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Research Article

Discrepancy between cTNM stage and postoperative pTNM stage of oral squamous cell carcinoma

Tianrun Liu[1, #], Liangen Xie[1, #], Haineng Xu[2,#], Wei Wang[1], Shimin Zhuang[1], Zhen Long[1], Fanqin Wei[1], Zhiwen Xiao[1], Xiaomei Sun[1], Jiaqi Luo[1], Ankui Yang[3,4,*], Guanping Zhang[1,*]

[1]Department of Otorhinolaryngology Head and Neck Surgery, The Sixth Affiliated Hospital of Sun Yat-sen University, Guangzhou, China, 510655.

[2]Penn Ovarian Cancer Research Center, Department of Obstetrics & Gynecology, University of Pennsylvania, Philadelphia, USA, PA19104.

[3]Department of Head and Neck Surgery, Sun Yat-sen University Cancer Center, Guangzhou, China, 510060.

[4]State Key Laboratory of Southern China, Guangzhou, China, 510060.

To compare the difference between clinical tumor-node-metastasis (cTNM) staging and postoperative pathological TNM (pTNM) staging of oral squamous cell cancer and to evaluate the accuracy of cTNM staging. The Comparison of cTNM staging and postoperative pTNM staging of oral squamous cell carcinoma was analyzed on consistent rate to find out the main factors affecting the difference. A total of 306 patients met the inclusion criteria. Compared with the pathological T stage (pT). Consistent rate of clinical T stage (cT) was 78.76%, and there was no statistically significant difference between the two groups. The overall consistent rate between clinical N stage (cN) and postoperative pathological N stage (pN) was 58.82%, among which the consistent rate between N1 stage, N2 stage and N3 stage cases was only 15/103 (14.56%). About 72% of cN1 stage were confirmed as pN0 stage, 66.67% of the cN2 stage were confirmed as pN0 stage or pN1 stage, 18. 72% of cN0 stage were confirmed as pN1 stage or pN2 stage after surgery by pathology. Postoperative N staging has a lower stage than clinical N staging at diagnosis. The coincidence rate of clinical staging and postoperative pathologic staging: stage I was 75%; stage II was 62.37%; stage III was 11.94% and stage was IV 80.30%, respectively. Both the stage I and stage II patient were basically consistent on preoperative and postoperative stage. Only stage III cases had a low rate of compliance (11.94%. P <0. 05) and approximately 55.22% of the clinical stage III cases were confirmed as stage I or stage II cases. In addition, 32.84% of cases confirmed as stage IV after operation. As the main factors that affect the inconsistency between cTNM staging and pTNM staging were inconsistent lymph node stage. Consistency between cTNM and pTNM staging was poor.

Keywords: Oral neoplasm, squamous cell carcinoma, TNM stage, coincidence rate.

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Introduction

Precise tumor (T) stage and lymph node (N) stage of oral squamous cell carcinoma was crucial factors in determining surgical treatment strategy and evaluating prognostic factors [1-3]. Nevertheless, clinical examinations and imaging such as computed tomography (CT) and magnetic resonance imaging (MRI), were still the main methods to evaluate preoperative clinical stage, however, the diagnostic accuracy of CT or MRI was dissatisfactory [4-6]. This study was to assess the accuracy of cTNM staging in comparison to the postoperative pTNM staging.

Materials & Methods

* Correspondence: Ankui Yang, Department of Head and Neck Surgery, Sun Yat-sen University Cancer Center, Guangzhou, China, 510060. yangak@sysucc.org.cn. OR Guanping Zhang. Department of Otorhinolaryngology Head and Neck Surgery, The Sixth Affiliated Hospital of Sun Yat-sen University, Guangzhou, China, 510655. zgp401826@ aliyun.com.. # Tianrun Liu, Liangen Xie and Haineng Xu contributed equally.

Patients

We retrospectively studied the clinical and pathologic data from 306 cases of oral squamous cell carcinoma treated by surgery in our hospital from January 1990 to December 2003. All patients were initially treated by radical resection of the primary tumor and neck dissection, who were staged using 2010 UICC/AJCC staging [7]. The size of primary tumor and predication of lymphatic metastasis were evaluated by clinical examinations and imaging including ultrasound, CT and MRI. The diagnostic criteria of cN0 was the maximum diameter of the lymph node less than 1 cm, without central necrosis, calcification, cluster distribution or no lymph node by imaging [8]. Clinical data included patient demographics, tumor information, preoperative and postoperative lymph node status and therapeutic policy.

