيف الدولى العاشر للإضطرابات النفسية لتشخيص إضطرابات الشخصية من خلال المقابلة النفسية الشبه مرتبة بعد اختفاء الأعراض الحادة للذهان. وتوصلت الدراسة الى أن ذهان الأمفيتامين يشكل أكثر من ثلث المرضى المصابين بذهان حاد لأول مرة. كما وجد أن إضطرابات الشخصية المضادة للمجتمع والشخصية الحدية منتشرة بين هؤلاء المرضى. ومن خصائص الذهان فى هؤلاء المرضى انتشار المظاهر الزورانية للذهان وكانت بداية الذهان ونهايته مفاجئة. وقد خلصت الدراسة الى أن فحص البول لمادة الأمفيتامين لابد وأن تكون روتينية لكل مريض يعانى من ذهان حاد خاصة فى المناطق التى ينتشر بها ذهان الامفيتامين. وأن التفريق التشخيصى بين ذهان الأمفيتامين والذهانات الأخرى فى غاية الأهمية لأن ذهان الأمفيتامين يحتاج الى تدخل علاجى مختلف ولابد من تدريب الأطباء على كيفية التفرقة بين ذهان الأمفيتامين والذهانات الأخرى من حيث النمط الاكلينيكى واضطرابات الشخصية والخصائص الديموغرافية.