

## NEUROPSYCHIATRIC AND PSYCHOLOGICAL ASPECTS RELATED TO HUMAN IMMUNO DEFICIENCY VIRUS (HIV) INFECTION

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*The prevalence of HIV infection in India is likely to increase dramatically in coming years. Neuropsychiatric and psychosocial problems are common among HIV infected individuals. Therapeutic measures employing biological, psychological and social approaches are necessary for managing these problems. Strategies for reducing high-risk behavioural patterns need to be developed for preventing the spread of infection. To cope with these tasks, neurology and psychiatric personnel should possess an adequate knowledge of the various aspects of HIV infection. Reports indicate a high prevalence of misconceptions among hospital staff. The paper provides a brief review of the biological, neuropsychiatric, psychosocial and management aspects of HIV infection relevant to neurology and psychiatry.*

**A**cquired Immune Deficiency Syndrome (AIDS) has become a global problem, is caused by a retrovirus transmissible to normal human beings by sexual contact with infected homosexual or by sharing of infected needles as usually happens in drug addicts and through transplacental route from infected mother to foetus. Limited diagnostic facilities and long latency period between infection and disease manifestation, the number of asymptomatic carriers and persons actually showing clinical symptomatology is gradually increasing and likely to increase further in the coming years (Eisenberg, 1989).

HIV has a predilection to affect the brain (Shaw *et al.*, 1985) and 31-65% of patients with AIDS show neurological and neuropsychiatric manifestations (Janseen *et al.*, 1980). The disease also carries considerable social stigma, and patients are ostracised and discriminated against, with a weakening of social supports (Faulstich, 1987). This, together with the lethal nature of the illness, causes significant neuropsychological trauma to the affected individuals (Cleary *et al.*, 1988) as well as to their family and friends (Frierson *et al.*, 1987). In addition, homosexuals and intravenous drug users, who constitute a part of the neuropsychiatric popu-

lation, account for 80-90% of reported AIDS cases (Small *et al.*, 1983; Centres for Disease Control, 1985) at least in the western countries. In this setting, the role of neuropsychiatric personnel involves recognising and managing this problem among patients and their families, counselling regarding disease transmission, prognosis and coping techniques, and reducing high risk behavioural patterns among neuropsychiatric sub-populations who are at risk for contracting the infection.

Misconceptions regarding the infection and resultant negative attitudes towards sufferers have been found to be common among hospital staff, showing reluctance to care for patients with AIDS (Fenton, 1987). This is further complicated by controversies regarding risk of transmission of disease to health care staff (Anonymous, 1988), and the ethical aspects of compulsorily testing neuropsychotic patients for HIV infection (Jadresic, 1980; King, 1990).

The current state of knowledge about HIV infection relevant to Neuropsychiatry is briefly reviewed in this article.

## HIV : INFECTIVITY AND NATURAL HISTORY

Once a person is infected, he is infected for the rest of his life (Janssen *et al.*, 1989). Following infection, the individual develops antibodies within 3-6 months, or rarely longer (Forster & Pinching, 1988). While the antibodies are useful for making a diagnosis by serological tests like Enzyme linked immunosorbant assay (ELISA), Western blot and immuno fluorescence tests, they do not neutralise the virus and appear to offer no protection against disease. False negatives are sometimes seen due to the delay between infection and development of antibody response, needing further confirmation and close observation with more tests at an interval of three months. The latency period between infection and disease manifestation is prolonged, varying from 1 month to 5 years, (Jaffe *et al.*, 1985, 1985a), or even longer. During this period, the individual is asymptomatic but capable of transmitting the infection to others (Fenton, 1987). Subsequently, some of those infected go on to develop the full clinical syndrome of AIDS. Others may manifest only some features of the syndrome, to be classified as having persistent generalised lymphadenopathy (PGL) or AIDS-related complex (ARC). At present, the prognosis for those with PGL and ARC is uncertain. Most patients with clinical AIDS experience rapid deterioration and death within 2-3 years, while a few with the best prognosis may survive upto 5 years (Volderding, 1985).

