Opportunistic infection among HIV seropositive cases in Manipal Teaching Hospital, Pokhara, Nepal

Dhungel BA¹, Dhungel KU², Easow JM³, Singh YI⁴
¹Lecturer, Department of Clinical Microbiology, ²Lecturer, Department of Clinical Physiology, Nepal Medical College, Attarkhel, Nepal, ³Assistant Professor, ⁴Professor, Department of Microbiology, Manipal College of Medical Sciences, Pokhara, Nepal

Abstract

Background: Human Immunodeficiency Virus (HIV)/ Acquired Immunodeficiency Syndrome (AIDS) claimed more than 22 million deaths in the past two decades. About 10,000-15,000 Nepalese are expected to die of AIDS related deaths every year in the absence of effective treatment and care. Major cause of mortality and morbidity in HIV infected people is opportunistic infection (OI). Type of pathogen(s) responsible for OI varies from region to region.

Objective: This study attempts to find out OI among HIV seropositive patients visiting MTH, Pokhara.

Results: Tuberculosis (30%) was found to be most common OI followed by candidiasis (14%). Pulmonary tuberculosis (21.14%) was more common than extra pulmonary tuberculosis (8.92%). Oral candidiasis (8.92%) was more common than oesophageal candidiasis (5.35%).

Conclusion: The study findings indicate that immediate and strong action needs to be taken and guidelines and strategies to tackle the HIV AIDS problems are required and should be equally implemented to achieve a decline in the rate of prevalence of HIV.

Key words: HIV, AIDS, Opportunistic infection, Tuberculosis

Materials and methods

Pertinent clinical examination of all the cases coming to Manipal Teaching Hospital, Pokhara, Nepal was carried out. Enzyme Linked Immunosorbent Assay (ELISA, Biokit Bioelisa HIV-1+2 (rec)) and spot test (HIV Tridot, J. Mitra & Co. Ltd.) were used to screen the HIV suspected cases among those patients. HIV testing was done on the basis of clinical suspicion; chief complains of the patients being fever, chronic cough, chronic diarrhoea, weight loss and some patients had history of high risk behaviour as commercial sex workers/their clients and intravenous drug users. 54 HIV seropositive cases were recorded during the study period from March 2004 to September 2005. Clinical history, age, sex, occupation and relevant personal details of the HIV seropositive patients were recorded.

As per the symptoms and clinical presentation various samples such as sputum, cerebrospinal fluid (CSF),
stool, oesophageal brushing, lymph node aspirate, blood and urine were collected for the diagnosis of OI. The samples were processed according to the different pathogens and OI suspected\textsuperscript{12}. Necessary precautions were taken while collecting and processing the samples.

**Results**

During the study period from March 2004 to September 2005, 54 HIV seropositive cases were detected from a total of 681 suspected cases. These patients presented of various signs and symptoms like weight loss, loss of appetite, chronic diarrhoea, dysphagia, chronic cough etc. However some patients came for voluntary testing as well.

As per the symptoms and clinical presentations in HIV positive patients, different etiological agents causing opportunistic infections were identified as shown in Table 1. Tuberculosis (TB) was found to be the most common opportunistic infection (30%) out of which 70% were pulmonary and 30% extra pulmonary tuberculosis (Fig 1), followed by oral candidiasis (9%). Extra pulmonary TB included, central nervous system (18%), pleural (6%) and abdominal cavity (6%). About eleven percents of the HIV seropositive patients were asymptomatic. Twenty-seven percent of cases were categorized as ‘others’, which included the patient whose health was deteriorating and also showed clinical signs and symptoms as nephropathy, hemiplagia, psychological disorder, lymphadenopathy etc (Fig 2).

<table>
<thead>
<tr>
<th>Opportunistic infection</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuberculosis</td>
<td>17</td>
</tr>
<tr>
<td>Candidias</td>
<td>8</td>
</tr>
<tr>
<td>Pneumocystis carinii pneumoniae</td>
<td>2</td>
</tr>
<tr>
<td>Cryptosporidial infestation</td>
<td>2</td>
</tr>
<tr>
<td>Disseminated Cryptococcosis</td>
<td>1</td>
</tr>
<tr>
<td>Pneumococcal pneumonia</td>
<td>1</td>
</tr>
<tr>
<td>Bacteremia</td>
<td>1</td>
</tr>
<tr>
<td>Dermatophytoses</td>
<td>1</td>
</tr>
<tr>
<td>Hepatitis</td>
<td>2</td>
</tr>
<tr>
<td>Asymptomatic</td>
<td>6</td>
</tr>
<tr>
<td>Others</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>56(^*)</strong></td>
</tr>
</tbody>
</table>

\(^*\): out of total 54 HIV seropositive patients two patients had polymicrobial infection

**Fig 1:** Distribution of tuberculosis in different body sites.
Progression of HIV infection is largely dependent on the interaction between the viral and host factors. HIV brings about the destruction of CD4+ lymphocytes, which are the crucial cells in forming immune response to foreign antigens and it is also the primary target cells of HIV13,14. The progressive loss of these lymphocytes eventually results in the loss of an ability to mount desirable immune response to any pathogen13 and death of the patients in the terminal stage of HIV infection occurs14. Major cause of morbidity and mortality of such patients are opportunistic infections15. In the present studies, majority of the opportunistic infection were reported in the age group 30-39 years (38%). About four percents of the HIV seropositive patients had polymicrobial infections, which included oral candidiasis plus pulmonary tuberculosis in 2% and pneumococcal pneumonia plus cryptosporidial infestation in 2%. All these patients belonged to the age group 30-39 years. It may be because the diagnosis of OI was made only on clinical signs and symptoms or when illness is quite advanced and by then it may be polymicrobial in nature16.

