PALM-NUT PROBLEM

Asian chewing habit linked to oral cancer

BY DIANA PARSELL

Several hundred million people today practice the ancient custom of chewing betel. In south Asia, where the habit is most prevalent, the signs are hard to miss. Placed inside the cheek and sucked for hours, a betel wad turns saliva bright red, and betel users' spit does likewise to sidewalks and streets. People typically chew betel as a quid consisting of nut pieces from an *Areca catechu* palm mixed with powdered lime (calcium hydroxide) and wrapped in the leaf of the pepper plant *Piper betle*. Betel is used primarily as a stimulant. Areca nuts contain alkaloids that induce euphoria and raise a person's heart rate and skin temperature. Some chewers say a cheekful of betel aids digestion.

Over the past decade, a variety of evidence has linked betel chewing to several types of oral cancer. Although the custom is falling out of fashion in several countries, such as Thailand and Cambodia, it's growing in popularity in other areas. Especially troubling is that many new betel users are adolescents and children, say Asian health officials.

Some governments in Asia are taking steps to reduce betel use.

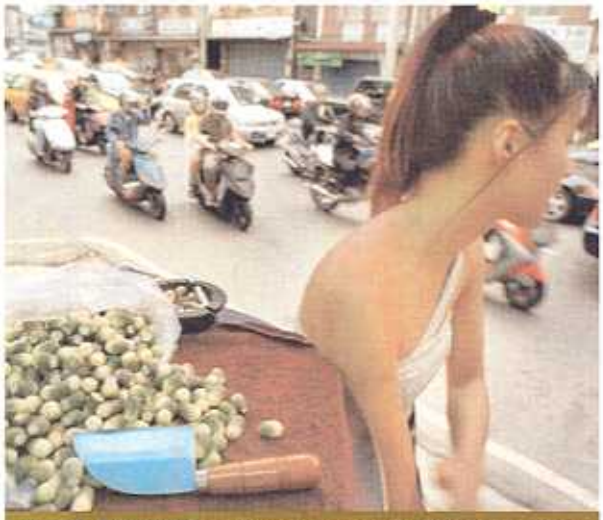
Oral cancer is relatively rare in Western countries. In some south Asian countries, however, it ranks first among malignancies. According to the World Health Organization (WHO), a disproportionate number of the world's cases of oral cancer in men occurs in regions of Asia where betel chewing is common. Once diagnosed mainly in adults, such cancers are now on the rise in young people.

Saman Warnakulasuriya, an oral pathologist at the Guy's, King's, and St. Thomas' Dental Institute in London, says that greater commercialization of areca-nut products is extending betel use. "What used to be homegrown and sold by farmers is now a big industry in most parts of Asia," he says.

Packaged betel mixtures, known by several names, are now widely available in Asian countries and some regions of the world with large populations of Asian immigrants. Many of these products contain tobacco, spices, sweeteners, and other additives to make them more flavorful, potent, and addictive.

"Aggressive advertising, targeted at the middle class and adolescents since the early 1980s, has largely enhanced the sales," notes Beatrice Secretan, a health researcher who contributed to the 300-page *Monograph on Betel-quid and Areca-nut Chewing* published in October 2004 by WHO's International Agency for Research on Cancer, based in Lyon, France.

"The situation," she says, "is similar to the real start of the tobacco epidemic, with industrially manufactured cigarettes, at the beginning of the 20th century."



BETEL BEAUTIES — Women wearing miniskirts and bikini tops sell areca nuts to drivers on the streets of Taiwan.

AP/WIDE WORLD

HOT HABIT In Taiwan, betel chewing has risen steeply since the 1970s. Young urban men are taking up the habit in unprecedented numbers, and it's still growing in rural areas, according to government reports. About 10 percent of the population now chews some form of betel. "Betel beauties," scantily clad young women selling areca-nut products, are a common sight along roads.

Last October at a meeting of the American Association for Cancer Research in Seattle, Chiun Hsu of National Taiwan University Hospital in Taipei reported that, from 1981 to 2000, a huge increase in oral cancer among Taiwanese men parallels a nearly sevenfold increase in Taiwan's production of areca nuts, making them Taiwan's second-largest crop.

