

World Journal of *Clinical Cases*

World J Clin Cases 2020 June 26; 8(12): 2408-2673



**REVIEW**

- 2408** Assessment of diaphragmatic function by ultrasonography: Current approach and perspectives
Boussuges A, Rives S, Finance J, Brégeon F
- 2425** Mechanisms of resveratrol in the prevention and treatment of gastrointestinal cancer
Wang LY, Zhao S, Lv GJ, Ma XJ, Zhang JB

MINIREVIEWS

- 2438** Clinical benefits of rational-emotive stress management therapy for job burnout and dysfunctional distress of special education teachers
Onuigbo LN, Onyishi CN, Eseadi C
- 2448** Functions and mechanisms of chemokine receptor 7 in tumors of the digestive system
Xin Q, Sun Q, Zhang CS, Zhang Q, Li CJ
- 2464** Computer navigation-assisted minimally invasive percutaneous screw placement for pelvic fractures
Yu T, Cheng XL, Qu Y, Dong RP, Kang MY, Zhao JW

ORIGINAL ARTICLE**Case Control Study**

- 2473** Elevated serum growth differentiation factor 15 in multiple system atrophy patients: A case control study
Yue T, Lu H, Yao XM, Du X, Wang LL, Guo DD, Liu YM

Retrospective Study

- 2484** Research on diagnosis-related group grouping of inpatient medical expenditure in colorectal cancer patients based on a decision tree model
Wu SW, Pan Q, Chen T
- 2494** Clinical outcomes of sacral neuromodulation in non-neurogenic, non-obstructive dysuria: A 5-year retrospective, multicentre study in China
Meng LF, Zhang W, Wang JY, Zhang YG, Zhang P, Liao LM, Lv JW, Ling Q, Wei ZQ, Zhong T, Xu ZH, Wen W, Li JY, Luo DY
- 2502** Magnetic resonance imaging features of minimal-fat angiomyolipoma and causes of preoperative misdiagnosis
Li XL, Shi LX, Du QC, Wang W, Shao LW, Wang YW
- 2510** Evaluation of internal and shell stiffness in the differential diagnosis of breast non-mass lesions by shear wave elastography
Xu P, Wu M, Yang M, Xiao J, Ruan ZM, Wu LY

Observational Study

- 2520** Recovery from prolonged disorders of consciousness: A dual-center prospective cohort study in China
Chen WG, Li R, Zhang Y, Hao JH, Du JB, Guo AS, Song WQ
- 2530** Gene testing for osteonecrosis of the femoral head in systemic lupus erythematosus using targeted next-generation sequencing: A pilot study
Sun HS, Yang QR, Bai YY, Hu NW, Liu DX, Qin CY
- 2542** Real-time three-dimensional echocardiography predicts cardiotoxicity induced by postoperative chemotherapy in breast cancer patients
Zhou F, Niu L, Zhao M, Ni WX, Liu J

Prospective Study

- 2554** Epidemiological and clinical characteristics of COVID-19 patients in Hengyang, Hunan Province, China
Zhong ZF, Huang J, Yang X, Peng JL, Zhang XY, Hu Y, Fu N, Lin HL, Jiang B, Tian YY, Yao HY, Deng LP, Tang XQ, Zhou JC, Tang J, Xie X, Liu Q, Liu J, Dou CY, Dai RJ, Yan B, Yang XF

CASE REPORT

- 2566** Demyelinating polyneuropathy and lymphoplasmacytic lymphoma coexisting in 36-year-old man: A case report
Rozlucka L, Semik-Grabarczyk E, Pietrukaniec M, Żak-Golqb A, Grabarczyk M, Grosicki S, Holecki M
- 2574** Lenvatinib for large hepatocellular carcinomas with portal trunk invasion: Two case reports
Komiyama S, Numata K, Moriya S, Fukuda H, Chuma M, Maeda S
- 2585** Biopsy-proven acute phosphate nephropathy: A case report
Medina-Liabres KRP, Kim BM, Kim S
- 2590** Endodontic management of the maxillary first molar with special root canals: A case report and review of the literature
Zhang ZH, Yao HL, Zhang Y, Wang X
- 2597** Novel approach for the diagnosis of occult cytomegalovirus cholangitis after pediatric liver transplantation: A case report
Liu Y, Sun LY, Zhu ZJ, Qu W
- 2603** Anti-N-methyl-D-aspartate-receptor antibody encephalitis combined with syphilis: A case report
Li XY, Shi ZH, Guan YL, Ji Y
- 2610** Collision tumor of squamous cell carcinoma and neuroendocrine carcinoma in the head and neck: A case report
Wu SH, Zhang BZ, Han L

