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Psychosis Associated with HIV Infection*

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Five cases of psychiatric illness, presenting as functional psychosis, occurring in male homosexuals with human immunodeficiency virus (HIV) infection are described and compared with similar cases in the literature. The association between psychosis and infection with HIV is discussed with particular emphasis on the significance of functional versus organic presentation.

Infection with the human immunodeficiency virus (HIV) is associated with a variety of psychiatric manifestations, which range from reactions to the stresses associated with the knowledge of having the infection, to the cognitive impairment, leading to frank dementia, seemingly caused by the encephalopathy common in HIV infection of the brain (Navia *et al*, 1986; Perry & Jacobsen, 1986).

Several cases of psychosis in patients with HIV disease have been reported (Batchelor, 1984; Kermani *et al*, 1984; Nurnberg *et al*, 1984; Kleihues *et al*, 1985; Palan *et al*, 1985; Thomas *et al*, 1985; Wolcott *et al*, 1985; Perry & Jacobsen, 1986; Rundell *et al*, 1986; Halevie-Goldman *et al*, 1987; Jones *et al*, 1987). Initially these tended to be interpreted as reactive 'psychogenic' psychosis (Batchelor, 1984). However, as more has become known of the neurotropic action of HIV (Ho *et al*, 1985; Levy *et al*, 1985; Gabuzda *et al*, 1986), it has been suggested that psychosis associated with HIV disease might be a direct organic manifestation of brain involvement (Perry & Jacobsen, 1986). Indeed, Toone (1988) has suggested that there may be a specific 'AIDS psychosis'.

Organic psychoses, with clouding of consciousness, impairment of orientation and memory, and visual hallucinations, would not be unexpected in a disease with sometimes major systemic complications and direct brain involvement. Most of the cases presented in the literature to date appear to have clear evidence of an organic aetiology from onset, or to have been complicated by extensive previous psychiatric history or current drug abuse. However, the appearance of one or two cases of apparently 'functional' psychosis associated with HIV infection (Thomas *et al*, 1985; Halevie-Goldman *et al*, 1987) led us to review a number of similar cases which had presented to psychiatrists in the Riverside Health District of London, which currently has the largest caseload of HIV infection and AIDS in the UK. The essential element in these cases was the presentation with symptoms associated with functional psychosis, and equivocal or no evidence of symptoms of organic psychosis. We then returned to the literature and selected all those cases which, from the description, would probably have received diagnoses of 'functional psychosis' at presentation.

In this paper we report the five cases of 'functional' psychosis associated with HIV infection and the seven other cases which were found in the literature. The significance of symptoms of functional psychosis occurring as a feature in HIV spectrum disorder is discussed. All of the cases we report here were male homosexuals, as were the seven cases reported in the literature.

Cases

Case 1

Case 1 was a 28-year-old single male model, of good premorbid personality and without a previous history of psychiatric or medical illness. The index illness was preceded by the break-up of a long-standing relationship with his boyfriend, resulting in the division of his flat and property. He had been for an HIV test two months prior to admission but had not asked for the result. However, the day before his admission he had phoned the GU clinic and in a 'bizarre' conversation demanded to know the result. The result was not released over the phone but was positive. He strongly denied use of illegal drugs.

For seven days he locked himself in his flat with a friend. They spent their time holding pseudo-religious services and daubing the walls with poems and prayers, which they then photographed because they were laden with significance. They lit candles which, when the last one went out, they thought would signal the start of Armageddon. This culminated in the subject running to a friend's house to escape Satanists who, he believed, had broken into his flat. He began tampering with the electrics with one hand while touching the water tap with the other, and the police were called.

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On admission he was neat and tidy but barefooted. He was not elated but was excited, suspicious and unpredictable, and no rapport was possible. There was pressure of speech. The thought content was poorly formed and he was unable to account for himself. He spoke continuously and monotonously. He falsely claimed to have three university degrees. He believed that two Christs would come and expounded at length on philosophical matters. He was controlled by messages from New Zealand which were linked to TV and radio. He said that 'spiritual things are happening in my body.' He denied auditory hallucinations. No organic symptoms were recorded on admission.

