LETTER to the EDITOR

Clues to Identifying Risk Factors for Nasopharyngeal Carcinoma

Asian Pac J Cancer Prev, **16 (18)**, 8673-8674

Dear Editor

Nasopharyngeal carcinoma (NPC) is a cancer that occurs in the nasopharynx, the upper part of the throat behind the nose and near the base of skull. NPC is uncommon in most nations worldwide, but the prevalence is much higher in Southeast Asia and Africa (Xun et al., 2011). The potential risk factors remain largely unknown, and current hypotheses do not well explain the diseases epidemiology. For example, Epstein-Barr virus infection is commonly proposed as a potential risk factor for NPC development. However, more than 90% of adults, worldwide, demonstrate evidence of Epstein-Barr virus infection (Centers for Diseases Control and Prevention, 2014). This uniform distribution of Epstein-Barr virus is clearly conflict with geographic variation in NPC prevalence.

NPC is extremely common in Southern China. The disease accounts for 18% of all cancers in Guangdong province (Li et al., 1985; Chang et al., 2006), and is commonly called "Guangdong cancer" or "Cantonese cancer" in China. 'Guangdong cancer' or 'Cantonese cancer', as far as we are aware, is the only toponymically named disease in China, or maybe worldwide (Desen et al., 2005). We found that the typical eating style in this area allows for very easy transfer of saliva among the diners. During dinner, individuals continuously pick up food with their personal chopsticks and present the food for others to consume. Therefore, if the carrier' saliva contains the potential causative pathogen, it will be transferred easily among the diners due to this practice. Picking up food for others using personal chopsticks during dinner, occurs occasionally in other areas of China, but much less frequently than in Guangdong providence. We wonder if this type of eating practice constitutes a risk factor for the transmission of saliva-borne pathogens.

Consistently, the prevalence of the disease in Southeast Asia, Africa and Middle East is much higher than in North America, Europe and Australia (Xun et al., 2011), and the eating styles in Southeast Asia, Africa and Middle East cause easier transference of saliva. A common eating style in these areas involves individuals using their chopsticks (Southeast Asia) or hands (Southeast Asia, Africa, or Middle East) to repeatedly take food from communal dishes, which shared among the diners. As a result, saliva can be easily transferred among the diners. In contrast, in Western countries, the dominant eating style involves separate portions for each individual (such as at a buffet or McDonalds).

In addition to the examples described, this ethno-specific food practice hypothesis can explain other previously unexplained NPC epidemiology questions. For example why NPC show familial aggregation (Williams et al., 1974)? Since familiar members commonly eat together, there is a greater chance of saliva transmission via the sharing of food, drinking glasses, and utensils among familiar members. Why has the prevalence of NPC decreased in recent decades, in Hong Kong, Taiwan, and Singapore (Luo et al, 2007; Hsu et al., 2006)? The western eating style (Buffet or McDonalds styles) has spread in these areas. Additionally, there are changes in chopsticks-eating styles in these areas. Public chopsticks (or Serving chopsticks) have become commonly used to transfer food from communal plates to individual's plates; thereafter, personal chopsticks are used to transfer food from the individual's plate to the mouth. This change breaks the cycle of salivary transmission between diners during a meal. Why do Asian and African immigrants to Western countries have a higher incidence of NPC, compared to their local populations, but lower than the populations continuing to reside in their homeland (Lo et al., 2004; Yu and Hussain, 2009)? Immigrants generally retain their native eating style in informal settings, especially at home, but, will use the Western eating style in more formal settings, like at meetings, in western restaurants, or at work. Therefore, the chances for such immigrants' exposure to pathogens contained in saliva are greater than the local western population, but less than the populations in their homeland.

A valid hypothesis should explain multiple questions pertaining to a disease. As discussed in this essay, the ethno-specific food hypothesis provides a consistent explanation for multiple questions regarding NPC epidemiology. Therefore, ethno-specific food handling mediated saliva transfer may be a clue to identifying the risk factor for NPC.

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