Flying with AIDS - International Scenario

Wg Cdr NN Aggarwal, Dr Vijai Kumar

Air India Medical Clinic, Old Air Port,
Santa Cruz (E), Bombay 400 029.

Acquired immuno deficiency syndrome has become an unprecedented threat to global health. Though its ultimate dimensions are difficult to gauze at present, it has already affected practically every social institution, viz families, schools, communities, business, law, governments and even armed forces to various degrees. Its impact has been felt on aviation as well. An AIDS case might be affected adversely in aviation environment especially if complicated. Controversial views exist regarding acceptance of infected crew for flying duties. Air transportation of AIDS infected passengers is a live issue with various Airlines. In this paper, these and other related dimensions are presented.

Keywords : ***Above Sea Level (ASL), Medical Information Form for Air Travel (MEDIF), Enzyme Linked Immuno Sorbent Assay (ELISA), Quarantine.***

Global Spread and Transportation

10-12 million adults and 1 million children are infected and about 2 million people have developed AIDS while more than 1 million have died already as indicated by the July 1992 estimates[1]. By geographical distribution, Africa accounts for 69%, USA 16%, America excluding USA 9%, Europe 6% and others 1%. Eighty percent of the cases are in developing countries. It is now believed that several small discrete epidemics have coalesced into world wide pandemic sparing no region and virtually no country. The countries which banned entry of HIV cases viz China have already started gathering infected cases though far less than other countries. According to an estimate on 31 Aug 1990, out of 48 AIDS cases in India, one third were foreigners. Transfusion of blood in India and abroad amongst infected account for 14% of transmissions. At the beginning of August 1992, India had 8309 HIV carriers and 218 overt cases of AIDS amongst its mammoth population of 830 millions. Unofficial estimates put the figures as 400,000 infected and 12000 diseased cases. Over the world, about 1200 million passengers were transported by various airlines of the world during 1991. It is of interest that 40% of world's passenger traffic is generated by USA followed by European airlines (32%)[2]. Both these regions have high endemicity of AIDS. The statistical data on how many HIV seropositives and AIDS cases have travelled by air is not known. However, it is reasonable to believe that declared cases make only small fraction of total population of infected air travellers.

Neuropsychiatric Sequelae

HIV infection alone does not ordinarily affect the person's ability to do the job until he develops illness that makes him unfit. Therefore in majority of occupations, there is no risk to the person or the job. The important aspect to consider in relation to aviation is insidious onset of neuropsychiatric changes which may occur in asymptomatic HIV positive crew and interfere with optimal task performance. Earliest symptoms of dementia complex include forgetfulness, poor concentration, mental slowing, inadequacies in performing motor tasks with poor balance and coordination along with behavioural alterations viz social withdrawal, reduced spontaneity and apathy[3]. During the course of infection, subclinical manifestation of above signs and symptoms, could be dangerous to aviation safety as these neuropsychiatric abnormalities are incompatible with desired crew functions. The risk is further increased on account of unpredictability of manifestations[4].

Cabin Environment

Unlike travel by any other means, cabin environment may present problems to a case of AIDS with complications. Aviation environment in a typical airliner cannot always be maintained at

sea level equivalent. The pressure within cabin is unlikely to fall below a level equivalent to pressure at about 7900 feet (2400m) when the maximum cruising altitude is 33000 feet above sea level (ASL). On most of short flights, the cabin altitude may be between 4000-6000' ASL (1200-1800m). At maximum cabin altitude, a drop of 25% in barometric pressure is likely to occur i.e. from 760 mm to 565 mm Hg. It would cause increase in volume of all gases trapped in human body by 25% under these circumstances. Closed cavitary bullous lung lesions in complicated cases of AIDS, can reach life threatening proportions. A 25% drop in barometric pressure would also cause drop of 32% in partial pressure of alveolar oxygen pressure with a fall in arterial oxygen saturation from 96% to 88%. In normal individuals with healthy lungs, this fall may be of no consequence. However in cases with cavitary or consolidating lung conditions, severe hypoxia may set in. In addition AIDS cases may entail following risks : (a) An immuno-suppressed individual will be at higher risk of exposure to environmental pathogens. The risk is likely to increase further with increased use of air recirculation system in aircraft and poor ablity of filters to clean air satisfactorily. Cases with CD4T cell counts below 300/µl could be at extra risk. (b) An alarming trend amongst AIDS cases is the development of tuberculosis especially with degenerative lung disorder. A growing number of AIDS patients are contracting resistant forms of pulmonary tuberculosis with atypical mycobacteria. Since tubercular spread is through air, it would not only threaten other immunosuppressed individuals in the cabin but also healthy people. (c) In US, about 63% of people with AIDS have been diagnosed to have 'pneumocystic carinii pneumonia'. Many of the patients develop cavitary and cystic lung disease which were of infrequent occurrence in pre AIDS era. These patients have increased risk of expansion of air in these cavities and can develop pneumothorax, which may need invasive therapy[5]. (d) Cases with recurrent diarrhoea may require parenteral fluid administration especially on long haul flights. If mobile, they may also contaminate toilet seats. Cryptosporidiosis diarrhoea may become severe enough to cause dehydration and death unless nutritional supplements are given. Special disposal may be required for used bed-pans, if the case is a lying patient. Disinfection of toilet seats and bedpans are difficult problems during flight. (e) Infected persons may lack control of bodily secretions, have open lesions and behave in a way that may infect others such as by biting[6]. (f) An attendant assisting the inflight labour of HIV seropositive mother is likely to be exposed to infected blood and tissues. They must use barrier precautions while handling the placenta or the infant, until blood and amniotic fluid has been removed from Infant's skin. Gloves are available in most of the onboard medical kits.