Physical examination was unremarkable, and no special investigations were carried out, as he rapidly improved on diazepam, chlorpromazine, and haloperidol. A severe dystonic reaction responded only slowly to procyclidine. Within 36 hours he had lost all psychotic symptoms. He was discharged on day 4, completely recovered. When seen eight months later, he showed no signs of mental illness. In the interim he had been informed of his HIV status. He had generalised lymphadenopathy and splenomegaly and has subsequently developed lethargy and headaches.

Case 2

Case 2 was a 32-year-old instrument-maker. There was no family or personal psychiatric history. He was a steady worker and maintained a good relationship with his family, but now saw himself as excessively passive. He was experiencing anxiety and guilt about a deteriorating relationship and was being taunted at work due to his homosexuality. An HIV antibody test was negative.

In the past he had had four episodes of gonorrhoea, and a pilonidal sinus operation which had left him with mild faecal incontinence. There was no history of alcohol or drug abuse.

Three weeks prior to admission he had felt unwell at work, had developed twitching and flinging movements of his arms, wobbly legs and loose bowels. He improved on benzodiazepines and returned to work for a week. However, he then deteriorated steadily, became anxious, depressed and agitated, used uncharacteristically coarse and foul language, repeated meaningless short phrases, talked to himself, and appeared perplexed.

His thought content was gloomy, e.g. 'I've fallen into the pit.' His speech was stilted and telegraphic. He experienced a hallucination of a male voice but would not discuss its content. He had a visual hallucination of spiders. There was no evidence of memory impairment, and physical examination was unremarkable.

During the first few days of admission he became more disinhibited, anxious, and irritable, with paranoid ideation and thought disorder. His concentration and serial 7s were poor and he maintained only partial insight. He became more agitated, aggressive, and verbally unresponsive, and required small doses of haloperidol, to which he developed a pronounced dystonic reaction. He adopted bizarre gestures and allowed his limbs to be manipulated, but fell short of true waxy flexibility. He slept with his head off the pillow. He was wakeful, thin, gaunt, tachycardia and sweating. Although his affect was blunted and withdrawn, he became more verbally accessible. He then described passivity phenomena, thought broadcasting, ideas of reference, racing thoughts, a belief that he was possessed by the devil, and auditory hallucinations.

Three weeks after admission he developed frank AIDS, with pneumonia, oral candidiasis, Kaposi's sarcoma and bloody diarrhoea, and he continued to lose weight. The pneumonia responded to trimethoprin. There was lymphopenia and an EEG suggestive of encephalitis. Urinary drug screen on admission was negative.

He succumbed to a chest infection within three months. His psychotic features subsided in his last few months of life, and he remained quiet, withdrawn and co-operative.

Case 3

Case 3 was a 28-year-old in professional employment, with no family or personal psychiatric history, and a good premorbid personality. There were no known precipitating events and he was working normally the week before admission. There was no history of substance abuse nor of any significant medical history. It is not known whether he was aware of his HIV status.

Workmates brought him to A&E after erratic behaviour at work for three days. On the day before admission he was distressed and anxious, and was preoccupied with mortality, life and death. He had mentioned suicide, that his life was not worth living and that he had no future.

His mood on admission was extremely labile and his affect incongruous. He talked very little, gave no history and was unresponsive to questions. Formal thought disorder and thought blocking were present. His thought content was dominated by apocalyptic themes. He had no insight and he was sexually disinhibited. Physical examination was unremarkable and there was no evidence of cognitive impairment.

