

Marihuana Psychosis

Acute Toxic Psychosis Associated With the Use of *Cannabis* Derivatives

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A clinical syndrome of acute psychosis associated with *Cannabis* derivatives and environmental stress has been observed in 12 soldiers seen in Vietnam. Each case was characteristic of acute toxic psychosis with organic features and ten cases had paranoid features as well. Factors unique to Vietnam and combat situations seem pertinent; treatment was conservative and supportive.

In light of the intensive contact of man with *Cannabis* it is surprising to find the literature so lacking in regard to adverse reactions to smoking marihuana. Ames¹ and Allentuck² reported psychiatric symptoms following ingestion of marihuana concentrate, and Keeler interviewed persons who had previously had adverse reactions to smoking marihuana,³ but, to our knowledge, the only report describing individuals studied while experiencing adverse reactions to smoking marihuana is that of Bromberg in 1934.⁴

Knowledge concerning the effects of *Cannabis* derivatives is controversial if not confusing. *Cannabis* derivatives have been used for medicinal purposes since the third century BC. Shen Nung, the Emperor of China, 2737 BC, extolled *Cannabis* derivatives as healthful and as psychic liberators. During the 19th century more than 100 medical reports were published in the United States recommending the use of *Cannabis* derivatives.⁵ Although by 1950 worldwide usage was estimated in excess of 200 million persons, only recently have medical investigators begun to study the effects of smoking marihuana.⁶

Individuals are affected by *Cannabis* derivatives on a continuum ranging from a benign intoxicating "high" to a frank schizophrenic-like psychosis. Smoking marihuana for most persons is a pleasant, nonthreatening, and ego-syntonic experience. The

degree of intoxication, pleasure, and mystical experience is variable and depends on the individual's personality, the existing emotional set before and in regard to the experience, and the amount of marihuana smoked or swallowed.

Adverse reactions to marihuana are also varied, but the experiences are generally unpleasant, threatening, and ego-dystonic. Symptoms include anxiety, fear, tachycardia, dyspnea, crying, depression, suspicion, dissociation, depersonalization, disorientation, confusion, paranoid ideation, delusions, and auditory hallucinations. Most adverse reactions are treated by the individual's peers in much the same manner as belligerent drunkenness is handled—with time, patience, and sobering up. However, when symptoms persist, or the individual or his peers become frightened of the behavior, medical care may be sought.

Physicians in Vietnam have been impressed by the severity and frequency of adverse reactions to smoking *Cannabis* derivatives.⁷⁻¹¹ Several of the psychiatrists on active duty in Vietnam had previous experience with adverse reactions to marihuana in large metropolitan hospitals in the United States and questioned whether there was a difference between the reactions in Vietnam and the United States. During the early part of 1967 we saw several cases of perplexing psychotic reactions which cleared in one of four days, and a few which lasted a week or longer.

In order to study adverse reactions to marihuana, all patients whose diagnosis was acute toxic psychosis associated with the smoking of *Cannabis* derivatives were examined independently by two psychiatrists and their course followed closely. This report will present 12 cases with which we had personal contact. Three cases will be presented in detail and the others will be summarized in the Table and their common characteristics discussed.

Methodology

The case material was collected during our tour of duty as psychiatrists with the US Army in Vietnam from 1967 to 1968. All military personnel requiring psychiatric hospitalization from the III and IV Corps areas were seen as well as many persons

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Summary of Cases*

Case No.	Age	First Exposure to Marihuana	Physical Symptoms	Impaired Cognitive Functioning	Mental Symptoms	Delusions	Premorbid Personality	Treatment	Duration of Symptoms
1	26	+	+	+	Paranoid anxious	+	—	Chlorpromazine hydrochloride 50 mg 4 times daily	36 hr
2	19	+	+	+	Paranoid	+	—	—	3 days
3	24	+	+	+	Paranoid anxious	+	Aggressive	Chlordiazepoxide as necessary and chlorpromazine hydrochloride 50 mg 4 times daily	7 days
4	21	+	+	+	Paranoid	+	Psychopathic	Chlorpromazine hydrochloride 25 mg 4 times daily	2 days
5	20	+	+	+	Paranoid	+	—	Chlorpromazine hydrochloride 50 mg 4 times daily	2-3 days
6	22	+	+	+	Anxious	—	—	—	1 day
7	21	+	+	+	Anxious	—	—	—	2 days
8	21	+	+	+	Paranoid	+	—	—	3 days
9	22	+	+	+	Suicidal paranoid	+	—	—	11 days
10	22	+	+	+	Anxious paranoid	+	—	Chlorpromazine hydrochloride 25 mg 4 times daily	2 days
11	19	+	+	+	Anxious paranoid	+	—	Chlorpromazine hydrochloride 25 mg 4 times daily	3 days
12	19	+	+	+	Paranoid	+	—	—	2 days