The manifestations of the disease are explainable by the selectivity of HIV to preferentially attack T4 lymphocytes and cells of the nervous system. Involvement of lymphocytes leads to immunosuppression, making the patient susceptible to opportunistic infections and neoplasms. Since the signs and symptoms depend on the infecting agent and organ involved, they tend to be non-specific. Involvement of the nervous system results in

neurological and neuropsychiatric manifestations, the nature of which again depends, on the region affected. Currently, management involves treating the secondary infections and malignancies, along with general supportive measures. There is neither any drug to offer a specific cure, nor a vaccine to prevent the infection. Some clinical benefit has recently been reported with the use to anti-viral agents (Fischl *et al.*, 1987; Schmitt *et al.*, 1988) but the benefits do not appear to be sustainable (Dournon *et al.*, 1988).

Despite low risk, the serious nature of the infection require that all personnel dealing with HIV positive patients take adequate precautions like wearing rubber gloves while dealing with infected material, proper disposal of used needles and use of 10% sodium hypochlorite for disinfection of blood spillage and work surfaces (Fenton, 1987).

## HOMOSEXUALITY AND HIV INFECTION

In the U.S.A. more than 70% of patients suffering from AIDS are homosexuals. Centres for disease control (CDC) carried a nation wide study and compared 50 homosexual men having AIDS with 120 healthy homosexual men and came to conclusion that former had had a more number of male sex partners per year, started sex at an earlier age, and were having more risk to have syphilis and hepatitis than latter (Jaffe, *et al.*, 1983). There has been another study where a comparison of 20 men with Kaposi's sarcoma with 40 homosexual controls was carried out proving that the number of male sex partners in the year before diagnosis was definitely higher in AIDS patients (Marmor *et al.*, 1984). There has been 22% to 65% seropositivity for HIV virus in asymptomatic homosexual men in U.S.A. (C.D.C. 1984; Goedert *et al.*, 1984; Melbye *et al.*, 1984; Weiss *et al.*, 1985). It will be quite interesting if somehow ultimate follow-up result of these patients are known.

## SUBSTANCE ABUSE ASPECT OF HIV INFECTION

**A**IDS in homosexuals and a similar type of disorder was reported in I.V. drug abusers in New York city of U.S.A. simultaneously, which stimulated research workers to look for AIDS in I.V. drug abusers. They came to conclusion that it were heterosexual partnership in I.V. drug abusers which developed AIDS especially in female prostitutes who also formed majority among I.V. drug abuse there. These studies also confirmed that mode of transmission in such individuals was either through sexual intercourse or by usage of infected needles used repeatedly by the partners (Harris *et al.*, 1983; C.D.C., update 1985; Small *et al.*, 1983; Selik *et al.*, 1984).

## HIV RELATED NEUROPSYCHIATRIC MORBIDITY

**N**europsychiatric consultation rates for patients with HIV infection, being treated in general hospitals, range from 18.9% (Sno *et al.*, 1989) to 32.5% (Dilley *et al.*, 1985). However these figures may not reflect the actual neuropsychiatric morbidity among HIV-infected population, as they depend upon the ability of the treating physician to recognise a neuropsychiatric consultation. Among people with HIV infection, who have not been referred to Neurologists or Psychiatrists, the prevalence of Neuropsychiatric disorders is reported to range from 31% (King, 1989) to 60% (Perry & Tross, 1984), although the actual prevalence could be lower because of certain methodological flaws inherent in these studies (King, 1990). The range of neuro psychopathology encountered among HIV infected population is wide, ranging from neurotic and adjustment disorders to major psychoses, AID complex dementia.