On the first night of admission, temazepam and chlorpromazine helped him sleep, but he awoke at 03:30 screaming that he was the Devil. His speech was disjointed. He told staff that he had wanted to kill himself the night before but had been dissuaded by a friend. Further chlorpromazine was administered and he settled again. The next morning he was calm, lucid and subdued. Despite close observation, he managed to slip away from the ward and jumped from a height, killing himself instantly. HIV positive was established at post mortem.

Case 4

Case 4 was a 31-year-old, an art dealer and masseur. A paternal uncle suffered with schizophrenia. He had a good premorbid personality, but had suffered briefly from agoraphobia about five months prior to admission.

He had been aware of being HIV antibody positive for two years. He had AIDS-related complex with lymphadenopathy and hairy leukoplakia. He had taken cannabis and LSD many years before, but now abstained. In the seven years before admission he had contracted gonorrhoea ten times, syphilis three times and NSU once. In the days before admission he was worried because his mother was coming

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to stay with him while he was organising an exhibition of his own paintings, which had a homosexual content. He was also increasingly guilty about providing homosexual massage services while being HIV positive.

In the four days preceding admission he had been sleepless, tearful, over-affectionate and emotionally labile. He tore up a photograph of himself and slashed a £400 painting.

Admission was precipitated by a small overdose of sleeping tablets. He was anxious and restless and his affect was incongruous. He felt sad and guilty, but was not suicidal, nor were there biological symptoms of depression. His speech was interrupted and disordered and he was easily distracted, but he developed a good rapport. He had persecutory delusions – of poisoning, that the hospital would be bombed, and that someone was trying to get him. He thought he was Jesus Christ.

He experienced thought blocking, insertion and broadcasting, third-person auditory hallucinations, and visual hallucinations of dead cats on his doorstep, the vicar coming to give him the last rites, and the Queen's Guards coming to take him for execution. He experienced the illusion of half his father's face turning into that of the Devil. These delusions and sensory experiences were fleeting and rarely fully formed. He retained some degree of insight.

He was fully orientated and alert, and neurological and cognitive examination were normal. EEG and CT scans were both normal. After one week of observation, pimozide 4 mg daily led to complete remission within a few days, and he was discharged two weeks later, completely well, continuing on pimozide.

Case 5

Case 5 was a 25-year-old professional, with good premorbid personality and a stable professional family background. There was no psychiatric history in the family. Apart from seeing a child psychiatrist at the age of 12 for poor school performance, he had no past psychiatric history and no history of alcohol or drug abuse.

One year prior to the index illness, his boyfriend died of AIDS. Five months prior to the index illness he was found to be positive for antibodies to HIV.

He experienced mild symptoms of depression two months prior to the index illness, treated successfully by the GP with mianserin. He admitted to have been feeling depressed and distressed over his HIV positivity for a week prior to the onset of the psychosis.

On admission he was suspicious and anxious. He was preoccupied with delusions of persecution and threatening auditory hallucinations. He exhibited delusions of reference and of passivity, and formal thought disorder with tangential thinking. He showed no cognitive abnormalities on clinical testing. Physical and neurological examinations were unremarkable. A CT scan of the brain showed no abnormalities. A urine drug screen was negative.

His mental state improved rapidly on trifluoperazine, and he was discharged to out-patient care after ten days, with no residual psychotic symptoms.

The trifluoperazine was gradually reduced, and stopped after six weeks. Although he had no recurrence of psychotic symptoms, two months after the index illness he developed depressive symptoms, which improved on a course of lofepramine after a brief admission in a psychiatric unit.

Three months after the index illness he remained free of psychotic symptoms, with no evidence of cognitive impairment. He continued to take lofepramine, but had needed no further neuroleptic medication. He had, however, developed oral candida and recurrent diarrhoea, and had become positive for HIV antigen.