- 2617** Successful treatment of plasma exchange-refractory thrombotic thrombocytopenic purpura with rituximab: A case report
Chen J, Jin JX, Xu XF, Zhang XX, Ye XN, Huang J
- 2623** Ovarian endometrioid carcinoma resembling sex cord-stromal tumor: A case report
Wei XX, He YM, Jiang W, Li L
- 2629** Headache and sick sinus syndrome: A case report
Bi YC, Gong L
- 2634** Modified pararectus approach for treatment of atypical acetabular anterior wall fracture: A case report
Wang JJ, Ni JD, Song DY, Ding ML, Huang J, He GX, Li WZ
- 2641** Pleomorphic rhabdomyosarcoma of the spermatic cord and a secondary hydrocele testis: A case report
Chen X, Zou C, Yang C, Gao L, Bi LK, Xie DD, Yu DX
- 2647** Comprehensive treatment of rare multiple endocrine neoplasia type 1: A case report
Ma CH, Guo HB, Pan XY, Zhang WX
- 2655** Low-grade fever during COVID-19 convalescence: A report of 3 cases
Zhuang SF, Hu J, Qiao N, Lan ZH, Lai JY, Wu JG, Wu XY
- 2662** Diffuse alveolar hemorrhage with histopathologic manifestations of pulmonary capillaritis: Three case reports
Xie J, Zhao YY, Liu J, Nong GM
- 2667** Presentation of gallbladder torsion at an abnormal position: A case report
Chai JS, Wang X, Li XZ, Yao P, Yan ZZ, Zhang HJ, Ning JY, Cao YB

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Marco Fiore, MD, MSc, Doctor, Research Scientist, Department of Women, Child and General and Specialized Surgery, University of Campania "Luigi Vanvitelli", Naples 80138, Italy

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The WJCC is now indexed in PubMed, PubMed Central, Science Citation Index Expanded (also known as SciSearch®), and Journal Citation Reports/Science Edition. The 2019 Edition of Journal Citation Reports cites the 2018 impact factor for WJCC as 1.153 (5-year impact factor: N/A), ranking WJCC as 99 among 160 journals in Medicine, General and Internal (quartile in category Q3).

RESPONSIBLE EDITORS FOR THIS ISSUE

Responsible Electronic Editor: Ji-Hong Liu

Proofing Production Department Director: Xiang Li

Responsible Editorial Office Director: Jin-Lai Wang

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Semimonthly

EDITORS-IN-CHIEF

Dennis A Bloomfield, Bao-Gan Peng, Sandro Vento

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

June 26, 2020

COPYRIGHT

© 2020 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>

Collision tumor of squamous cell carcinoma and neuroendocrine carcinoma in the head and neck: A case report

Shi-Hai Wu, Bao-Zhu Zhang, Ling Han

ORCID number: Shi-Hai Wu (0000-0002-5833-9723); Bao-Zhu Zhang (0000-0001-9081-1912); Ling Han (0000-0002-6733-7367).

Author contributions: Wu SH and Zhang BZ contributed equally to this research; Wu SH collected the patient's clinical data as the patient's radiologist; Zhang BZ reviewed the literature and contributed to manuscript drafting; Han L interpreted the imaging findings and was responsible for the revision of the manuscript; all authors issued final approval for the version to be submitted.

Supported by National Natural Science Foundation of China, No. 81802732.

Informed consent statement: Informed written consent was obtained from the patient for publication of this report.

Conflict-of-interest statement: The authors declare that they have no conflict of interest.

CARE Checklist (2016) statement: The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build

Shi-Hai Wu, Department of Radiation Oncology, the Second Clinical Medical College of Jinan University, Shenzhen People's Hospital, Shenzhen 518020, Guangdong Province, China

Bao-Zhu Zhang, Department of Oncology, The People's Hospital of Baoan, Shenzhen, The Affiliated Baoan Hospital of Southern Medical University, Shenzhen 518020, Guangdong Province, China

Ling Han, Department of Otorhinolaryngology, the Second Clinical Medical College of Jinan University, Shenzhen People's Hospital, Shenzhen 518020, Guangdong Province, China

Corresponding author: Ling Han, MD, Doctor, Department of Otorhinolaryngology, the Second Clinical Medical College of Jinan University, Shenzhen People's Hospital, 1017 Dongmen North Road, Shenzhen 518020, Guangdong Province, China.
hanlingsunny@163.com

Abstract

BACKGROUND

There are many disputes about the definition, diagnosis, therapy, and prognosis of collision tumors.

