Human Immunodeficiency Virus Infection: Does Highly Active Antiretroviral Therapy Influence Ear Nose Throat Manifestations?

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Abstract To study the change in trend of ear, nose and throat (ENT) manifestations in patients who were on treatment, before and after availability of highly active antiretroviral therapy (HAART). To find out the prevalence of ENT manifestations in human immunodeficiency virus (HIV) infected people who were on treatment, in the year of 2004 (before the availability of HAART) and in 2014 (after the availability of HAART). *Design* A combination of a retrospective and prospective study. *Setting* Anti Retroviral Therapy (ART) Center at Our Hospital. *Subjects* Patients with HIV infection on ART. *Methods* Retrospective review of case records of the patients visiting the center in the year 2004 and prospective study of the patients visiting in the year 2014 was conducted. Sample size was calculated as 200 in each group based on 95% confidence and 96% power. Convenience sampling was used in our study. The prevalence of ENT manifestations in HIV patients were found to be 86% in 2004 and 93% in 2014. Among ENT manifestations oropharyngeal manifestations were most common. Lesser the CD4 count more was the prevalence of disorders in oropharynx. Our study showed a high prevalence of ENT manifestations in HIV

patients who were on treatment, irrespective of the gap of 10 years and introduction of HAART therapy. Most common ENT manifestation both in 2004 and 2014 was oropharyngeal candidiasis. Lesser the CD4 count more was the prevalence of disorders in oropharynx.

Keywords Human immunodeficiency virus · HIV · Highly active anti retroviral therapy · HAART · ENT manifestations

Introduction

It is a well-known fact that, human immunodeficiency virus (HIV) infection can manifest with ear, nose and throat (ENT) diseases. It is said that, about 79% of patients with HIV infection suffer from ENT disorders at some point or the other [1]. In the initial phase, nose and throat infections are more and the patients usually suffer with these infections before the detection of the HIV [2]. About 50% of the HIV + cases have oral disorders. Dissemination of the HIV virus causes hypertrophy and hyperplasia of the lymph nodes in a patient with the compromised immunity [3]. Researchers have previously examined the effects of HIV infection on Oto-Acoustic Emissions [4]. Reduced hearing (of sensori-neural type) may be seen primarily due to the effect on central nervous system or cochlear nerve. As the prevalence of HIV infection is high and the morbidity due to ENT disorders is high among these patients, ENT consultants have an important role in the management of HIV cases.

Highly active antiretroviral therapy (HAART) increases the immunity of the patient, thus reduces mortality, morbidity and secondary infections in HIV patients [5]. As stated above, studies conducted on HIV patients who were

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on treatment before the introduction of HAART have shown that, oral and nasal manifestations are highly common in HIV. Review of Indian literature showed that, there are not many studies focused on finding out if HAART has influenced the ENT manifestations. Hence we chose to carry out this study.

Materials and Methods

Study Design and Setting and Study Duration

This cross sectional study was done at a tertiary care hospital. A retrospective study was performed for cases who were getting treatment from ART Center in the year 2004 (before the availability of HAART) and for the patients who were on HAART, prospective study was done in the year 2014.

Study Population, Sample Size and Sampling Technique

The study subjects were HIV positive patients, who were receiving treatment from ART center at our hospital. With 95% confidence level and 96% power, a sample of 200 each in these years was arrived at. Convenience sampling was used in our study.

Data Collection

The ethical clearance from the institutional ethics committee was obtained and permission was also obtained from the Medical Superintendent to access the medical records of the patients.

For retrospective study, a semi-structured proforma regarding ENT manifestations was used to retrieve the data from the case files. For the prospective study, all HIV infected patients attending ART center were selected and referred to outpatient ENT clinic where they were examined by ENT specialist.

An ENT consultant documented, in a proforma, the demography of the patients, their complaints, examined them and also noted the results of their lab-reports.

Data Analysis

Descriptive statistics were calculated with the mean for variables that were normally distributed. To compare proportions, Chi square (χ^2) statistics was used. Statistical analyses were performed with SPSS software. A *P* value less than 0.05 was considered statistically significant.

Results

Four hundred cases were studied. Most of the patients belonged to the age group of 31–40 years. Our study had 296 males and 104 females. Seventy-four percent of the participants were married. Incidence of alcohol ingestion and smoking were found to be 62.6 and 58.9% respectively. Most of the patients in 2004 were given dual drug therapy i.e. Zidovudine and Lamivudine, while in 2014 most of the patients were on Zidovudine, Lamivudine and Nevirapine/Efavirenz or PIs. The prevalence of ENT manifestations was found to be 86.0% in 2004 whereas 93.0% in 2014.