*+ indicated positive; —, negative.

handled through the judicial system and all stockade prisoners. This allowed clinical access to psychiatric cases requiring intensive psychiatric hospitalization from a population of more than 350,000 as well as judicial cases from a population of more than 500,000. In all cases involving the question of *Cannabis* derivatives as a causal factor, the opinion of a second psychiatrist was sought. In six cases it was possible to secure collaborative information regarding the smoking of *Cannabis* derivatives by the patients.

Since the possession of *Cannabis* is illegal it is quite possible that we saw only those cases demanding professional intervention. Patients with less severe symptoms were probably handled in the community by nonprofessionals. The environment of a war zone makes the symptomatology potentially more dangerous, eg, walking into a mine field, or having a loaded weapon readily available, etc. Similarly, the same environment may have an effect on the nature of the symptoms.

Report of Cases

CASE 1.—A 26-year-old, single, white man, second lieutenant registered nurse, with no history of psychiatric difficulties was hospitalized after smoking his first cigarette containing *Cannabis* derivatives. Immediately after smoking, he became aware of a burning, choking sensation in his throat and following this, he went to a civilian bar. Shortly thereafter he felt apprehensive, anxious, and suspicious. The symptoms rapidly increased in intensity and the subject became fearful that the "nationals" in the bar meant him harm. He fled in terror and returned to the bachelor officers' quarters. Shortly thereafter, one of us was called to see him.

When examined the patient was anxious and disoriented as to time, but not as to place and person. Anxiety, as well as the fear of being harmed by nationals, seemed to intensify and decrease in wavelike fashion. The fear of being harmed at its intensified peak we believed to be delusional. He was unable to identify the nature of the harm he feared. Affect was judged to be appropriate but labile. Thinking was rapid and disjointed, as if he were unable to follow a

line of thought and as if he were experiencing a wide variety of thoughts (in rapid fashion) dissimilar in nature except for a common apprehensive quality. Proverbs were handled adequately, but with poor concentration and he quickly returned to his fears of being harmed. He did not acknowledge loosening of associations. Judgment and insight were impaired, and any evaluation of intelligence was precluded by his general condition. There were no hallucinations.

Abnormal physical findings included the following: a generalized impairment of coordination, as demonstrated by heel-to-toe walking and finger-to-nose testing; there was a positive Romberg sign; there was some injection of the conjunctivae; reflexes were generally and symmetrically hyperactive; and vital signs reflected a psychomotor agitation or excitement.

The patient was hospitalized and treated with phenothiazines and sedatives. He was also seen in brief psychotherapy. The patient was able to be discharged to his quarters in 36 hours and was returned to duty in 48 hours. No recurrence of symptoms was noted in the next three months.

Further work-up revealed no other evidence of psychiatric difficulties sufficient to diagnose a preexisting psychiatric condition. The patient was not seen by another psychiatrist. A second cigarette containing *Cannabis* derivatives was in his possession and was examined. The patient's condition was diagnosed as acute toxic psychosis.

CASE 2.—A 19-year-old, single, white soldier, private first class, was referred for examination by another psychiatrist. He was alleged to have shot and killed an individual while on guard duty.

Sworn statements and a formal judicial investigation revealed that while on guard duty the victim shared a "marihuana cigarette" with the subject, the subject's first. The victim was described as a joker whose humor was sometimes "a little sick and cruel." Shortly after having the cigarette the victim began to pick on some nearby Vietnamese children. He reportedly told them that he was "Ho Chi Minh" and fired his weapon near them. Although the subject questioned if he was Ho Chi Minh, when the victim showed him the name on his shirt, the subject became terrified and fired his rifle. He then left his guard post and entered the base camp in a confused fashion, saying that he had killed Ho Chi Minh. Upon saying this he displayed a T-shirt with that name written on it and urged those around him to accompany him to see the body. On the way, he spoke in a disjointed and confused fashion. Upon arrival at the guard post, actually an observation tower, the bare-chested body of a Negro soldier, with several

gunshot wounds on the left anterior portion of the chest, was found. Due to the subject's confused state and his bizarre story, he was taken to the division psychiatrist.