Organic Neuropsychiatric disorders  
Among patients with clinical AIDS, showing

involvement of the CNS, the most frequent complication is a progressive dementia which has been variously labelled as HIV-encephalopathy, AIDS-Encephalopathy, sub-acute encephalitis or AIDS- Dementia complex (Janssen *et al.*, 1989). It may be seen in an overt form in about 1/3 of patients at the time of AIDS diagnosis and in 2/3 of patients in the pre-terminal stages (Price *et al.*, 1988). The prevalence could be even higher if sub-clinical forms of the illness are included. It presents with a combination of cognitive, motor and behavioural disturbances, with cognitive impairment predominating in most patients (Navia *et al.*, 1986). In the majority, the initial cognitive impairment progresses to a picture of profound dementia, mutism, incontinence and coma (Fenton, 1987) and the mean survival time is 1.8 months from the onset of severe dementia.

The other common organic mental disturbance is delirium, which may occur in a setting of established dementia or be a consequence of opportunistic infections or CNS malignancies (Fenton, 1987). In addition, dementia accompanying AIDS may be punctuated by episodes mimicking functional psychoses such as schizophreniform, paranoid, depressive or hypomanic illnesses (Nurnberg *et al.*, 1984; Gabel *et al.*, 1986; Perry & Jacobsen, 1986). But in most such instances, cognitive impairment suggestive of organic brain dysfunction is apparant. Where cognitive impairment is minimal, differentiation between functional and organic psychoses is difficult (Sno *et al.*, 1989).

## FUNCTIONAL PSYCHOSES

**A**mong HIV infected population, occurrence of functional psychoses unaccompanied by cognitive impairment is infrequent. Halstead *et al.* (1988) reported 5 cases of functional psychoses without cognitive deficits, and reviewed 2 other similar cases from literature. They failed

to find any common symptom pattern which could be considered specific for functional psychoses associated with HIV infection. Other reports indicate that DSM-III major depressive disorder is not uncommon among individuals with HIV infection (Dilley *et al.*, 1985; Sno *et al.*, 1989; Rabkin & Harrison, 1990), and patients with a past history of depressive episodes may be at increased risk for experiencing a recurrence (Dilley *et al.*, 1985).

## NEUROTIC AND ADJUSTMENT DISORDERS

Neurotic and adjustment disorders account for the major portion of psychiatric morbidity observed among HIV positive individuals. Adjustment disorders with disturbed mood, depressive neurosis and anxiety neurosis were the commonest diagnoses among unselected HIV positive individuals consultation as well as among those referred for psychiatric consultation (Dilley *et al.*, 1985; Sno *et al.*, 1989). Other conditions encountered include simple phobias, hypoactive sexual desire disorder (Rundell & Brown, 1990), panic disorder (Dilley *et al.*, 1985) and obsessive-compulsive disorder (Green, 1986). In addition, a large number of individuals with a diagnosis of HIV infection have high levels of psychological distress (Cleary *et al.*, 1988) which may, in part, be explainable as an expected reaction to a life threatening illness. Its similarity to psychological reactions seen in other life threatening illnesses has been noted (Dilley *et al.*, 1985; King, 1990).

## SUICIDAL RISK

While some investigators have noted the suicidal risk among AIDS patients to be strikingly high (Frierson & Lippman, 1988; Marzuk

*et al.*, 1988), others have found such risk to be low (Chuang *et al.*, 1988; Sno *et al.*, 1989). Faulstich (1987) observed that suicidal ideation among AIDS patients is common, but actual attempts are not as frequent. This variability of findings may be explainable on the assumption that the risk of suicide varies at different stages of the illness, and with the social, physical and financial problems faced at each stage. Completed suicides among AIDS patients tend to be sudden and impulsive (Frierson & Lippman, 1988; Marzuk *et al.*, 1988), and are more common during the first six months after diagnosis, in association with cognitive decline in the later stages, and among those who have witnessed the death of partners (Glass, 1988).

