

Original Article

The relationship between infection of human papilloma virus and risk of Chinese oral squamous cell carcinoma

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Abstract: Previous studies indicated that human papilloma virus (HPV) infection may be associated with risk of oral squamous cell carcinomas (OSCC). In this study, we evaluate the relationship OSCC and HPV infection in Chinese population via meta-analysis. A total of 7 articles were included in our study eligible case-control studies. After testing the heterogeneity of the studies by the Cochran Q test, the meta-analyses for HPV and HPV16 were performed using the random effects model. Quantitative meta-analyses showed that subjects OSCC with HPV infection increase 6.03 times risk of OSCC than subjects without HPV infection (OR=7.03, 95% CI: 3.88-12.76). High incidences of HPV infection may increase risk of OSCC In Chinese population.

Keywords: Human papilloma virus, oral squamous cell carcinoma, risk

Introduction

HPV infection is a cause of nearly all cases of cervical cancer. Over 90% of all cervical cancers can be attributed to certain HPV type. HPV16 accounting for the largest proportion (roughly 50%) followed by HPV18 (12%), HPV 45 (8%), and HPV 31 (5%) [1]. It is estimated by worldwide in 2002 that 561,200 new cancer cases (5.2% of all new cancers) were attributable to HPV, which suggest that HPV is independent risk of cancer [2].

Nowadays, HPV test is significance important as a primary cervical cancer screening [3]. In recent years, some studies by Chinese researchers have also focused on the relationship between oral squamous cell carcinoma (OSCC) and HPV oral infection.

However, little knowledge is known on the relationship between HPV infection and risk of OSCC among Chinese population. Present study aim is to evaluate the overall risk of HPV infection to OSCC.

Methods

Search strategy

The keywords consist of HPV, human papillomavirus, oral, oral cancer, and Chinese popula-

tion. China National Knowledge Infrastructure (CNKI)/Wanfang Database/OVID/MEDLINE were searched. Finally, a total of 450 articles published between Jun, 1994 and aril, 2016 were available

Inclusion and exclusion criteria

The literatures included in the present study meets the following criteria: subjects from China; on the relationship between human papilloma virus and oral squamous cell carcinoma. The literatures excluded according to the following reasons: missing data needed and reviews. Of 450 articles preliminary identified, 443 articles were not met including criteria, finally, a total of 7 articles [4-10] were included in this Meta-analysis.

Data extraction

The data related to this study were extracted by two independent reviewers. Any discrepancies were resolved by consensus or in consultation with a third reviewer. The data related to this study were shown in **Table 1**.

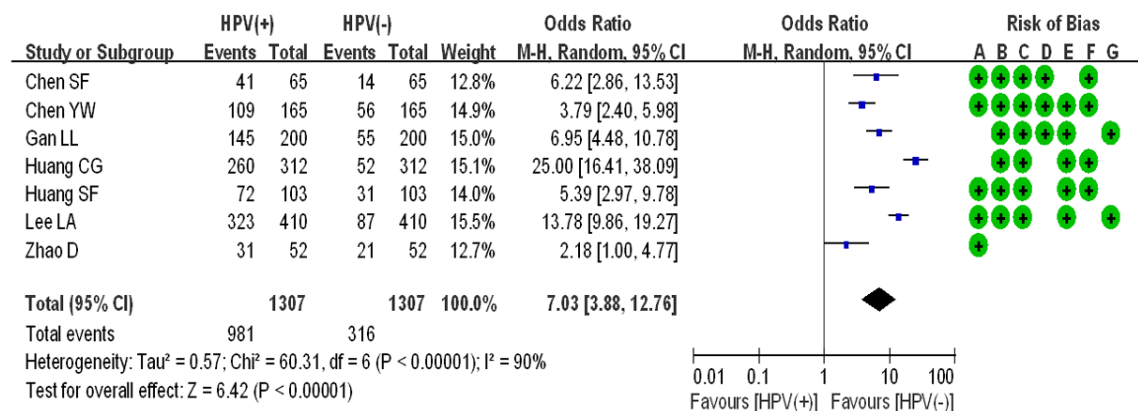
Data analysis data

RevMan 5.3 software was used for statistics analysis, OR and 95% confidence interval [CI] of OR were calculated for evaluate the relation-

