ORIGINAL RESEARCH PAPER
Volume - 11 | Issue - 11 | November - 2022 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

OPPORTUNISTIC INFECTIONS IN POSTMORTEM CASES – A CASE STUDY

Pathology

Dr Navneet Kaur Senior Resident, Department of Pathology, Government Medical College, Amritsar

Dr Neetika Kaushal* Senior Resident, Department of Pathology, Government Medical College, Amritsar
*Corresponding Author

ABSTRACT

Opportunistic infections are infections that take the advantage of the opportunity offered by weakened immune system. The most common associated immunocompromised condition is HIV/AIDS. Other causes of immunosuppression are infections, diabetes, steroid intake, malignancy, drugs and chronic diseases. The aim of this study is to determine the spectrum of opportunistic infections in post mortem cases. The study was conducted in Department of Pathology, GMC Amritsar from 2019-2021 in which 200 postmortem cases which were sent for histopathological examination were studied including known cases of HIV positive. The organs received after autopsy were grossed and processed. The sections were made and stained with routine Haematoxylin and Eosin stain. Microscopic examination of the cases was done and opportunistic infection involving any organ was reported. Out of 200 post mortem cases, 28 cases were diagnosed with opportunistic infections out of which 15 cases were associated with known HIV positive cases. The most common opportunistic infection in those cases was Tuberculosis. The study concluded close association of immunosuppression with Opportunistic infection with most common cause being HIV/AIDS.

KEYWORDS

Disseminated, Opportunistic, HIV-AIDS

INTRODUCTION

Opportunistic infections are infections which occur more frequently and severely among individuals with weakened immune system(1). It is most commonly associated with HIV/AIDS. The epidemic of HIV remain serious public health concern (2). In 2018, as estimated 37.9 million people globally were living with HIV (3) and all HIV infected people are susceptible to develop wide range of opportunistic infections (4). Opportunistic infections are leading cause of morbidity and mortality among HIV patients contributing to 94.1% HIV related deaths (5,6,7,8).

In middle income countries, the most frequently occurring opportunistic infections are Tuberculosis, Candidiasis, Varicella zoster, Pneumocystis pneumonia, bacterial pneumonia, Herpes zoster and dermatophyte infections (9,10). Most opportunistic infections are easily preventable and treatable with cost effective interventions. A decrease in CD4 count in HIV is at least partially responsible for the profound immunodeficiency that lead to various opportunistic infections (11). AIDS related mortality and morbidity, which is significantly higher in number as compared to other diseases is actually due to opportunistic infections rather than HIV itself (12). There are wide range of opportunistic infections affecting different systems like respiratory, gastrointestinal, urinary tract infections, STIs and disseminated infections (13).

Despite the availability of ART, opportunistic infections continue to cause considerable mortality and morbidity for following reason- (a) Many patients are unaware of their HIV status and seek medical care when opportunistic infections become initial indicator of disease, (b) certain patients are aware of their HIV status but do not take ART because of psychosocial or economic factors and (c) certain patients prescribed ART fail to attain adequate virological and immunological response because of factors related to adhere, pharmacokinetics or unexplained biological factors.

Although deaths have decreased since implementation of ART, opportunistic infections remain a leading cause of morbidity and mortality in HIV infected person (14).

AIM

To study opportunistic infections in postmortem cases and its association with immunocompromised status of the patient.

MATERIALS AND METHOD

This study was conducted in Department of Pathology, Government Medical College ,Amritsar, Punjab.

STUDY PERIOD – 1.5 years
SAMPLE SIZE- 200 postmortem cases
STUDY DESIGN- Prospective comparative study.

RESULTS

A total of 200 post mortem cases were included in the study out of which 145 (72.5%) were males and 55 (27.5%) were females. Age group distribution was done and the maximum number of cases were in 18- 40 years of age group.

TABLE 1: Age group distribution of postmortem cases (200 cases) and their HIV status

AGE (in years)	HIV POSITIVE CASES	HIV UNKNOWN/NEGATIVE CASES	TOTAL
≤ 17 YEARS	0 (0%)	02 (1%)	02 (1%)
18-39 YEARS	15 (7.5%)	92 (46%)	107 (53.5%)
40-59 YEARS	03 (1.5%)	76 (38%)	79 (39.5%)
≥ 60 YEARS	0 (0%)	12 (6%)	12 (6%)
TOTAL CASES	18 (9%)	182 (91%)	200

The study conducted included 18 (9%) HIV positive cases and 182 (91%) cases with HIV negative or unknown HIV status.