## FACTORS CONTRIBUTING TO NEUROPSYCHIATRIC MORBIDITY

In patients with AIDS, direct involvement of the CNS by the virus has been demonstrated (Shaw *et al.*, 1985) and even among asymptomatic HIV-positive individuals over 1/3 are reported to show abnormal CSF findings (Appleman *et al.*, 1988). Thus, the neurotropic nature of HIV accounts for many cases of organic psychiatric syndromes, while some could be caused by secondary infections, CNS malignancies or the adverse effects of pharmacotherapy. In case of functional psychoses without evidence of organic brain dysfunction, the position is less clear. It is theoretically possible to hypothesise that functional psychoses can result if specific brain regions are involved by the virus, but supporting evidence to that effect is lacking. The association between functional psychoses and HIV infection, where present, is more likely to be coincidental than causal (Halstead *et al.*, 1988).

Among HIV infected population manifesting neurotic and adjustment disorders,

psychological and social factors seem to play an important role in the pathogenesis of psychiatric morbidity, although the evidence for this is not entirely one sided. The three major issues forming the basis of psychological problems are terminality, isolation and money worries, which produce the signs and symptoms of anger, denial, guilt and depression (Deuchar, 1984). The very knowledge of harbouring a potentially fatal infection of uncertain prognosis, with bleak treatment prospects and possible suffering and social isolation, can be sufficiently stressful to induce neuropsychiatric morbidity. Individuals who know that they are HIV positive are found to be at increased risk for psychological distress (Cleary *et al.*, 1988), and psychiatric problems more frequent among those who knew of their diagnosis for a shorter period and among those who have had past psychiatric problems (King, 1989). There is also evidence and infected individuals who have not yet developed clinically AIDS show a higher prevalence of neuropsychiatric morbidity than those who have developed the syndrome (Atkinson *et al.*, 1988; Chuang *et al.*, 1989), possibly on account of prognostic uncertainties associated with the earlier stages (Chuang *et al.*, 1989). On the other hand, Perry *et al.* (1990) reported a lower prevalence of Neuropsychiatric disorders among those who already knew their diagnoses than among those who did not and Rundell & Brown (1990) found no difference in the frequency of Neuropsychiatric disorders with passage of time since the diagnosis was revealed to the patient. This conflicting data must however be weighed against evidence that major risk groups like homosexuals and drug users in general, tend to have a higher prevalence of psychopathology (Rounsaville *et al.*, 1982; Pillard, 1988) so that small sample sizes and differences in populations sampled can appreciably alter results across studies.

The psychological trauma resulting from social consequences faced by an infected person has also been cited as an important factor leading to Neuropsychiatric morbidity

Faulstich, 1987; Ostrow *et al.*, 1987; Chuang *et al.*, 1989; King, 1990). The intense media coverage of AIDS has provided the public with information that is not always accurate, resulting in misconceptions regarding health risks and infectivity (Fenton, 1987). Infected individuals often face social, economic and occupational discrimination. A quarter of the patients who revealed their HIV status to others have been reported to suffer condemnation or rejection from social circles & society (King, 1989). Among high-risk groups, psychological distress was found to be more among those lacking social supports (Ostrow *et al.*, 1989). Whether social stressors alone can give rise to Neuropsychiatric disorder is unclear, and at least one study (King, 1989) found no link between social rejection or condemnation and neuropsychiatric disorder. On the whole, it appears that a multiplicity of factors including social, neuropsychological economic and occupational stressors act in tandem to precipitate neuropsychiatric morbidity. In a given individual, the personal meaning or subjective significance accorded to each of these several factors could determine the psychological response.

## MANAGEMENT

Symptoms of HIV infection, during early stages are vague and often may be similar to common ailments. Unexplained fever for more than 3 weeks, loss of weight (more than 10% of original weight) skin rash and diarrhoea (more than 2 weeks duration) need to be tested serologically for AIDS. This entity should be suspected and treated in all patients suffering from opportunistic infections like Tuberculosis, Toxoplasmosis, Pneucocystis carinii, Cryptococcus meningitis, Candidiasis, Cytomegalo & Herpes viral infections and in malignancies like Kaposi's Sarcoma. In the absence of any vaccine against the disease antiviral drugs, antipsychotics, antidepressants and ECTs have all been used with some success in

treating neuropsychiatric disorders among patients with HIV infection (Fenton, 1987; Schaerf *et al.*, 1989; Rabkin & Harrison, 1990). However some of the patients are particularly sensitive to drug side-effects (Fenton, 1987), and the use of anti-anxiety medications as the initial drug of choice may be preferable (Nichols, 1983).

