HIV Infection and Breast Cancer are Two Major Killers of Thai Women

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In Thailand, acquired immunodeficiency syndrome (AIDS) and breast cancer are two pressing issues in women's health. Thailand experienced its first case of AIDS in 1984. Approximately 800,000 Thais were infected with HIV in 1995 and 1 million Thais became infected by the year 2000. There have been 5 major epidemic waves: among male homosexuals (started 1984-5), intravenous drug users (started 1988), female commercial sex workers (started 1989), male clients (started 1990), and housewives and the newborn (started 1991). The spread of the human immunodeficiency virus (HIV) continues unabated and women now constitute almost one half of all newly reported AIDS cases. Meanwhile, breast cancer is becoming the most common cancer in Thai women, representing 20 % of all new cancers in women. According to **Professor Dr. Pornchai O-charoenrat** from Department of Breast Surgery, Siriraj Hospital Medical School, doctors are seeing more cases of breast cancer and other breast abnormalities in seropositive women. This raises a number of major issues as follows: 1) Does HIV increase breast cancer risk?; 2) What is the behavior of breast cancer in the HIV+ host?;

3) Does HIV infection affect outcome of breast cancer treatment?; 4) What other breast pathologies may be encountered in patients infected with HIV?

Infection with HIV may result in an increased susceptibility to malignant neoplasms by means of a decreased immunologic response to tumor cells and an increased susceptibility to oncogenic viral infection. The possible relationship of HIV infection and the resulting immune depression with breast cancer has been addressed in several cohort and record linkage studies. Surprisingly, there is a trend toward a deficit of breast cancer among HIV-infected individuals as reported by investigators from both African and Western countries. The deficit of breast cancer among females in seropositive women may be explained by their overall lower risk (lower social class, early age at first childbirth, high parity, and low alcohol intake) and the possibility that immunodeficiency may protect HIV-infected persons from developing breast cancer. Meanwhile, investigators have been searching for other virus(es) that may be responsible for pathogenesis of breast cancer. Herpes simplex virus, hepatitis C virus, and Epstein-Barr virus have been demonstrated in breast carcinoma tissues although their role is still unknown. The mouse mammary tumor virus (MMTV) is a retrovirus known to cause breast cancer in mice although the human form of MMTV has yet been identified. Recently, the novel markers, RAK antigens, which are expressed in 95-100% of breast cancer cases, have been shown to exhibit molecular, immunologic, and genetic similarities to the proteins encoded by HIV-1. This suggests that a retrovirus

related to HIV-1 may be associated with breast cancer. In summary, cancers occurring in the setting of HIV infection can be divided into three groups. The first includes AIDS-defining neoplasms such as Kaposi's sarcoma (tumor of blood vessel) and non-Hodgkin's lymphoma (tumor of lymph gland) particularly primary brain lymphoma. The second group includes malignancies more prevalent in patients with HIV infection such as squamous cell carcinoma of the anus, and cervical cancer. A third group in which the incidence of these malignancies is not influenced by HIV infection such as breast cancer.

Breast cancer in HIV-infected patients presents at a relatively early age, with increased bilateral disease, unusual histology and early metastatic spread with a poor outcome. Early reports described advanced stage diseases and uniformly poor prognoses as the result of multiple factors, including the debility of patients with advanced AIDS and poor compliance with treatment regimens. Recent series in the era after highly active antiretroviral therapy describe more favorable prognoses and long-term survivors. The presence of HIV infection will significantly influence the toxicity of the chemotherapy. It is also possible that chemotherapy can adversely impact on the natural history of HIV. Adjuvant therapy is safer and more effective using anti-hormonal therapy rather than standard chemotherapy regimens, even in cases of locally advanced disease. Patients for breast conservation requiring adjuvant radiation therapy must be carefully chosen, in view of the poor compliance with radiation.

HIV may directly and indirectly affect the breast leading to increased incidence of benign nipple disease (sore nipples, cracked nipples, and eczema) among HIV-positive breast-feeding mothers. Inflammation of the breast (mastitis) can result in a higher HIV viral load in breast milk and may increase the rate of mother-to-child transmission. Other common infections include tuberculous mastitis and pyogenic abscesses that may lead to fatal septicemia. Enlargement of lymph gland as part of a progressive generalized lymphadenopathy or secondary to an opportunistic infection can be found. In summary, we know the following about HIV and breast cancer: 1) HIV infection is not permissive for breast cancer, 2) breast cancer can be treated effectively and safely in the HIV host, 3) increased rates of benign and malignant breast disease can be found in HIV setting. We should also bear in mind that breast symptoms could be the initial signal of HIV infection.