Most common presenting complaints were constitutional symptoms (fever, cough, weight loss, anorexia) 89% in 2004 and 93% in 2014. Among ENT manifestations, oropharyngeal manifestations were most common and among them oropharyngeal candidiasis was the most common, 56% in 2004 and 53% in 2014. Second among them was cervical lymph nodes enlargement, 48% in 2004 and 59% in 2014. The mean CD4 count was 298 ± 100.4 cells/ml in 2004 and 312 ± 92.6 cells/ml in 2014. The CD4 count was < 200 cells/ml in 10% of the patients in 2004 and 8% of patients in 2014. Lesser the CD4 count more was the prevalence of disorders in oropharynx but not statistically significant.

Clinical examination was performed, out of which most common findings were seen in oral cavity. ENT manifestations in HIV patients are mentioned in Table 1. Tumors and infections associated with HIV patients are mentioned in Table 2. Of these HIV cases, there were 126 (63%) cases of tuberculosis (pulmonary and extra-pulmonary) on treatment in 2004 whereas 114 (57%) in 2014.

Discussion

In our study, prevalence of ENT manifestations before the availability of HAART, was found to be 86.0% in 2004, while after introducing the HAART, prevalence of ENT manifestations was 93.0% in 2014. The study done in Nigeria in 2010 showed 82.8% prevalence [6]. In our study, most of the cases were 31–40 years old. This is similar to the findings of study done in Iran with mean age of 35.76 ± 11.2 years [7], while in study conducted in Muhimbili hospital showed that majority of the patients were found to be in the age group of 40–49 years [8]. Three-fourth of our study population were males, while a study conducted in Nigeria showed almost equal sex distribution [6]. Our study showed that more than three-quarter of the respondents were married. Most studies have not given the details of the marital status of the patients,

Table 1 ENT manifestations among HIV patients

ENT manifestations	Group 1 (2004)	Group 2 (2014)	P value
Total number of cases	200	200	
<i>Oral</i>			
Recurrent aphthous ulcers	20	64	0.001
Dysphagia/odynophagia	20	64	0.001
Oral candidiasis	112	106	0.158
<i>Otological</i>			
Hearing loss	0	6	
Tinnitus	0	0	
Vertigo	4	18	0.002
Ear discharge	0	8	
Otalgia	0	16	
Otitis externa	0	5	
<i>Nasal</i>			
Nasal blockage	0	28	
Epistaxis	2	10	
<i>Neck</i>			
Cervical lymphadenopathy	96	118	0.027
Vocal cords palsy	2	2	

Table 2 Tumours and infections in HIV patients

ENT conditions	Group 1 (2004)	Group 2 (2014)	P value
Total number of cases	200	200	
<i>Tumours</i>			
Nasopharyngeal carcinoma	2	2	
Non-Hodgkin's Lymphoma	0	2	
Total tumours	2	4	
<i>Infections</i>			
Oral candidiasis	120	106	0.158
Acute bacterial/viral pharyngitis	36	42	0.449
Acute/chronic sinusitis	28	23	0.454
Total infections	184	171	
<i>Others</i>			
Benign lymphoepithelial parotid cysts	0	4	
Plunging ranula	0	2	
Total	196	198	0.411

while the study of Nigeria shows 85% patients to be married [6]. Majority of the patients were manual laborers (49.4%) and were local residents. Incidence of alcohol ingestion and smoking were found to be 62.6 and 58.9% respectively in our study, while the Nigerian study showed that only 18% patients did smoking while 21% regularly had alcohol, which is far less than that in our study. In our study, the mean CD4 count was 298 ± 100.4 cells/ml and was < 200 cells/ml in about 10% of the patients, while in

the study done in Iran, they were 310.89 ± 294.9 cells/ml, and in 42.9% respectively [7].

Our study showed that almost all patients come with constitutional symptoms. While study done in Nigeria, showed recurrent nasal discharge (65.8%) as the most common presenting symptom, while constitutional symptoms were found in only 47.2% [6]. Amongst the clinical finding, oral candidiasis was the most common finding, which resembles the result of a study done in India [2].

While, a study in Italy showed that the most common manifestations were cervical lymphadenopathies, oropharyngeal candidiasis, adenotonsillar diseases, otitis media and diffuse parotid swelling [3]. In our study, incidence of oral aphthous ulcers, dysphagia and vertigo were found to be significantly increased in the year of 2014.

In our study, we found that there is no improvement in the ENT manifestations after the introduction of HAART, while some studies have concluded that HAART led to decrease in the prevalence of all ENT manifestations including infections, tumors and led to rise in CD4 counts [3]. A study done in Iran showed that there is no relation between HAART and ENT manifestations [7].

There are certain limitations in our study. As the data collection for cases from year 2004 was retrospective, there might have been incomplete details in the records. In both the groups, duration for which the patients were on retroviral therapy was not taken into account, which may have influence on the ENT manifestations of the patients.

Conclusion

Our study showed a high prevalence of ENT manifestations in HIV patients who were on treatment, irrespective of the gap of 10 years and introduction of HAART therapy. Oropharyngeal candidiasis was the most common ENT manifestation in both the groups. Lesser the CD4 count more was the prevalence of disorders in oropharynx.

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Compliance with Ethical Standards

Conflict of interest All authors declare that they have no conflict of interest.

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