In the event of declared AIDS case, most of the international airlines insist on MEDIF (Medical Information form for airtravel). HIV seroconverted cases without AIDS are treated as normal passengers. Escorting by medical attendant is considered essential to take inflight care of diseased including administration of parenteral fluids, disposal of used equipment, biospills, biowastes and other biohazardous material. The patient need not wear mask, gown, gloves or other items, unless he has another infectious process or is strongly suspected of having one. In such cases air transportation is permitted only as life saving measure. As far as possible, disposable "patient care equipment" is to be used viz disposable syringes, needles and hygiene bags[7].

Biospills, Biowastes and Onboard Biosafety

One of the paramount consideration in International air transportation is safety of passengers, crew and public at large. Onboard breach in hygiene remains a potential threat. Earlier the main focus of attention were food preparation, storage and service. More recently, it has been shifted towards disposal of biospills, biowastes especially in view of dangers posed by HIV contamination. Biospills include saliva, vomitus, urine and other body fluids including blood, breast milk, tears etc. It has already been established that HIV exists in lower concentration in saliva, tears, breast milk and urine as

compared to blood and CSF. It is generally believed that HIV is extremely fragile and dies rapidly outside human body. However some studies have shown that the virus can remain active and alive upto 7 days on dry surface at the room temperature, and up to 15 days in water. It is capable of causing infection during this period[8]. All spills of blood and body fluids should therefore be considered infectious. It also infers that simply rinsing the needle and other equipment with water and air drying does not destroy the virus. No comprehensive statistical data is available on the incidence of inflight biospills and seriousness of their consequences. However, estimated frequency is generally very low i.e. less than 1% of flights. Incidence has been higher on long haul flights than on short haul domestic flights. Vomitus is the most common biospill and its frequency is higher in inexperienced passengers, children and during air turbulence. Growing incidence of infection amongst paediatric age group is likely to pose increased risk of contamination through vomitus and diarrhoea. Amniotic fluid, placenta and bleeding during onboard delivery remain high source of contamination as well[8,9].

All biospills and biowastes are to be disinfected irrespective of the extent of contamination. As a first measure, the biospills are cleaned up immediately. With gloved hands. Masks may be required rarely if aerosolized transmission is suspected. Paper -canvas linen may preferably be used for stretcher cases.

Retroviruses are broadly susceptible to common disinfectants viz alcohol, phenols, formalin, sodium hypochlorite and glutaraldehyde. While these agents are included in the "patient care equipment", many of them cannot be used on board due to their reaction with synthetic interiors of cabin, bleach effect, corrosive action especially on aluminium, and due to their inflammable nature and smell. Biospill kits are carried by some airlines. Typically they include disposable aprons, antiseptic wipes, absorbent sponges and paper tissues. Disposable toilet seat covers are available on BOEING-747. Liquid disinfectant soap is also freely available in aircraft.

