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Original Research

Ethnic differences in the occurrence of oropharyngeal cancer in Taiwan

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KEYWORDS
Oropharyngeal cancer;
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Summary *Objective:* The purpose of this study was to examine the oropharyngeal cancer pattern among different ethnic groups in Taiwan.
Methods: The sample population was divided into three ethnic groups: the Fukkien, Hakka, and aboriginal communities. Age-standardized mortality rates (SMRs) and age-standardized incidence rates (SIRs) were estimated among these ethnic groups for the period 1979–1996/1997.
Results: Our study found that the higher oropharyngeal cancer mortality and incidence rates in females of aboriginal groups are statistically significant, and higher than reference groups for both genders (SMR = 3.76, SIR = 2.18). However, in the lower areca quid chewing aboriginal groups, the higher pattern was not seen in females, and the lower pattern was even found in males. The incidence and mortality rate of oropharyngeal cancer in Hakkas was significantly lower than in the reference group.
Conclusions: The pattern of oropharyngeal cancer in Taiwan showed ethnic differences. The differences may be due to variation in exposure to different risk factors; however, in our study, we found that genetic differences might also be considered when explaining the different oropharyngeal cancer patterns among ethnic groups.

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Introduction

Ethnic difference has become a recognisable problem in the evaluation of risk exposure factors and the prognosis of various diseases by epidemiologists. Such differences may be influenced by biological and/or socio-cultural factors. The occurrence of oropharyngeal cancer shows racial differences.[1–4] In the USA, African-American men have a higher incidence rate than white men in all sub-sites of oropharyngeal cancer except for lip cancer,[2] and the difference may be due to variations in exposure to carcinogens rather than differential sensitivity to them.[5] A study from Hawaii reported that lip, mouth and gum cancer in Japanese and Chinese males and tongue cancer in Chinese males have a lower incidence rate than in Hawaiian Caucasian males.[6] Indians had a higher oral cancer incidence than Chinese people in a Malaysian study.[7]

Most determinants of ethnic disparities in oropharyngeal cancer are thought to be associated with environmental factors, such as use of areca quid, tobacco and alcohol[1,2,4] or interaction of genetic and environmental factors. The major etiologies of oropharyngeal cancer in Taiwan are cigarette smoking, alcohol consumption and areca quid chewing, and the latter is an endemic habit with a growing prevalence. Following this trend, the oropharyngeal cancer incidence rate has increased sharply, and is becoming a serious problem, especially in males.[8] In 1997, the incidence of oropharyngeal cancer was 19.29 per 100 000 persons and had become the fourth most common site of the 10 leading cancer sites in Taiwanese males.[9] This incidence of oropharyngeal cancer in Taiwan is even higher than in other areca quid chewing south-east Asian countries such as Thailand and India,[10] and the increase pattern in Taiwan has become the highest in the world.[8]

In Taiwan, there are three major ethnic communities—the Fukkien, the Hakka, and the aborigines. The Fukkien and Hakka communities are of 'Han' origin, but the Hakka population generally has a lower mortality rate in all cancer sites than the Fukkien population,[11] and this pattern can also be seen in other countries, such as Singapore.[12] The aborigines of Taiwan have been suggested to be closely related to the Austronesian population.[13,14] As in the USA and Australia, aborigines of Taiwan also suffer the problems of health disparity, health behaviour and medical access, and have a higher mortality rate in oropharyngeal cancer than the Fukkien population.[15]

The patterns of incidence and sub-site distribution focusing on oropharyngeal cancer among these different ethnic groups have rarely been discussed in other studies. The purpose of this study was to examine the oropharyngeal cancer incidence pattern from 1979 to 1996 and mortality data from 1979 to 1997 among these different ethnic groups of Taiwan. We also attempt to explain the ethnic differences in oropharyngeal cancer with respect to major etiologies, distribution and other genetic factors. This knowledge may provide the means to identify risk factors for oropharyngeal cancer among the different ethnic groups of Taiwan.

Methods

In this study, the term 'oropharyngeal cancer' relates to malignant neoplasms of the lip (ICD 140), tongue (ICD 141), mouth (ICD 143–145), pharynx (ICD 146, 148) and others sites (ICD 149). The cancer incidence and mortality data were obtained from the Taiwanese Cancer Registry and the Taiwan Vital Statistics, separately. The cancer incidence data were collected for the period 1979–1996, and the cancer mortality data for the period 1979–1997. The two databases were set up by the National Health Department and were coded according to the eighth (before 1980) or ninth revision of the International Statistical Classification of Diseases, Injuries and Causes of Death. The population data used in our study were obtained from the Taiwan-Fukkien Demographic Fact Book published by the Ministry of the Interior, Taiwan.

The population of Taiwan is 23 million, consisting of Fukkien (73%), Hakka (12%), Mainland Chinese (13%), and aboriginal (2%) ethnic groups. The Fukkien and Hakka populations of Taiwan migrated from Mainland China approximately 400–600 years ago. There are 10 aboriginal tribes in Taiwan (Atayal, Saisiyate, Bunun, Tsou, Rukai, Paiwan, Puyuma, Amis, Yami and Pepo), and most of them live in rural and remote areas. The Pepo group is commonly mixed with the Han population, and most of them cannot be differentiated from the Han population. The Mainland Chinese are those people who came to Taiwan in a wave around 50 years ago, who lived in Fukkien, Hakka, or aboriginal communities, and integrated with the local population.

Since, in our study, we divided all of the population into three groups according to their residential areas, only three major community groups were considered—the Fukkien, Hakka, and aboriginal communities:

1. The Fukkien communities: over 85% of the residents living in these communities are Fukkien people.