Upon examination the patient was confused and apprehensive, but quite proud, in a patriotic manner, of having killed Ho Chi Minh. When confronted with the fact that the individual killed was an American Negro soldier, the subject held up the bloody, bullet-torn T-shirt, with Ho Chi Minh written across the chest, and stated rather emphatically that he had shot Ho Chi Minh, not an American soldier. He stated that the victim had told him that he was Ho Chi Minh, that the victim was disguised and had infiltrated American lines, and had proved his identity by showing his name written on the shirt. The subject then believed him, became scared, shot him, and took the T-shirt back to camp to prove that he had indeed shot and killed Ho Chi Minh. The psychiatrist's opinion was that the subject was delusional and suffering from an acute toxic psychosis, one of us (J.W.T.) concurred at a later examination.

Further examination revealed no evidence of hallucinations nor any other indication of a thought disorder. The subject was concerned and became increasingly anxious with any mention of the victim being an American soldier. He was apprehensive and unable to understand why no one believed him. He was puzzled at being seen by a psychiatrist rather than being treated as a hero for having killed Ho Chi Minh.

Following a short period of hospitalization, the subject's condition changed and he evidenced grief and depression about the preceding events.

Contact with this individual continued over the next several months without any further signs of psychotic thinking or behavior. It should be noted that the subject also stated that upon first smoking the cigarette containing *Cannabis* derivatives he experienced a burning-like irritation and an urge to cough. In addition to this he noted some mild sensations of choking and transient tingling in his extremities.

CASE 3.—A 24-year-old single Negro, private first class, was admitted to the hospital on transfer from another hospital. He had smoked a pipeful of "strange tasting tobacco" two days previously and had felt light-headed and "funny." He subsequently had feelings of depersonalization and derealization, and thought his mind was split into two parts—good and evil. He expressed the morbid preoccupation that he was dead, admitted to unusual illusions or hallucinations (clouds pulling him in, bright lights coming out of the clouds toward him), and expressed frightening fears that he would kill someone or be killed by someone. He was disoriented, confused, and forgetful. He was treated with chlorpromazine (Thorazine) hydrochloride with some improvement, and after two days was transferred to the psychiatric facility.

On admission the patient was apprehensive, worried, and preoccupied with fears, sensations, and impulses. His restlessness, tremulousness, agitation, and rapid speech alternated with staring, mutism, and inability to complete his thoughts. He continued to express the belief that his mind was split, but denied hallucinations, delusions, or other unusual sensations. He seemed adequately oriented, and denied any prior exposure to marihuana. The patient's history included the absence of a father in the family when he was growing up, aggressive outbursts in late adolescence, excessive drinking, and difficulty in being able to keep a job.

The patient was given chlordiazepoxide hydrochloride (Librium) and his anxiety abated rapidly. He was active in group therapy and presented no problems in ward management. He was discharged with no residual symptoms seven days after he had smoked marihuana.

Vietnamese Marihuana

To place the following findings in proper perspective several factors should first be mentioned. Mari-

huana is cheap and readily available in Vietnam, disguised in regular American cigarette packs. This is so well done that it is virtually impossible to tell the difference without either removing the filling from the cigarettes or smoking them.

Vietnamese marihuana is reported by the Army Chemical Laboratory in Japan to be about twice as potent (content of resins) as that normally sold or found in the United States. Because the resins are produced by the plant as a protective agent against the harmful effects of the sun,¹² it is easy for anyone familiar with the climatic conditions of Vietnam to understand the plants' increased resin production. South Vietnam lies between the eighth and the 17th parallels, and thus has a much more tropical climate than the United States (24°-49°) or Mexico (15°-33°), where the most potent marihuana sold in the United States is grown. The resins are concentrated in the tops and seed pods of the female plant. In Vietnam the plant is so abundant that most preparations make use of only the female tops and seed pods.

In addition, approximately 50% of the *Cannabis* contraband seized in Vietnam contains opiates. Therefore, the quality of the *Cannabis* derivatives used there is likely to produce a much stronger effect on the consumer.

The smoking of *Cannabis* derivatives is not uncommon in Vietnam. Several surveys indicated that more than 30% (30%-65%) of the soldiers used *Cannabis* derivatives at least once during their tour of duty in Vietnam.^{10,11} Our experience confirms this estimate.

Findings

The findings in the 12 cases of acute toxic psychosis associated with *Cannabis* intoxication are presented in the Table. In all instances, this was the patient's first admitted exposure to marihuana and in each case marked physical symptoms appeared soon after the subjects began to smoke. Symptoms included burning and irritation of the respiratory tract accompanied by an urge to cough; impaired coordination and difficulty with fine movements; odd, irregular, and vague aching of the large muscles of the extremities (especially the legs); and irritation of the conjunctivae.