Counselling, psychotherapy and cognitive-behavioural techniques are all important aspects of management. In all patients suicidal risk should be carefully monitored and managed. Deuchar (1984) advocates psychotherapy centered on restructuring and which involves finding a new meaning to life and adapting to the limitations of the illness. Supportive neuro psychotherapeutic approaches should involve issues such as guilt associated with sexual practices or drug abuse, possible social isolation, and acknowledgement of the illness and any associated fear or anger (Faulstich, 1987). Specific cognitive techniques may be useful in reducing negative thinking and countering dysfunctional assumptions (Fenton, 1987). All attempts should be made to utilise and further fortify social supports, and to remove misconceptions regarding the illness among patient's family and friends. Counselling should aim at helping the patient and family to understand current information about the disease, its prognosis and modes of transmission (Fenton, 1987). Careful advice should be given on preventive measures such as safe sex avoiding exchange of body fluids, not sharing razors and needles, and on how to clean up blood spills using hot water and household disinfectants. Hospital staff should avoid moral posturing and offer information to the patients in a secure, non-judgemental fashion (Dilley *et al.*, 1985). The overall effort should be aimed at avoiding a defeatist attitude in the face of an incurable illness, and at improving the quality of patient's life.

## PSYCHOLOGICAL AND SOCIAL INTERVENTION

Adolescent and adult population need to be given information about the danger of AIDS epidemic, mode of spread, methods of prevention and information regarding personal HIV antibody testing services. Efforts also should be made to change personal health beliefs and to change in the attitude of impulsive high risk behaviour related to drug abuse or other situational factors directed towards various subgroups who are going to have high incidence of HIV infection. It is the responsibility of the treating doctor, not only to treat the ailment but also to educate apart from the patient, people in and around him about methods to prevent the acquisition as well as mode of transmission of the disease. All persons who have AIDS related anxieties or neuropsychiatric syndrome should be given accurate medical information at a short notice without any hesitation by the medical profession. The AIDS virus does not spread through casual contact like shaking hands, touching and hugging. Neither does it spread through food, water, sneezing, coughing, insects, toilets, swimming pools and sharing cups.

## EARLY IDENTIFICATION OF HIGH RISK PERSONS

Many specific services and agencies help people to alter patterns of social relationships and sexual behaviour to reduce the personal risk of getting HIV infection or its transmission. Such agencies also help people to cope with the fear and grief which commonly occur with death of an AIDS patient, in the community.

The gay community has developed an AIDS related service organisation in the U.S.A. and has been successful in imparting information, social and mental services to the people who suffer from AIDS. The AIDS related servi-

ces there also provide substance abuse treatment to the I.V. drug abusers who often are heterosexuals and educate them about safer sex (usage of separate disposable condom every time they have sex).

Female prostitutes are known to have high rate of I.V. drug abuse (Small *et al.*, 1983) and high seropositivity and cause of heterosexual spread of H.I.V. infection. Community based education and information programmes will change the HIV transmission risk behaviour of female prostitutes. Obstetricians and Gynaecologists, have a sole moral responsibility to educate and counsel child bearing women regarding S.T.D. and HIV high sexual behaviour, HIV antibody testing and risk of HIV transmission with pregnancy.

Type A hemophilics patients, their sexual partners all will require information and psychosocial support services as they make up their mind for HIV testing and cope up with their anxieties and guilt about the actions that might have contributed to HIV infection in themselves and to the family members & friends.

### KNOWN HIV POSITIVE PERSONS

Asymptomatic persons need careful watch education and proper follow up at regular interval with HIV antibody testing services lest they indulge in spreading the disease to other people in the society.