Social Acceptance of Crew and Passengers

In view of the fatal outcome of AIDS, irrational fears and prejudices are prevalent amongst society. The infected persons, often not only lose their place in community but also sense of attachment and identity. Because of associated stigma and dread crew may develop undesirable behaviour towards such passengers. The fellow passengers too may show attitudes of anxiety, hostility and altruism. Several of them may show reluctance to serve or assist such a case. To avoid any kind of discrimination, confidentiality by crew is of utmost importance. Some of the European airliners have included education programme to their crew on transmission of virus and biosafety procedures along with their first aid refresher courses. Education has to be imparted to the effect that virus cannot be spread through food, beverages, eating utensils, plates and drinking glasses. There is no evidence of transmission of virus other than through intercourse with infected sexual partners, needle sharers and children born to infected mothers. This is essential for keeping positive attitude of crew towards infected passengers[10,11].

Screening of Crew and Passengers

Controversies exist over antibody screening of HIV. Commonly used screening tests viz ELISA detect only antibodies, which may take months or longer to appear after a person is infected[12]. The long window period relates to decreased sensitivity of ELISA system as compared to other confirmatory serological assays viz. membrane - immuno fluorescence, western blotting and radioimmunoprecipitin. Many of the international airlines are conducting mandatory HIV screening especially at the time of employment (open screening). Subsequent screenings have mostly been kept voluntary [12].

Screening has been considered essential for crew. In West, it has largely been kept confidential. Usually the results are communicated in closed envelopes. Once recruited a crew is permitted to carry on with his job despite seropositivity until he withdraws voluntarily, his health deteriorates to the extent that he can no longer perform his duties and on

the recommendations of his treating physician. Anti-discrimination and job protection laws protect his job. The assignment of flying duties are determined as follows :

(i) HIV seropositive cockpit crew] Flying not
(ii) AIDs manifested cockpit crew] permitted

(iii) HIV seropositive cabin crew-QTA (Quick Turn about) flight permissible and follows-ups are conducted on voluntary basis.

(iv) AIDS manifested cabin crew - flying not permitted

Mandatory screening for the passengers is not carried out anywhere in the world. Most of the airlines depend upon voluntary disclosure by passengers. Unfavourable attitudes on the part of health functionaries, travel authorities and fear of social ostracisation may compel some passengers to adopt defensive strategy, whenever laws on the issue are kept strict.

Quarantining Policies

With the increasing awareness towards rapid spread of HIV infection through international migration of people from one country to another and their uncheckable sexual behaviour therein, a large majority of countries have implemented AIDS prevention and control programmes. Several such programmes include restriction on immigration and isolation of HIV positive and AIDS cases. Some countries had approached WHO (World Health Organisation)[13], whether a certificate stating that a person is not infected with HIV should be required for international travel. In December 1985, WHO had recommended that testing and certification of international travellers is not warranted. Following this International Air Transport Association (IATA) had advised all its member airlines to adopt WHO guidelines, thus keeping a similar stand point against the screening of seropositive passengers without any kind of restriction on such travellers. Currently, European community countries permit infected cases freely within the Community. However they require declaration/medical information, from travellers of other countries. Some countries including US, Saudi Arabia, Cuba, China and Norway besides many others have banned the entry of AIDS cases and demand medical certification or declaration on HIV seronegativity. Strict immigration restrictions exist in Saudi Arabia, Cuba and China. Thailand has recently lifted ban on entry, as the disease had already spread rapidly in that country due to ineffective enforcement. Quarantining is legal in Norway while others deport the infected persons on discovery of infection. In India, quarantine against AIDS carrier is not resorted to. However under National AIDS control project, all the foreigners intending to stay in India for more than one year are required to undergo screening test for HIV within one month of arrival or produce AIDS free certificate issued by WHO collaborating laboratories.

Non availability of screening kits, cost factor, legal and political reasons, escape of detection during long window period, over-whelming number and undefined long quarantine period are several issues which enhance futility of immigration restrictions and quarantining policies. Several Western countries term these restrictions as discriminatory and ethically objectionable. An air traveller including crew in any case, has to be aware of these policies in relation to the country of his visit.

Conclusion and Recommendations

(a) Asymptomatic HIV seropositive crew may not essentially be fit for flying tasks, due to possibility of early neurological involvement.

(b) HIV screening of the crew is recommended at the time of employment and subsequently periodically to ensure flying fitness and resultant flight safety.

(c) Asymptomatic HIV seropositive passengers pose no contraindication to flying.

(d) Symptomatic AIDS cases require medical clearance and attendance to minimise on board complications.

(e) Seropositive cases with bullo-cavitary and degenerative lung diseases, haemophilia, diarrhoea and expectant mothers may not be accepted for air travel.

(f) Onboard hygiene practices need updating in view of biohazards from biospills and biowastes of the infected.

(g) Crew indoctrination on HIV infection, transmission and biosafety is recommended.

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