Impaired cognitive functioning was also present in each soldier. This included impairment of orientation to either time or place; severe impairment of memory, most particularly of recent memory; impairment of intellectual functioning manifested by confusion, short attention span, and difficulty concentrating; impaired thinking with tangential and disjointed qualities; and impaired judgment.

The 12 exhibited lability of affect and marked anxiety and fearfulness. Ten showed paranoid symptoms including suspiciousness, referentiality, and delusions or hallucinations. Expressed fear of overt homosexual assault on the patient was frequently a factor in bringing the soldier to the medical facility.

Two patients had significant psychiatric histories and diagnosis of personality disorder could be made. The remainder had a negative history and no evidence of preexisting personality disorder.

None of the cases presented any serious difficulty during hospitalization. In all cases the patient was able to return to duty within a week. Informal follow-up disclosed no further difficulties. All except the soldier involved in the shooting incident successfully completed their tour of duty in Vietnam. Initially the first patients hospitalized were treated with moderate doses of phenothiazines and soporifics. In addition they received individual as well as group therapy. It soon became apparent that the phenothiazines were doing more for the therapist and the ward personnel than for the patients. Following this realization no drugs were used.

Comment

The material presented above is similar to the cases originally described by Bromberg in 1934,⁴ the only difference being our emphasis on the "organic" signs present and the short duration of the psychotic state. Reports and personal communications from Vietnam indicate that similar cases continue to be seen, and at about the same rate, ie, one to two per month.⁸ This raises several questions. (1) Is this a valid clinical syndrome, and if so, is the involvement of *Cannabis* derivatives essential, or is it merely an added stress? (2) If this is a valid clinical syndrome, why has it not been reported in the past 30 years? (3) Are there factors present in Vietnam which predispose the occurrence of this condition there, but not in the United States?

It would seem that this is a valid clinical syndrome having a central core, consistent signs, and characteristic symptoms. The condition immediately followed inhalation of the smoke of a cigarette containing *Cannabis* derivatives and the symptoms rapidly intensified. In each case this was the first experience with *Cannabis* derivatives. The signs and symptoms had a definite toxic, organic quality and the condition seemed to be self-limiting. Recovery was complete and the symptoms did not recur. More than one psychiatrist made the diagnosis of psychosis in 11 of the 12 cases. In no instance was a similar case seen which did not involve the use of *Cannabis* derivatives.

Since the incidence of combat reactions in Vietnam is low in comparison with other wars, and since the visible incidence of marihuana psychosis seems so high, some observers have postulated that we are encountering the same syndrome, except that it is precipitated by marihuana, not combat. This study is unable to confirm or deny this postulate. However, these cases differ from most combat reactions reported.

We believe that *Cannabis* is directly and essentially involved in the development of the syndrome. Environmental stresses may potentiate, exaggerate, or otherwise effect the symptoms. The same environment may also have caused nonprofessionals

to handle those persons less severely affected by smoking *Cannabis* derivatives, leaving only those severely affected with toxic psychosis to be seen in medical facilities.

While many of the environmental factors of Vietnam are not present in the United States, it is quite likely that the syndrome described above does occur here. Most cases are probably handled within the community by nonprofessionals, and only a few persons are seen by physicians. Those persons who seek a physician's care may not volunteer or admit to *Cannabis* usage because it is illegal. As the symptoms clear in a relatively short period of time, the physician may be satisfied and look no further into the cause. Even if the patient does admit to using *Cannabis*, will the physician accept this as a possible etiology?

One of us (J.W.T.) recently heard of such a case. A young woman was admitted to a university psychiatric hospital in a psychotic state with a history of having smoked *Cannabis* derivatives for the first time. Her symptoms were quite similar to those we observed, and she was discharged after several days. The physician in charge had no knowledge of the possibility of *Cannabis* producing the psychosis, and the etiology of her transient psychotic state was not determined.

Cannabis derivatives, as a causal or precipitating agent, should be considered whenever a young person presents with an acute toxic psychosis with paranoid features. Since possession of the drug is illegal, accurate histories may not be obtainable, but the physician must be alert to the possibility of marihuana psychosis in cases resembling acute schizophrenic reaction, acute paranoid psychosis, or acute toxic-metabolic psychosis.

Generic and Trade Names of Drugs

Chlorpromazine hydrochloride—*Thorazine Hydrochloride*.
Chlordiazepoxide hydrochloride—*Librium*.

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