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## **Safety Considerations for Human Immunodeficiency Virus Infection in Pathology Department Workers Exposed to Infected Materials and Patients**

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**ABSTRACT:** The risk of occupational transmission of human immunodeficiency virus (HIV) to health care workers with intensive exposure to HIV infected patients was considered, because the author autopsied an acquired immunodeficiency syndrome (AIDS) patient in February 1990. A few case reports suggested that the risk of HIV infection incurred when health care workers are exposed to blood or body fluids of HIV infected patients through accidental needle-stick exposure or contamination of an open wound or mucous membrane. For the prevention of AIDS, the pathologists and staff must use double-gloves, gown, mask, apron, shoes cover, medical cap, undershirt, pant, and goggle when in contact with AIDS patient-related materials during postmortem procedure and treatment of surgical specimens.

### **HISTORY OF AIDS**

In June and July of 1981, the Centers for Disease Control (CDC) reported the cases of an extremely uncommon opportunistic infection of *Pneumocystis carinii* pneumonia, other opportunistic infections, and a very rare skin tumor of Kaposi's sarcoma. They were first reported in New York and California in epidemic proportions among previously healthy young homosexual and bisexual men who were not previously known to be predisposed to these diseases<sup>2, 3</sup>. The opportunistic infections seen in these patients essentially never occur in people with normal immune function and it is a fact that these patients had a severe immune defect. Very high incidence of Kaposi's sarcoma was seen in this disease. Kaposi's sarcoma is an unusually aggressive form of this disease and has been reported to occur at an increased frequency among patients receiving immuno-

suppressive drugs. Therefore, Kaposi's sarcoma in this disease also provided clinical evidence for a cellular immune defect. In early 1982, this disease entitled specific pattern of immunodeficiency which was named the acquired immunodeficiency syndrome (AIDS) by the Centers for Disease Control (CDC). The term "syndrome" has been used because AIDS does not constitute a single illness which has opportunistic infections and neoplasms associated with acquired disorder of cell-mediated immunity. When the early cases of AIDS were reported, many hypotheses were proposed to explain the possible causes of this syndrome associated with cell-mediated immune dysfunction. Epidemiologic evidence strongly supported the hypothesis that AIDS was due to a specific viral agent. The common cell-mediated immunodeficiency was characterized by the specific depletion of the T-helper lymphocytes. AIDS was caused by human retrovirus which was initially discovered and isolated from AIDS

patients in 1983 at the Institute Pasteur in Paris by Luc Montagnier and his associates, and named lymphadenopathy associated virus (LAV)<sup>11</sup>. Several months later in 1984, retrovirus was cultured from AIDS patients in the United States of America by Robert Gallo and his colleagues at the National Cancer Institute, and named human T-cell lymphotropic virus type III (HTLV-III)<sup>7, 13</sup>. The virus has been renamed the human immunodeficiency virus (HIV) by the International Committee on the Taxonomy of Viruses in 1986.

Several case investigations suggested that the risk of HIV infection incurred when health care workers were exposed to blood or body fluids of HIV infected patients through accidental needle-stick exposure or contamination of an open wound or mucous membrane. The risk of occupational transmission of HIV to health care workers with intensive exposure to HIV infected patients was considered, because the

authors autopsied AIDS patient in February 1990.

### PREVENTION OF HEALTH CARE WORKERS

Transmission of the immunodeficiency virus (HIV) has been under investigation since the epidemic of AIDS was recognized in 1981. The occupational risk of infection by this kind of exposure is extremely low, considering the very few documented cases reported among the large number of health care workers who have been exposed to blood infection with HIV<sup>5, 8, 16</sup>. The virus has been isolated from the blood<sup>1, 7, 10</sup>, semen<sup>18</sup>, tears<sup>6</sup>, saliva<sup>9, 11</sup>, breast milk<sup>14</sup>, vaginal secretion<sup>15, 17</sup>, and cerebrospinal fluid<sup>62</sup>, from HIV infected patients. Although the virus has been detected in very low titers in these body fluids, they serve as significant vehicles for the transmission of HIV infection. Transmission of HIV by sexual contact with infected individ-



**Fig. 1.** Front of dissector: The author wear double-gloves, gown, mask, goggle, apron, shoes cover, undershirts, pant, and medical cap.



**Fig. 2.** Back of dissector: The author wear double-gloves, gown, mask, goggle, apron, shoes cover, undershirts, pant, and medical cap.

uals, by direct inoculation of contaminated blood products and by perinatal exposure in children born to infected mother is well documented. The epidemiology of transmission of HIV is similar in some respects to transmission of hepatitis B virus which have prompted considerable concern regarding the possibility of HIV transmission to health care workers through occupational exposures to infected patients, blood, and body fluids. The risk of health care workers who have had frequent contact with HIV infected materials by direct skin, or mucosa exposure to HIV infected blood or other body fluids, or contact with open wounds, is high. However, the chance of occupational transmission of HIV is very low. In order to prevent potential HIV infection, it is essential that all health care workers observe the same precautions used to protect themselves against accidental infection with hepatitis B virus by using surgical gloves when handling all patients' blood and body fluids. Extreme care should be taken to avoid accidental wounds from sharp instruments contaminated with potentially infectious materials or from needles used on AIDS patients, and to avoid contact of open skin lesions with materials from AIDS cases. During postmortem procedures, the pathologists and staff should follow the general safety consideration as well as the guidelines described for hepatitis B virus infected materials. Double-gloves, gown, mask, goggle, apron, shoes cover, medical cap, undershirt, pant, and hand washing are required when in contact with AIDS patient-related materials (**Figs. 1 and 2**).

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