Clinical data

The age ranged from 24 to 86 years old, with a median age of 54 years. The cases included 191 males (58. 8%) and 115 females (41. 2%) with a ratio of 1. 66: 1. According to the criterion of TNM stage (UICC, 2010), the distribution of cTNM stages were as follows: T1 in 103 cases, T2 in 148 cases, T3 in 13 cases and T4 in 42 cases; N0 in 203 cases, N1 in 76 cases, N2 in 26 and N3 in 1 cases.

They were all initially treated in our hospital by radical resection of primary carcinoma (negative cut-edge) and neck dissection. According to the tumor location, the main operation procedures included partial glossectomy (66 cases), hemiglossectomy (156 cases) and subtotal glossectomy (84 cases).

All cases underwent neck dissection including level I-III regions, level I-IV regions and level I-V regions neck dissection in 39 cases, 42 cases and 224 cases, respectively. The ratio of radical neck dissection to functional neck dissections was 121: 103.

The distribution of cT stage included, T1 in 97 cases, T2 in 130 cases, T3 in 11 cases and T4 in 68 cases. Postoperative pN stages were as follows, N0 in 234 cases, N1 in 13 cases, N2 in 58 cases, and N3 in 1 case. Distant metastasis had not been found in any of these cases preoperatively or 3 months postoperatively.

Statistics methods

Statistical analyses were performed using SPSS 19. 0. Comparisons between groups were performed by chi-square test. Statistical significance was accepted at P <0. 05, and all P values were two-tailed.

Table 1. The Comparison of Clinical and Surgical-pathological T Stage for Carcinoma of the Oral Tongue

Clinical T Stage	Surgical-pathological T Stage							P
	T1	T2	T3	T4	Total	Accordance ratio	Accordance rate (%)	
T1	83	14	3	6	103	83/103	80.58	0.880
T2	13	113	5	17	148	113/148	76.35	0.069
T3	1	6	3	3	13	3/13	23.08	0.813
T4	0	0	0	42	42	42/42	100.00	/
Total	97	133	11	68	306	241/306	78.76	/

Results

Comparison of clinical T stage and pathological T stage

After comparing the difference between clinical T stage and pathological T stage, the coincidence rates of T1, T2, T3 and T4 were 80.58%, 76.35%, 23.08% and 100%, respectively. And the total coincidence rate of clinical T stage and pathological T stage was 78. 76% (Tab. 1 & Fig. 1).

Comparison of clinical N stage and pathological N stage

In this study, the total coincidence rate of clinical N stage and pathological N stage was 58.82%. After comparing the difference between clinical N stage and pathological N stage, the coincidence rates of N0, N1 and N2 were 81.28%, 6.67% and 33.33%, respectively. As a small scale of cases for analysis in N3 stage, there were no statistical results in N3 stage. However, the coincidence rate of N1-N3 stage was only 15/103 (14.56%), if the cases of N0 were excluded. Approximately, 18.72% of the cN0 stage was verified as pN1 stage or pN2 stage, 72.00% of the cN1 stage was verified as pN0 stage and 66.67% cN2 stage was verified as pN0 stage or pN1 stage. In summary, most of the cases were down-staged postoperatively (Tab. 2 & Fig. 2).

Table1 2. The Comparison of Clinical and Surgical-pathological N Stage for Carcinoma of the Oral Tongue

Clinical N Stage	Surgical-pathological N Stage							*P*
	N0	N1	N2	N3	Total	Accordance ratio	Accordance rate (%)	
N0	165	5	33	0	203	165/203	81.28	0.009
N1	54	5	16	0	75	5/75	6.67	0.001
N2	15	3	9	0	27	9/27	33.33	0.061
N3	0	0	0	1	1	1/1	100.00	/
Total	234	13	58	1	306	180/306	58.82	/