Present study showed that tuberculosis (30%) is the most common opportunistic infections similar to the finding in Nepal and India6,11,17. From a total of 30% cases of tuberculosis, 70% were pulmonary tuberculosis in the present study. In a study done in Palpa, Nepal11, 40% HIV seropositive cases were reported to have tuberculosis out of which 75% had pulmonary tuberculosis and 25% had extra pulmonary tuberculosis11. Among the large number of reports available, pulmonary tuberculosis is reported more than any other clinical forms in HIV/AIDS patients18,19,20. Seventeen million people in Africa and more than four million people in South Eastern Asian region (SEAR) were infected with both HIV and tuberculosis in 200021. It is feared to be even more in the year 2006. Other major opportunistic infection in HIV positive patients, in the present study was oral candidiasis (9%). In a study in South India, oral candidiasis was reported in 59% of AIDS cases16. Candidiasis occurs frequently with HIV infection7. It has been reported that candidiasis occurs in up to 70% of HIV infected cases.4 Similar conclusions was obtained in one of the hospital based study in India, where the most common opportunistic infection in HIV infected cases is tuberculosis which is followed by candidiasis5.

In the present study 7% of HIV infected patients were also diagnosed to be suffering from meningitis due to Mycobacterium tuberculosis (5%) and Cryptococcus sp (2%). HIV coinfection with Cryptococcal sp has increased from 20% in 1992-1996 to 37% in 1996-2000 to 49% in 2000-2004 at All Indian Institute of Medical Sciences (AIMS)4. About two percent of HIV seropositive cases of present study were co infected with Hepatitis B Virus (HBV), similarly 2% of the HIV seropositive patients were coinfected with Hepatitis C Virus (HCV). All the coinfected patients were intravenous drug users. All three viruses HIV, HBV and HCV share common mode of transmission...
and common risk groups. Up to 90% of homosexual AIDS patients have markers of post or ongoing HBV infection. In one of the studies among Nepalese blood donors, HIV/HBsAg co prevalence was recorded in 0.033% cases. Higher co prevalence rate was reported in a study done in Delhi, India, 28% of the HIV infected patients harbor HBV simultaneously in contrast to 2% among control.

Two of the HIV seropositive patients were coinfected with Pneumocystis carinii pneumonia (PCP) in the present study. It is now established that PCP is one of the common opportunistic infections in HIV but the cases are relatively less documented, may be due to the lack of routine testing facility. PCP is rarely documented in India too. However, in a study in Nepal, 2 out of 13 HIV positive cases were found to have PCP. Eleven percent of HIV seropositive patients were asymptomatic in our study. These patients belong to Group II in Centre for Disease Control (CDC) classification of HIV infection. They remain well after seroconversion for many years before developing AIDS, but during this time they are infectious. Twenty-one percent of the HIV seropositive patients were grouped as “others” in the present study. These patients presented clinical features of Group III and IV of CDC classification of HIV infection. It includes those with AIDS or AIDS related complex (ARC). Among them 46% belonged to Subgroup A, 7% belonged to Subgroup B and 20% belonged to Subgroup E of group IV and 27% belonged to group III, CDC classification for HIV infection. (Fig 2)

As in the present study, pulmonary tuberculosis is the most common opportunistic infection in HIV seropositive patients in Nepal and India too. This may be due to endemicity of the causative agent. However determining the spectrum of OIs and the changing pattern over the years, in a given region requires adequate surveillance and good diagnostic services that are not available in many parts of the developing countries like Nepal. OI as oral candidiasis that can be diagnosed with reasonable accuracy by physical examination or by inexpensive laboratory techniques may be documented more frequently than OI requiring more cumbersome procedures of collection and diagnosis as PCP, viruses.

OI and reactivated latent infections seen in HIV infected persons will vary from region to region as OIs like Mycobacterium Avium Complex (MAC), Kaposi’s sarcoma are frequently reported in the developed world where as tuberculosis is the most common OI in HIV positive patients in our context. This could be due to few environmental exposures, difference in host susceptibility, prevalence of particular pathogens in an environment, earlier death owing to exposure to more virulent organisms, diagnostic difficulties, paucity of experienced / trained personnel to look for these infections.

By early 2005, more than 1800 cases of full blown AIDS were officially reported in Nepal and 0.5% of the adult population between the age of 15-49 years which is also the most prolific age group, are estimated to have HIV infection. In the absence of effective intervention, AIDS can be the leading cause of death in this age group, which would mean a colossal negative impact on country’s social and economical development. The impact of HIV/AIDS would surely increase poverty and vulnerability.

Conclusion
HIV/AIDS is the burning crisis worldwide. However, the approach for the management of the issue is dissimilar in different countries. In low prevalence countries like Nepal, USAID aims to deliver prevention activities while in high prevalence countries it is implementing a package that includes care and support activities. Nepal is signatory to the Millennium development goals, which has set year 2015 as target to be able to reverse the spread of HIV/AIDS. The chances to achieve the goal looks very remote as the data from National Centre for AIDS and STD control (NCASC) shows that in August 2004 there were 4164 HIV positive cases including AIDS, in July 2005 the number increased to 5201, further it increased to 7373 in July 2006 and the figure reached 10546 by December 2007. These fig suggest that Nepal still has a long way to go, immediate strong action to be taken, guidelines and strategy to tackle the HIV/AIDS problem to be strictly adhered to, so that the prevalence rate of HIV will decline.

References

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