TOBACCO SMOKING and HIV DISEASE

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Smoking and HIV Infection

People who smoke tobacco are more likely to become HIV-infected or participate in high-risk behaviors that facilitate HIV transmission than those who do not. This has been shown in groups as diverse as Haitian women, Californian gay men, and teenagers from 0regon.[1] Often attributed to people ignoring prevention messages, the association between smoking and H IV infection may in fact have a biological basis. In many, smoking degrades the lining of the oral cavity or leads to minuscule ulcerations that could facilitate HIV transmission.

Smoking has a number to known negative biological effects that may affect the progression of HIV disease. These include decreased lung function, chronic inflammatory disease of the lower airways, gum and oral diseases such as periodontis, various cancers, and a lowered ability to heal wounds.

Along with the chronic inflammation of the lungs, which can lead to chronic bronchitis or emphysema, smoking causes an elevation of the body's white blood cell count, a condition known as smoker's leukocytosis.

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Smoking and Disease Progression

Because of smoking's general effects on the immune system and the body , some researchers have hypothesized that smoking in early HIV disease may increase risk of progression to AIDS by activating T4 cells, thus facilitating HIV replication.[2] A study from the Food and Drug Administration (FDA) provides preliminary evidence that, at least in the test tube, constituents of cigarette smoke induce HIV production in chronically-infected cells.[3]

A British group of researchers retrospectively reviewed the smoking status of people with AIDS in a lung study they were conducting. They saw a more rapid progression to AIDS and a higher risk of developing Pneumocystis carinii pneumonia (PCP) in those who were smokers than in nonsmokers (a group that included former smokers). Further analysis showed no difference between smokers and nonsmokers in progression to non-PCP AIDS. The authors recommend that, in addition to T4 count, the effects of smoking on lung function be taken into account when prescribing PCP prophylaxis, since smokers' decreased lung function seems to place them at a higher risk of developing PCP than their nonsmoking counterparts.[4]

Other studies have found little or no effect of smoking on disease progression. A study of Haitian men and women found that smoking status was not associated with changes in T 4 cell percentages or beta-2-microglobulin (a measure of immune system activation).[5] A long-term follow-up study of 202 gay men found that T4 counts and serum beta-2-microglobulin levels were elevated in smokers compared to nonsmokers following seroconversion. However, this difference in immune parameters disappeared after two years and had no impact on clinical outcomes such as AIDS or the development of PCP.[6] Another study of 249 men in Canada with HIV found no association between smoking and the development of AIDS.[7]

A long-term study of HIV-infected and uninfected men found that, across the board, smokers had higher T4 counts; however, this difference was less marked for those who were HIV-infected. The authors also found that of those participants who seroconverted, smokers' T4 counts fell faster than nonsmokers' counts.[8]

Smoking and Opportunistic Infections

At the Vlllth International Conference on AIDS in Amsterdam last July, a few abstracts associated smoking with the development of certain opportunistic infections and poor outcomes. A group from California found that people diagnosed with cryptococcal meningitis were four times more likely to have smoked within the last 30 days than people diagnosed with other opportunistic infections. The organism that causes the meningeal infection (inflammation of the lining of the brain), Cryptococcus neoformans, is believed to enter the body through the lungs. The authors postulate that smoking-impaired lung defenses might allow the organism to colonize the lungs, which precedes its spread to the central nervous system.[9]

In an abstract dealing with oral lesions in smokers and nonsmokers, another California group found that smoking was associated with a higher risk of developing oral thrush, but a lower risk of developing oral ulcers.[10] And in a second study to explore the association of smoking with the development of PCP, heavy smokers were found to be over three times more likely than light smokers to develop the infection. Intermediate smokers were also found to have an increased risk of PCP, regardless of T 4 count, gender, ethnicity, or use of PCP prophylaxis.[11]

Smoking and Healing

Cigarette smoking has been observed to impair the healing of wounds, although few studies have been done to confirm this conclusion. Smoking has been associated with slower healing of ulcers, oral injuries, mastectomies, and facelifts, as well as increased scar formation, postoperative complications and recovery time.[12] Proposed reasons for this finding are the constriction of blood vessels induced by cigarette smoke and the reduced proliferation of red blood cells (which carry oxygen), macrophages, and fibroblasts (which are involved in the healing of wounds). At the same time that there is less oxygen and blood flow, smoking increases the heart rate and the oxygen demands of tissues. It also interferes with enzymes crucial to healing and inhibits the growth of new skin cells (epithelial cells). The combined effects of these processes lead to a recommendation that "smokers should be advised to stop smoking prior to elective surgery or when recovering from wounds resulting from trauma, disease, or emergent surgery for at least two weeks."[13]

Smoking and HPV.Related Anogenital Cancers

People with HIV are at increased risk for developing anogenital cancers and precancerous abnormalities due to their suppressed immunity and high incidence of infection with the human papilloma virus (HPV). HPV is thought to cause most genital warts, lesions, and cervical or anal cancers. However , the development of anogenital cancers and lesions, especially cervical cancer, is associated with factors other than just HPV infection. Suppressed immunity is one of them, but so is poor nutrition. Vitamin C and beta-carotene seem especially important.[14] Smoking dramatically reduces the body's stores of vitamin C, and smoking has been associated with the development of precancerous cervical lesions and cervical cancer.[15] T obacco products (like nicotine) are also found in high concentrations in cervical secretions, where they may act as carcinogens or suppress local immunity.[16] Former smokers do not have as high a risk of cervical cancer as current smokers.

While there is no study that shows that quitting smoking decreases the risk of anogenital cancer or lesions in people with HIV, quitting smoking is known to reduce the risk of cervical cancer in women in general, especially in women who have precancerous lesions. The same would very likely hold true for men with HPV-related anal or penile lesions. Quitting smoking is something that people with HPV and HIV who are concerned about anogenital cancer can do to reduce their risk of cancer.[17]

One abstract presented at the Vlllth International Conference on AIDS found an association between abnormal anal cell growth (running the spectrum from lesions to warts to cancer) and smoking in men with late-stage HIV disease.[18] Joel Palefsky , M.D. found that in addition to

HIV infection and T 4 counts of under 200, current smoking was associated with a 13-fold higher risk of developing anal cellular abnormalities in men.[19]

Conclusion

Tobacco smoking is harmful not only to smokers but also to those who live or work with them, regardless of HIV status. It has been associated with a higher risk of HIV infection. There are conflicting data on the effects of smoking on HIV disease progression, and the effects of reexisting smoker's leucocytosis do not seem to be protective. Although some recent studies oint to increased risks for certain opportunistic infections in smokers, especially PCP, the only infection in which this association has been proved is in the case of anogenital abnormalities and cancers. Despite the long time it takes many smoking-related problems to develop, smoking is by no means without health risks for the immunocompromised person.

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