CASE SUMMARY

We describe a rare patient with a collision tumor consisting of neuroendocrine carcinoma (NEC) and squamous cell carcinoma (SCC) in the nasal cavity and paranasal sinus. She received operation, concurrent chemoradiotherapy, and then two cycles of palliative chemotherapy. Follow-up at 12 mo after diagnosis showed that this patient experienced a complete response with no signs of recurrence or metastasis. A literature review of previous 26 cases diagnosed with collision tumor of NEC and SCC in the head and neck was also undertaken.

CONCLUSION

It is challenging to manage collision tumors because there are two morphologically and etiologically distinct tumors. Well-designed multimodality therapy including surgery and chemoradiotherapy might lead to a long survival in these patients.

Key words: Collision tumor; Squamous carcinoma; Neuroendocrine carcinoma; Chemoradiotherapy; Head and neck; Case report

©The Author(s) 2020. Published by Baishideng Publishing Group Inc. All rights reserved.

upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Manuscript source: Unsolicited manuscript

Received: January 20, 2020

Peer-review started: January 20, 2020

First decision: April 1, 2020

Revised: April 24, 2020

Accepted: May 23, 2020

Article in press: May 23, 2020

Published online: June 26, 2020

P-Reviewer: Huang AHC, Tsuji Y

S-Editor: Dou Y

L-Editor: Wang TQ

E-Editor: Liu JH



Core tip: It is rare to see collision carcinoma composed of squamous carcinoma and neuroendocrine carcinoma (NEC) in the head and neck region. In this paper, we present a case of squamous cell carcinoma and NEC colliding in the nasal cavity and paranasal sinus. Besides, 26 cases of collision carcinoma in the head and neck were also reviewed to further comprehend the multimodality therapy of collision carcinoma.

Citation: Wu SH, Zhang BZ, Han L. Collision tumor of squamous cell carcinoma and neuroendocrine carcinoma in the head and neck: A case report. *World J Clin Cases* 2020; 8(12): 2610-2616

URL: <https://www.wjgnet.com/2307-8960/full/v8/i12/2610.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v8.i12.2610>

INTRODUCTION

Collision tumor of squamous cell carcinoma (SCC) and neuroendocrine carcinoma (NEC) in the head and neck appears rare^[1]. This type of tumor in the nasal cavity and paranasal sinus is an even less likely occurrence^[2]. A multidisciplinary approach including surgery, chemotherapy, and radiotherapy should be carefully designed once the diagnosis is confirmed. The real challenge is how to treat two synchronous malignancies. Here, we present a case of SCC and NEC colliding in the nasal cavity and paranasal sinus to promote the understanding of collision carcinoma.

CASE PRESENTATION

Chief complaints

A 47-year-old female patient presented with frequent intermittent bleeding in the right nasal cavity for 6 mo.

History of present illness

The symptom of nosebleed was exacerbated with the passage of time. The patient had no fever, headache, chest tightness, or shortness of breath.

History of past illness

The patient used to be in good health. No history of major past illnesses was found.

Personal and family history

No relevant personal or family history was found.

Physical examination

No obvious abnormalities were found in physical examination.

Laboratory examinations

No obvious abnormalities were found in laboratory examinations.

Imaging examinations

A computed tomography (CT) scan revealed a 4.1 cm × 2.85 cm × 4.3 cm heterogeneous mass of the right nasal and paranasal region, which invaded the nasal septum, right inferior middle turbinate, and right lateral wall of maxillary sinus bone, expanded to the right orbital base, and compressed the right internal rectus muscle and the right optic nerve (Figure 1). The neck and abdominal ultrasound showed no metastasis signs.

FINAL DIAGNOSIS

Biopsy pathology of nasal mass specimen revealed poorly differentiated SCC with necrosis. Postoperative pathology of the specimen revealed poorly differentiated SCC with neuroendocrine carcinoma as a collision tumor (Figure 2A). CK5/6 was diffusely positive in the squamous differentiation area and negative in neuroendocrine differentiation cells (Figure 2B). P40 was also diffusely positive in the squamous differentiation area (Figure 2C). CD56 was positive in neuroendocrine components