Betel chewing is also soaring in India, where the sale of packaged betel products has skyrocketed in the past decade. In some parts of the subcontinent, almost one-third of children and teenagers regularly chew betel products, WHO reports. In Pakistan, the practice is especially popular in Karachi, which accounts for more than half of all national cases of oral cancer but only about one-tenth of the population.

Many Asians living in Europe and North America have continued the betel-chewing custom. Secretan says that 90 percent or more of Bangladeshi adults in the United Kingdom are betel users. That's the highest prevalence in any U.K. group. In some immigrant communities, Secretan notes, chewing betel begins by the age of 5.

For years, experts thought that the cancer risks associated with betel chewing stemmed from tobacco in betel quid or from the high likelihood that a betel chewer would also be a tobacco smoker. In 2003, however, a group of scientists convened by the International Agency for Research on Cancer said that recent epidemiological and animal studies have shown that areca nuts are themselves carcinogenic. Some of the evidence came from studies in Taiwan, where people don't add tobacco to betel quid.

The scientists reported, however, that smoking or chewing tobacco does magnify the cancer risk of chewing on areca nuts, as does heavy drinking of alcohol.

Studies have also linked betel chewing with increased risk for several other medical conditions, including heart disease, diabetes,

and asthma. Of greatest concern, however, is a condition called oral submucous fibrosis, which frequently leads to mouth cancer. In some study populations, nearly 90 percent of people with the condition were habitual betel chewers.

Oral submucous fibrosis causes permanent cell changes in mouth tissues. Eventually, "the skin of the cheek becomes hard as a brick," and people with the condition become unable to open their mouths, says Sylvie-Louise Avon of Laval University in Quebec City. She described betel-related oral lesions in the April 2004 *Journal of the Canadian Dental Association* after observing a growing incidence of such cases among Asian immigrants in Toronto.

Health officials in Pakistan say the precancerous condition has begun showing up in teenage girls there.

MOUTH AT RISK — A long-time betel chewer is inspected for cancer in a Taiwan clinic.

AP/WIDE WORLD

HARM'S WAY While the carcinogenic effects of betel chewing seem clear, scientists are still working to figure out how various components in areca nuts and the typical betel quid induce damage. A study in 1997, for example, suggested that high concentrations of copper in areca nuts might underlie their toxic effects (*SN: 5/31/97, p. 337*).

Studies in recent years have identified several versions of certain genes that appear to influence whether someone who chews betel has an increased risk of oral cancer. In a study of male betel chewers published in the Oct. 18, 2004 *British Journal of Cancer*, researchers led by Shu-Chun Lin of National Yang-Ming University in Taipei, Taiwan, found that a particular version of a gene called *heme oxygenase-1* (*HO-1*) is much more common among men who have mouth cancer than it is in men with no sign of the disease. *HO-1* normally plays a role in protecting cells from harmful agents such as ultraviolet radiation. Mutant forms of the gene have also been associated with increased risk of heart and lung diseases.

Concerned about the health hazards of betel chewing, some governments are trying to curb the practice. Studies in several districts of India found that the incidence of oral precancerous lesions declined after the introduction of community education programs that discouraged betel chewing and tobacco use. Recently, several state governments in India banned the manufacture and sale of some betel products, and health advocates are pushing to extend the restrictions nationwide.

Taiwan now has an aggressive anti betel program in place. Secretan says that the United Kingdom, however, still has no law regulating the import or sale of areca-nut products. A group of health professionals in London recently launched a public health campaign called Areca Concern to get the word out in immigrant communities about the medical dangers of chewing betel.

Yet progress is slow, public health officials acknowledge, because betel chewing is deeply ingrained in Asian social customs and the ingredients are still easy to get in many places.

Hsu notes that in Taiwan, the government made headway over the past 4 years in limiting areca-nut production. Yet "the domestic consumption of betel quid may continue to increase," he predicts, "because more and more betel has been imported from other southeastern Asia countries in recent years." ■