### AIDS-RELATED-COMPLEX AND AIDS PATIENTS

Require multidisciplinary team work approach, where a primary physician, neurologist, nurses, neuropsychologist psychiatrist and a social worker work in a co-ordinated manner to

treat the above conditions and to communicate with the people who are involved in caring for such people in the community.

### ROLE OF FAMILY & FRIENDS

They can provide emotional support services to the sick patients with AIDS during his life time. They should be told that there is no need to fear and shun persons who are infected with the AIDS virus. They need a lot of Tender Loving Care (TLC) to help them live out their life with courage and dignity and share his family responsibilities after his death.

### EMERGENCE OF AIDS IN INDIA

Alarmed by the spread of HIV infection all over the world, it was Indian Council of Medical Research in India, who took lead to establish AIDS Task Force in 1985. It strongly recommended setting up of Serosurveillance for persons belonging to high risk groups i.e. promiscuous heterosexual persons (prostitutes and their clients, patients having sexually transmitted disease), intra venous drug users, persons receiving blood and blood products, as usually happens during accidents, selective surgical procedures, patients with blood disorders like hemophilia etc. The National Institute of Virology (NIV), Pune and the Christian Medical College, Vellore started screening in October, 1985. By April 1986, they had screened 3027 persons of high risk groups and 10 prostitutes were found to be Seropositive and concluded that HIV infection has reached Indian shore. Subsequently, more and more patients with Seropositivity started emerging among high risk groups from other places like Delhi, Kanpur, Chandigarh, Srinager, Lucknow, Manipur etc. and ICMR in collaboration with Directorate General of Health Services, Ministry of Health State Health Authorities took decision to estab-

lish more Sero-Surveillance centres and in 1987 the National AIDS control Programme was formulated with the objective to arrest the spread of infection among the promiscuous groups and for prevention of the disease by Information, Education and Communication to the high risk target population of the society.

### EPIDEMIOLOGICAL DATA AS ON 31ST AUGUST, 1991

Blood sample screened	10,49,301
Number of Seropositive cases	5732
Sceropositive Rate Per Thousand	5.4

#### Aids cases in India

Origin	Male	Female	Total
Indian	49	16	65
Foreign	10	03	13
Total	59	19	78

AIDS cases as detected in cities like Madras and Bombay appears more among heterosexual promiscuous group prostitutes whereas in North eastern region prevalence of disease is more among I.V. drug users.

### STRATEGIES FOR REDUCING HIGH RISK BEHAVIOUR PATTERN FOR PREVENTION OF SPREAD OF INFECTION.

A. Government in collaboration with W.H.O. is trying to get more training facilities for its medical personnel in the advanced countries, so that on their return they train more manpower ready to look after the H.I.V. in-

fectd patients in coming years with the latest methodology and advanced technology. It also proposes to set up AIDS Medical Care Units in different hospitals of the country especially in the metropolitan cities where incidence of the disease seems to be higher. So many workshops, seminars, symposiums are being organised by the National AIDS Control Programme Co-ordinator to update and educate Medical and Para-medical personnel in general, so that they actively participate, in spreading knowledge about the disease, its transmission and prevention among masses involved in community care services of the country.

B. Central Health Education Bureau has taken a very active public education campaign through media like radio, television, pamphlets etc. to sensitise high risk target population by educating them about the importance of high moral values, use of safer sex and hazards of I.V. drug abuse in relation to spread of this dreadful disease.

C. Setting up of more Surveillance Centres in the country for screening the high risk behaviour target population for HIV infection and check the trend of infection.

D. Screening of all blood donors, blood recipients, blood and blood products in the Blood Banks for H.I.V. infection. It should also be done for patients attending S.T.D. clinics, antenatal clinics and all patients suspected to be suffering from opportunistic infections like tuberculosis, toxoplasmosis, candidiasis etc. (Lal, S., 1991).

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