Amongst 18 cases with HIV positive status, 13 were diagnosed with opportunistic infections and 15 cases with HIV unknown /Negative status had opportunistic infections.

TABLE 2: Number of opportunistic infection in association with HIV status

HIV STATUS	OPPURTUNITIC INFECTION PRESENT	OPPURTUNISTIC INFECTION ABSENT	TOTAL
POSITIVE	13 (6.5%)	05 (2.5%)	18 (09%)
NEGATIVE/UNKNOWN	15 (7.5%)	167 (83.5%)	182 (91%)
TOTAL CASES	28 (14%)	172 (86%)	200

In this study 28 cases of opportunistic infections were reported if which 13 had known HIV positive status.The most common organ involved by opportunistic infection in our study was Respiratory system and 5 cases of disseminated diseases were reported.

The opportunistic infections diagnosed were 12 cases of Pulmonary Tuberculosis, 4 cases of disseminated tuberculosis, 9 cases of bacterial pneumonia,1 case of Cryptococcal meningitis, 1 case of esophageal candidiasis and 1 case of disseminated Candidiasis.

TABLE 3: Number of cases in Opportunistic Infections

OPPURTUNISTIC INFECTION	NUMBER OF CASES
Pulmonary Tuberculosis	12
Disseminated tuberculosis	04
Bacterial Pneumonia	09

Cryptococcal Meningitis	01
Esophageal Candidiasis	01
Disseminated Candidiasis	01
TOTAL	28

Microscopic findings of tuberculosis show granulomas comprising of epithelioid cells, lymphocytes and Langhan's giant cell. In cases with disseminated tuberculosis; liver, spleen, kidney and brain were involved with features of granuloma with necrosis. In the case reported with disseminated candidiasis, fungal hyphae and spores were seen infiltrating heart, brain, lung and liver with chronic inflammatory infiltrate. In Cryptococcal meningitis, meninges were seen involved with spores.

DISCUSSION

In this study, HIV positive status in majority of the patients were in the age group 18- 40 years. This is consistent with the studies conducted in India and abroad (15,16).

It was seen that the frequency of opportunistic infections was highest in sexually active age groups and in males. Therefore the urgent need in the society is to bring awareness in the youth and productive age group of society regarding opportunistic infections.

In the study conducted Tuberculosis was the most common opportunistic infection similar to the study of Sharma(17) and Vajpayee(18). HIV-TB coinfection is a serious problem worldwide. Tuberculosis is a systemic infection caused by Mycobacterium tuberculosis affecting many organs and tissues. In its disseminated form, 2 or more non contiguous sites are involved. Tuberculosis is considered important cause of morbidity and mortality in immunocompromised adults including HIV. Of all the disseminated TB cases found at autopsy 33-80% were missed antemortem(19).

In this study 1 case of disseminated candidiasis was diagnosed in 22 year old male who was HIV positive. It is well known that infection due to candida remain frequent in immunocompromised patient, being Candidemia the most relevant but chronic infection. Disseminated candidiasis is the distinct form of systemic candida infection with predominant involvement of liver, spleen and kidney (20). The postmortem candidemia is likely a reliable indicator of undetected premortem candidemia which is important contributor to death in these patients (21).

In our study opportunistic infections are linked to compromised immunity in individuals, HIV being the most common which was similar to study by Kumar R(22).

CONCLUSION

This study demonstrated that opportunistic infections were pervasive in immunosuppressed individuals especially with HIV/AIDS. Opportunistic disease screening and prevention strategies should be done to strengthen the health system as it is leading cause of death in patients with HIV.