Discussion

In the five new cases reported here (Tables I and II), prodromal affective and behavioural symptoms were seen from three days to two months prior to the onset of the psychosis. No clear pattern of common precipitants, such as learning of HIV positivity, was observed. Three patients did not know the result of

TABLE I
Background features of five cases of psychosis in HIV-positive male homosexuals

Case	*Family history*	*Psychiatric history*	*Possible precipitants*	*HIV test*	*Recent medical history*
1	Not known	Nil	Breakdown of relationship, overwork	Test done: positive, unknown to patient	? drug abuse
2	Nil	Nil	Breakdown of relationship, taunting at work	False negative test; patient denied AIDS	—
3	Nil	Nil	Nil	Positive post mortem (not known ante mortem)	Nil
4	Schizophrenic uncle	Nil	Anticipation of family conflict	Positive for two years	AIDS-related complex
5	Nil	Age 12, poor school performance	Lover died of AIDS one year before	Positive for five months	AIDS-related complex

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TABLE II
Symptoms of five cases of psychosis in HIV-positive male homosexuals

Case	*Prodromal symptoms*	*Affective symptoms*	*Psychotic symptoms*	*Organic symptoms*	*Investigations*	*Outcome*
1	Bizarre behaviour, one week	Fear, excitement	Grandiose, paranoid, passivity, auditory, hallucinations, thought disorder	Nil	Nil	Improved on neuroleptics; AIDS one year later
2	Anxiety, depression, bizarre behaviour	Anxious, depressed	Passivity delusions, auditory hallucinations, catatonia	Visual hallucinations, cognitive deterioration	EEG: encephalitis	Clinical AIDS and death from pneumonia
3	Disturbed erratic behaviour, three days	Labile, distressed, incongruous	Depressive delusions, thought blocking and disorder	Nil	Nil	Suicide
4	Labile, bizarre behaviour; overdose	Labile, anxious, depressed, incongruous	Delusions, auditory hallucinations, thought insertion and broadcast	Visual hallucinations	CT scan normal EEG normal	Improved on neuroleptics
5	Mild depression, two months	Fear, excitement	Persecutory delusions, ideas of reference, auditory hallucinations, thought disorder	Nil	CT scan	Improved on neuroleptics; depression

HIV testing at the onset of the psychosis, one had known it for over a year and one for over five months. Family history and premorbid personality were, for the most part, unremarkable in this small series.

The prominent symptoms of the psychotic episode were labile affective changes, without a dominant shift towards either depression or mania. A variety of delusional beliefs were exhibited, and thought disorder was common. Four patients had auditory hallucinations. In three cases there was no clear evidence throughout of an organic mental syndrome, although one committed suicide during the acute psychosis, and might have developed organic symptoms later had he lived. In one case visual hallucinations, cognitive impairment and EEG changes suggesting encephalitis became apparent during the illness. This case had clinically apparent

TABLE III
Background features of seven cases of psychosis in HIV-positive male homosexuals

Case		*Family history*	*Psychiatric history*	*Possible precipitants*	*HIV test*	*Recent medical history*
A	Thomas *et al* (1985)	None	None	Surgery	Tested positive during admission	PUO ?
B	Palan *et al* (1985)	Not given	None	None	Positive four months	AIDS
C	Nurnberg *et al* (1984)	None	Alcohol abuse	None	Positive four months	AIDS
D	Perry & Jacobsen (1986) (1)	Not given	Intravenous heroin and cocaine	None	Tested positive during admission	AIDS
E	Perry & Jacobsen (1986) (2)	None	None	Death of lover from AIDS	Not carried out	AIDS
F	Jones *et al* (1987)	None	Intravenous drug use, alcohol abuse	Anxiety re positive status	Positive six months	Right basal chest pain
G	Halevie-Goldman *et al* (1987)	None	None	Allergic rhinitis	Tested positive during admission	None

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TABLE IV
Symptoms of seven cases of psychosis in HIV-positive male homosexuals