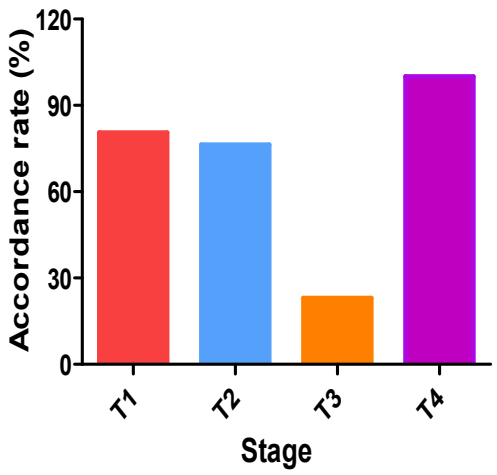

Figure 1. The Comparison of Clinical and Surgical-pathological T Stage for Carcinoma of the Oral Tongue

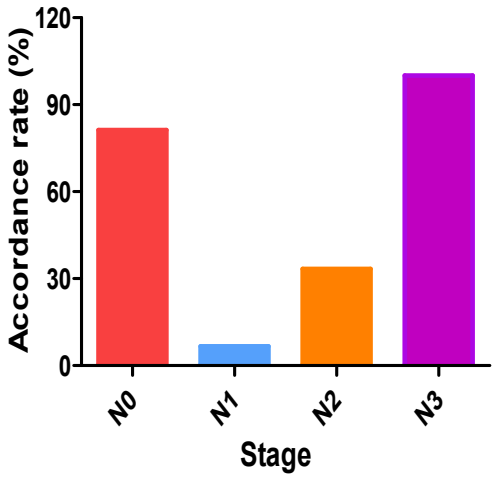

Figure 2. The Comparison of Clinical and Surgical-pathological N Stage for Carcinoma of the Oral Tongue

It was noteworthy that the cN stage was coincidentally identical to the pN stage in some cases, the number is same between the preoperatively predictive positive lymph nodes and the postoperatively pathological-confirmed positive lymph nodes, and however, there was significant difference between the locations of positive lymph nodes preoperatively and postoperatively. There were 9 cases that had the same number of positive lymph nodes but with different regional distribution of positive lymph nodes, and 5 cases that had the same distribution region with different number of positive lymph nodes. Such cases accounted for 14/103 (13.59%) of cases in clinical N1-N3 stage. Among the 103 cases, 69 cases (66.99%) of lymphadenopathy were free of lymph node metastasis, with pathological diagnosis of lymphnoditis. And among the 203 cases of clinical N0 stage, postoperative pN1-pN2 stage accounted for 18.72% (n=38).

Comparison of clinical M stage and pathological M stage

There was no evidence of distant metastasis during the postoperative follow-up of 6 months, which proved that clinical M stage was consistent with postoperative pathological M stage.

Comparison of clinical TNM stage and pathological TNM stage

According to comparison of the clinical stage (cTNM) and the postoperative pathological stage (pTNM), the coincidence rates in stage I, II, III and IV were 75.00%, 62.37%, 11.94% and 80.30%, respectively. And the total coincidence rate of cTNM stage and pTNM stage was 58.50%. There was no significant difference in the coincidence rate in stage I or stage II, however there was a low coincidence rate in stage III (P =0.022). Approximately, 55.22% of clinical stage III cases were postoperatively confirmed as stage I or stage II and 32.84% was stage IV, but only 11.94% was stage III. The stage-shift in clinical III stage was mainly due to the stage-shift in clinical N stage (Tab. 3 & Fig. 3).

Table1 3. The Comparison of Clinical and Surgical-pathological TNM Stage for Carcinoma of the Oral Tongue

Clinical TNM Stage	Surgical-pathological TNM Stage							*P*
	I	II	III	IV	Total	Accordance ratio	Accordance rate (%)	
I	60	7	1	12	80	60/80	75.00	0.791
II	7	58	6	22	93	58/93	62.37	0.716
III	13	24	8	22	67	8/67	11.94	0.002
IV	2	8	3	53	66	53/66	80.30	0.000
Total	82	97	18	109	306	179/306	58.50	/