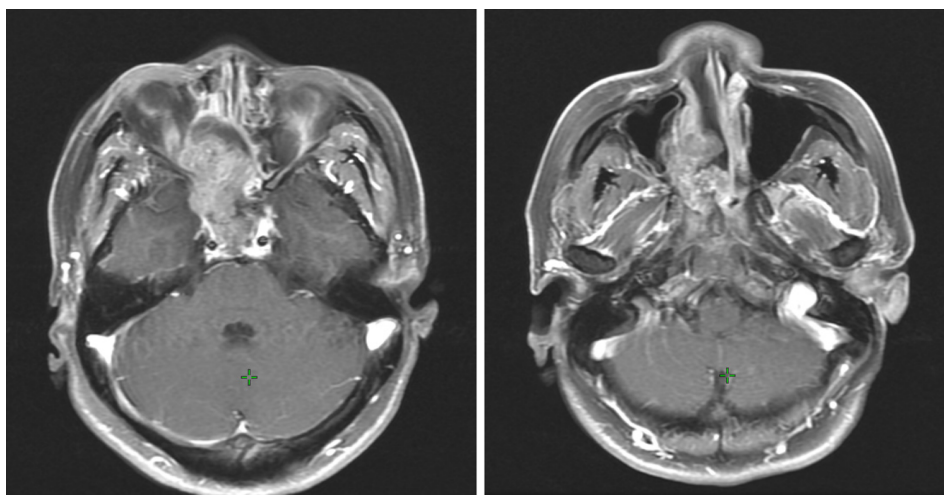


Figure 1 Images before surgery showing a mass in the nasal cavity and paranasal region.

(Figure 2D and E). Chromogranin A and synaptophysin expression was negative (Figure 2E and F).

TREATMENT

She received operation in August 2018. A CT scan after the surgery revealed residual lesions in the primary tumor region (Figure 3A and B). Then concurrent chemoradiotherapy was performed with radiotherapy 68.0Gy and chemotherapy of lobaplatin and VP-16 for four cycles. The chemotherapy regimen was lobaplatin (55 mg, day 1) and VP-16 (100mg/m², day 1-3). Follow-up at 3 mo after completion of the full course of treatment showed that the patient experienced a complete response (Figure 3A and B).

OUTCOME AND FOLLOW-UP

Positron emission tomography-CT taken in August 2019 (12 mo after diagnosis) revealed no signs of recurrence or metastasis (Figure 3C).

DISCUSSION

Different terms, including collision/mixed/composite/combined tumor, have been employed to describe tumor consisting of two malignant components. The more troublesome is that the definition of collision tumor has been a matter of debate for years. In 2000, the World Health Organization (WHO) classifications of tumors of endocrine organs suggested that collision tumors are those in which either component occupies at least 30% of the tumor tissues^[3,4]. However, it might be an arbitrary criterion since the 30% cutoff has not been proven by reliable clinical data. The more malignant component in collision tumor, even if its share is less than 30%, tends to alter the biological behaviors. Furthermore, in the WHO classification of thyroid and lung tumors^[5,6], mixed NEC and non-NEC tumors were not defined by a minimum percentage. We agree to the proposition of Yu *et al*^[7] that collision carcinoma should meet the following conditions: Two malignant neoplasms of different pathological types derive simultaneously from the same location of human body and appear like a mass to the naked eye, with no evidence that one neoplasm migrates from the other.

According to our definition of collision tumor, we reviewed 26 well-documented cases of collision tumor of NEC and SCC in the head and neck from 1978 to 2019 (key words: Collision or mixed or composite or combined carcinoma, and the head and neck). Combining the data with our patient, the resulting group of 27 patients is large enough to allow some meaningful analysis. Of all cases, 23 were male and 4 were female. The sex ratio of men to women is 5.75:1, which displays a significant difference. The mean age of the 25 patients was 58.37 years (range: 32-83 years). Their clinical pathological features, treatments, and outcomes are summarized in Table 1.