REFERENCES

1) Centres for disease content and prevention(CDC) : AIDS and opportunistic infections. Available at http://www.cdc.gov/hiv/ basics/livingwithhiv/ oppurtuni sticinfections.html2018.
2) Gayle HD, Hill GL. Global impact of immunodeficiency virus and AIDS. Clin Microbiol Rev. 2001;14(2):327-35.
3) UNIAS: Global HIV and AIDS statistics- 2019 fact sheet available at http://www.uniads.org/en/resources/factsheet;2019.
4) World Health Organization : Global health sector strategy on HIV, 2016-2021. Available at https://www.who.int/news-room/fact-sheets/detail/hiv-aids;2019.
5) Candiani TM, Pinto J, Cordosco CA, Carvalho IR, Dias AC, Carneiro M, Goulart EA. Impact of highly active antiretroviral therapy (HAART) on incidence of opportunistic infections, hospitalization and mortality among children and adolescents living with HIV/AIDS in Belo Horizonte, Minas Gerais state, Brazil. Cad Saude Publica. 2007;23(Suppl 3): S414-23.
6) Haileamlak A, Hagos T, Abebe W, Abraham L, Asefa H, Teklu AM. Predictors of hospitalization among children on ART in Ethiopia: A cohort study. Ethiop J Health Sci.2017;27(Suppl 1)53-62.
7) Kaplan JE, Hu DJ, Holmes KK, Jaffe HW, Masur H, De Cock KM. Preventing Opportunistic infections in human immunodeficiency virus infected persons-implications for the developing world. AM J Trop Med Hyg. 196;55(!):1-11.
8) Mermin J, Were W, Ekwarn JP, Moore D, Downing R, Behumbiize P, Lule JR, Coutinho A, Tappero J, Bunnell R. Mortality in HIV infected Ugandan adults receiving ART and survival of their HIV uninfected children: A prospective Cohort study. Lancet. 2008;371(9614):752-9.
9) Alarcon JO, Freimanis- Hance L, Krauss M, Reyes MF, Cordosco CA, Mussi Pinhata MM, Cordosco E, Hazra R. Oppurtunistic and other infection in HIV infected children in Latin America compared to similar cohort in the US. AIDS Res Hum Retrovir.2012;28(3):282-8.
10) Gona P, Van Dyke RB, Williams PL, Danknew WM, Chernoff MC, Wachman SA, Seage GR. Incidence of Opportunistic and other infections in HIV infected children in the HAART era. Jama. 2006:296(3):292-300.
11) Talib VH, Khurana SK, Pandey J, Verma SK. Current concepts: Tuberculosis and HIV infection. Indian J Pathol Microbiol. 1993;36:503-11.
12) Madigan MT, Martinko JM, Parker J. 11th edition. Upper Saddle River(USA) : Prentice Hall;2006. Brock Biology of Microorganisms; pp. 875-84.
13) Brooks GF, Butel JS, Morse SA. 23rd ed. Boston: Mc Graw Hill;2004. Jawetz, Melnick, Adelberg's Medical Microbiology; pp.605-19.
14) Nagender Devulapally. Deepak Pandharpurkar, B. Gonthami, Gudikandula Krishna. A clinical study on opportunistic infections among HIV/AIDS patients admitted in the department of General Medicine of a tertiary care hospital. International Journal of Contemporary Medical Research 2019;6(4):D4-D8.
15) Sircar AR, Tripathi AK, Choudhary SK, Mirsa R. Clinical profile of AIDS: A study at a referal hospital. J Assoc Physicians India. 1998;46:75-8.
16) Destura RV, Berba RP, Mendoza Mt, Velmont MA, Ecarma RM, Zoleta LB,et.al. Profile of HIV/AIDS patients at Phillippine General Hospital: Revising 9 years of clinical experience. Philipp J Microbiol Infect Dis.2003;32:11-21.
17) Sharma SK, Kadhiravan T, Bango A, Goyal T, Bhatia I, Saha PK. Spectrum of clinical disease in a series of 135 hospitalised HIV- infected patients from north India. BMC infect Dis.2004;22(4):52.
18) Vajpayee M, Kanswal S, Seth P, Wig N. Spectrum of opportunistic infections and profile of CD4 counts among AIDS patients in North India. Infection. 2003;31:336-40
19) Tolovera W, Miranda R, Lessnan KKL, Kalpholz A. Extrapumlnonary tuberculosis. In : Freidman LN ed Tuberculosis current concepts and treatment. 2nd ed. Boca Ronton Fla: CRC Press;2001:518.
20) Catano JC, Taffin CC. Chronic Disseminated Candidiasis: The new face of old disease. J Clin case Rep.2012;2:189.
21) Thomas JL, Gilchist KB, Richard E, Nand K, Peter N, Stephen A. Post mortem Candidemia marker of disseminated disease. J Clin Pathol.2010 Apr; 63(4):337-40.
22) Kumar R, Gandhi S, Rao V. Clinical profile to HIV patients with opportunistic infection. A descriptive case study- Int J Appl Basic Med Res. 2015 May- AUG; 5(2):119-23.