Case	*Prodromal symptoms*	*Affective symptoms*	*Psychotic symptoms*	*Organic symptoms*	*Investigations*	*Outcome*
A	None	Suicidal, aggressive, guilty, depressed	Paranoid, special powers, third-person auditory hallucinations	None	CT scan and EEG normal	Improved
B	Incoherent speech	Depression, biological symptoms, agitated	Paranoid, auditory hallucinations	Reduced short-term memory	CT scan and EEG normal	Improved
C	Anxiety	Depression, biological symptoms	Guilty delusions, paranoid, auditory hallucinations	Reduced short-term memory	CT scan normal	Deteriorated; died
D	None	None	Auditory hallucinations	Marked dementia	Ataxia and spasticity of legs	Deteriorated; died
E	None	Manic then depressed, suicidal	Guilty worthless delusions	V/P discrepancy on WAIS, clouding of consciousness	CT scan and EEG normal	Deteriorated; died
F	Mild anxiety, mild depression, auditory hallucinations (2 months)	Flat and incongruous affect	Delusional mood, paranoid delusions, thought blocking, thought broadcast, somatic delusions, delusions of reference	Seizure (one), disorientation (for one day)	CT scan and EEG normal	Improved on neuroleptics
G	None	None given	Paranoid and persecutory delusions, auditory hallucinations	None	CT scan and MRI normal; physical, neurological and laboratory tests normal; CSF: protein +	Not given

AIDS. In one case only, visual hallucinations hinted at an organic cause, but both EEG and CT scan were normal.

A most important point for clinical practice is the observation that only two of these five cases were known to be HIV-positive at presentation and that the psychoses, even those which later declared their organicity, began by appearing to be 'functional'. This suggests that psychiatrists need to be aware of the possibility of HIV-associated psychosis, especially in patients with a history of risk behaviours.

Tables III and IV show the details of the seven cases reported in the literature which appear to have presented as functional psychoses. Three of these cases had clear evidence of drug or alcohol abuse, and two others had suffered severe life events before the onset of the psychosis. In four, organic mental symptoms were present early in the illness. Indeed, only the reports by Thomas *et al* (1985) and by Halevie-Goldman *et al* (1987) show the same degree of freedom from organic symptoms and the lack of confounding features, such as current drug abuse, as was seen in our five relatively 'pure' cases.

A small series such as this cannot properly address the question of whether HIV may itself cause symptoms of functional psychoses, although it appears likely to do so in some cases. Davison & Bagley (1969) reviewed a wide variety of cerebral diseases, showing that the majority appeared to be associated with symptoms of functional psychosis in at least some cases. Nevertheless, it remains impossible to tell, even from this case series (small, but the largest to be systematically reported to date), whether there is a *statistical association* between HIV infection and symptoms of functional psychosis, let alone a *causal relationship*. We would contend that

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those cases which eventually demonstrated organic symptoms or signs may have been due to HIV or the consequences of opportunistic infection or systemic illness, while the rest may have been coincidental. While there are some features which appear in most cases, there is no common pattern of symptoms which is clear and distinct enough to be described as an 'AIDS psychosis'.

HIV is a retrovirus, and a lentivirus whose nearest relative appears to be visna virus, which causes neurological symptoms in sheep (Haase, 1986). Crow (1983) has put forward the theory that schizophrenia is caused by a viral infection, probably by a retrovirus or retrotransposon. Thus, reasoning backwards, HIV, being a neurotropic retrovirus, might be expected to be associated with the production of schizophrenic symptoms.

Our five cases of florid and apparently functional psychosis in patients infected with HIV were all we were able to find in our health district, in which, to date, over 2200 patients have presented with HIV infection and 170 have died of AIDS. This suggests a weak association with symptoms of functional psychosis, and further suggests that a simple mechanism for the production of schizophrenic symptoms by a neurotropic retrovirus is now difficult to support. In a further paper, Crow (1986) suggests a relationship between the infection with the virus and a developmental abnormality of the left hemisphere. This suggests that the virus would need to be present in early life, and schizophrenia might not be expected to occur in these cases where infection took place in adult life.

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