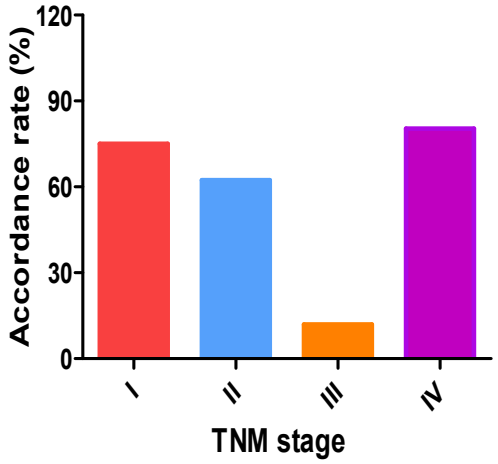

Figure 3. The Comparison of Clinical and Surgical-pathological TNM Stage for Carcinoma of the Oral Tongue

Discussion

There was no statistical difference between clinical T stage and pathological T stage with a coincidence rate of 78.76%. There was no significant difference in the coincidence rate in stage I or stage II, however there was a low coincidence rate in stage III (11. 94%, P=0. 022). Approximately, 55.22% of clinical stage III was postoperatively confirmed to be stage I or stage II, and 32. 84% was stage IV. The total coincidence rate of cTNM stage and pTNM stage was 58.50%. Therefore, the cTNM stage and pTNM stage had poor consistency in oral tongue squamous cell carcinoma.

The total coincidence rate of cN stage and pN stage was

58.82%. However, the coincidence of clinical stage and pathological stage from N1-N3 staging was only 15/103 (14.56%). It was noteworthy that some cases of cN stage were coincidentally identical to pN stage with the same lymph node number but different locations/distributions of positive lymph nodes, and such cases accounted for 14/103 (13.59%). In 66.99% of the cases, the clinical enlarged lymph nodes were pathologically confirmed as non-metastatic lymph nodes. On the other side, 18. 72% of cases in cN0 stage had been detected lymph node metastasis, and 72.00% of cases in cN1 stage had been down-shifted to pN0 stage and 66.67% of cN2 stage to pN0 stage and pN1 stage as well. In addition, 18.72% of cN0 stage cases were proven to be pN1 or pN2, which decreased the consistency of cTNM stage and pTNM stage. Only 58.50% of patients had a consistence between preoperative stage and postoperative stage. Therefore, the coincidence of clinical-pathological N stage or clinical-pathological stage III was relatively low, which mainly contributed to the low coincidence of the TNM stage. If using the preoperative criteria in accordance with the existing 2010 UICC / AJCC to assess lymph node metastasis, the error was relatively large [9]. Great stage-shift between preoperative and postoperative N stage was the main reason leading to poor consistency of cTNM and pTNM stage.

The reasons for the large stage-shift between preoperative and postoperative N stage may be as follows. (1) At present, the main methods to evaluate of lymph node metastasis in patients with oral squamous cell carcinoma were imaging, such as color Doppler ultrasonography, CT and MRI etc. And the factors indicating malignancy include size, number, location, enhancement, and so on. These methods can mainly assess the extent of metastasis lymph nodes. It is hard to confirm it as benign or malignant. This is the basic reason of cN staging inaccuracy. [10, 11]. In this study, 66.99% cases of stage cN1-cN3 were confirmed as stage pN0 by postoperative pathological diagnosis. (2) Patients with oral squamous cell carcinoma were often accompanied by chronic inflammation of the oral mucosa and common with tumefaction of submandibular lymph nodes. In imaging method, lymphadenectasis of infection or inflammation was difficult to distinguish from lymph node metastasis preoperatively [12]. As a result, 66.99% of the cases with cervical lymphadenopathy were proved to be lymphadenitis, rather than cancer. (3) Due to the limitations of the detection means, some small lymph nodes (< 0.5cm) with metastasis are hard to be found by preoperative palpation and CT. It was reported that the rate of cervical lymph node metastasis in cN0 stage ranging from 15% to 30% [8, 11], which was 18.72% in this study. The results in this study were fairly consistent with experimental results reported in literatures [8, 11]. As hot topics in current research, the management of the neck of early-stage oral tongue cancer was still controversial [13-17]. It was of great significance to find favorable measures for the detection or screening of cervical lymph node metastasis [18-20]. Finally, further studies are needed to evaluate highly-effective indicators for the diagnosis and staging of neck lymph node metastasis.

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Conflict of Interest

None

References

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