Human papilloma virus and oral squamous cell carcinoma

Table 1. Characteristics of studies included

First author	Year	Gender		HPV (-)	HPV (+)	Mean age	Country	Method	Published language	Quality Score
		F	M							
Huang CG [4]	2014	16	296	260	52		China	PCR	English	5
Chen YW [5]	2012	21	144	109	56	52.	China	Immunostaining	English	6
Huang SF [6]	2012	7	96	72	31	49	China	PCR	English	5
Zhao D [7]	2009	17	35	21	21	-	China	PCR	English	1
Chen SF [8]	2012	13	52	41	24	53	China	In situ hybridization	English	5
Gan LL [9]	2014	57	143	145	55	81	China	PCR	English	5
Lee LA [10]	2013	19	391	323	87	52	China	In situ hybridisation	English	5



Risk of bias legend

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Figure 1. Forest plots and risk bias of the included studies.

ship between HPV infection and risk of OSCC. heterogeneity test among studies included was performed using Q test [11]. A P value less than 0.05 was considered significant. If no heterogeneity, a fixed-effect model was applied using the Mantel-Haenszel method [12]. Otherwise, the random-effect model with the DerSimonian-Laird method [12] was used. The potential publication bias was assessed graphically by funnel plots [13].

Results

The character of studies included is showed in **Table 1**. Tests for the heterogeneity showed that, the Q value was 60.31 (P<0.05). Thus, random-effect model was applied for meta-analysis, the results revealed that subjects OSCC with HPV infection increase 6.03 times

risk of OSCC than subjects without HPV infection (OR=7.03, 95% CI: 3.88-12.76). Forest plot and risk of bias were showed in **Figure 1**. Publication bias was measured in **Figure 2**.

Discussion

Quantitative meta-analyses showed that, compared to normal oral mucosa without HPV infection, subjects OSCC with HPV infection increase 6.03 times risk of OSCC than subjects without HPV infection (OR=7.03, 95% CI: 3.88-12.76). While, previous meta-analysis find the combined odds ratio of OSCC subjects with HPV infection have 1.98 times risk of OSCC than OSCC subjects without HPV infection [14].

The previous reports showed that cancers patients with HPV infection had a lower risk of

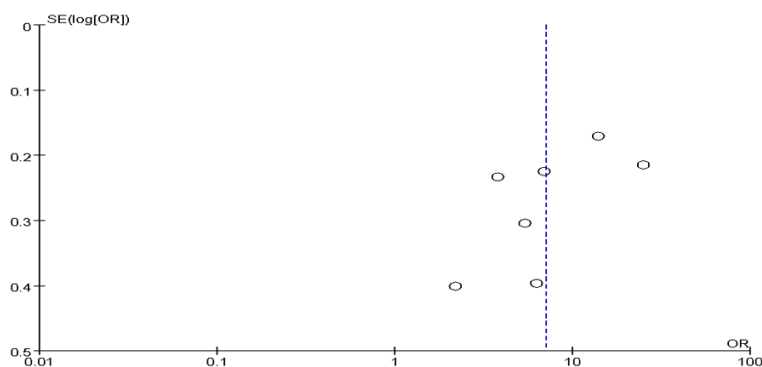


Figure 2. Funnel plot of the included studies.

dying or recurrence than those without HPV infection [15-17]. The majority of studies suggest that HPV-associated OSCC patients with HPV infection have a better prognosis than those without HPV infection [18, 19]. Thus, results of HPV screening to the patients with OSCC could be used for assessing the prognosis of OSCC.

The funnel plots of our study showed no publication bias was found in the funnel plots of our study. Additionally, some limitations in present study also should be addressed. We only select articles published in Chinese for this research. Moreover, tumor location, clinical stage and degree of differentiation may have influence on the association between HPV infection and risk of OSCC. Considering that HPV infection could be a important predictive factor to OSCC, HPV test should be used in future clinical practice .

Disclosure of conflict of interest

None.

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Human papilloma virus and oral squamous cell carcinoma

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