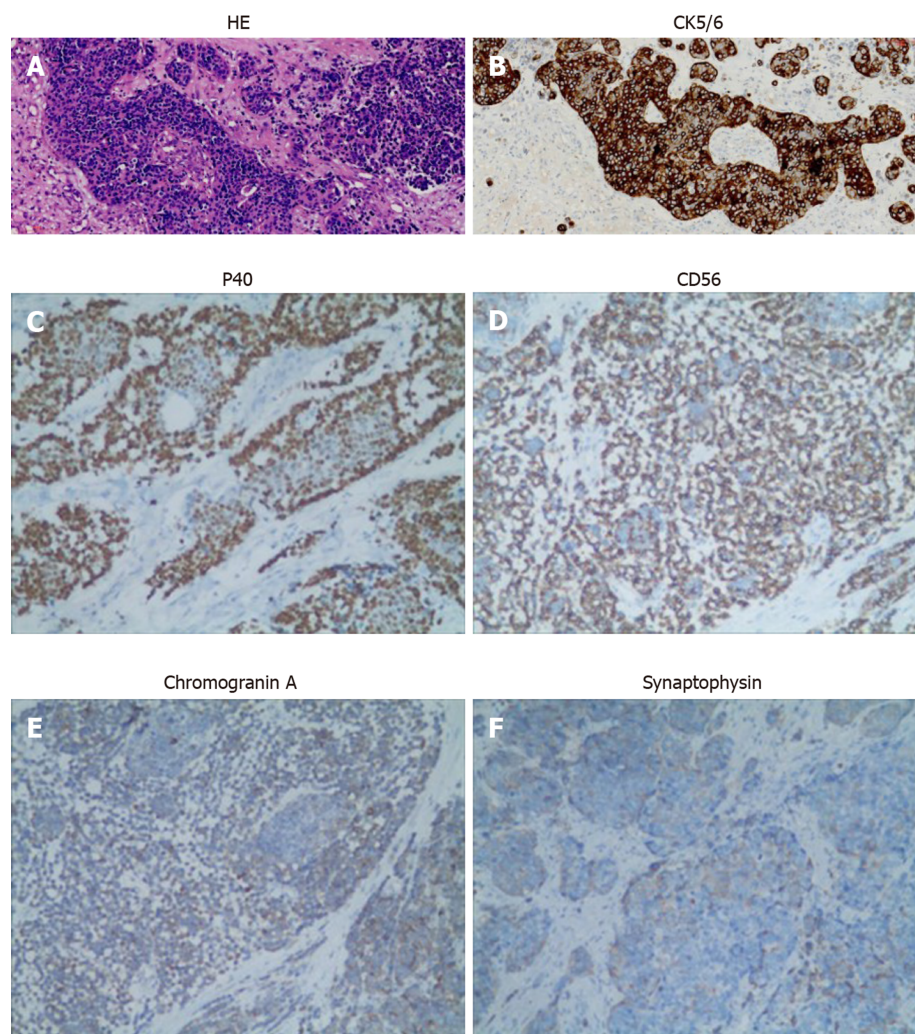


Figure 2 Immunohistochemical images. A: Hematoxylin and eosin (HE) staining showed typical squamous and neuroendocrine differentiation areas of the neoplasm; B: CK5/6 was diffusely positive in the squamous differentiation area and negative in neuroendocrine differentiation cells; C: P40 was diffusely positive in the squamous differentiation area; D: CD56 was positive in neuroendocrine components; E: Chromogranin A expression was negative; F: Synaptophysin expression was negative. Original magnification, × 200.

As to tumor sites, 20 (74.1%) originated from the larynx, 4 (14.8%) from the nasal and paranasal cavity, 1 from the palatine tonsil, and 1 from the soft palate. Fourteen (55.5%) patients were heavy smokers, which keeps consistent with the association between cigarette usage and head-neck cancer. Of all cases, 7 received surgery (S) alone; 7 received chemotherapy (C) and radiotherapy (R); 6 received S + R + C; 5 received S + R; 1 received S + C; and 1 received no treatment for high performance status (grade 3). Follow-up information was available for 23 patients (Table 1). Eight patients died of diseases (tumor) from 3.5 to 39 mo after diagnosis (mean survival, 24.1 mo), and 8 were clinically disease-free, from 6 to 60 mo (mean survival: 18.9 mo) following diagnosis. Seven patients were living with unresectable tumor, from 12 to 39 mo (mean survival, 28.8 mo), after diagnosis. There were only 2 patients who developed local relapse, and coincidentally, both of them received C + R treatment but no surgery. Four patients had recurrent regional lymph nodes metastases, 7 developed remote metastasis, including 3 affecting the bone, 1 lung, 1 lung and bone, 1 bone and liver, and 1 right breast mass.

One difficulty existing in collision tumor is to establish accurate preoperative diagnosis. To obtain two malignant neoplasms by single biopsy is like to kill two birds with one stone. A definite diagnosis most depends on careful microscopic observation of surgical specimens, especially with the application of immunohistochemistry. Another problem is that the outcome of collision tumor of SCC and NEC appear very poor. As far as we know, there have been two reports of collision carcinoma involving NEC and SCC in the nasal and paranasal region. However, it is the first case who achieved a complete response. Ferlito *et al*^[8] raised the point that radical surgery takes little effect in improving local tumor control of collision tumor of

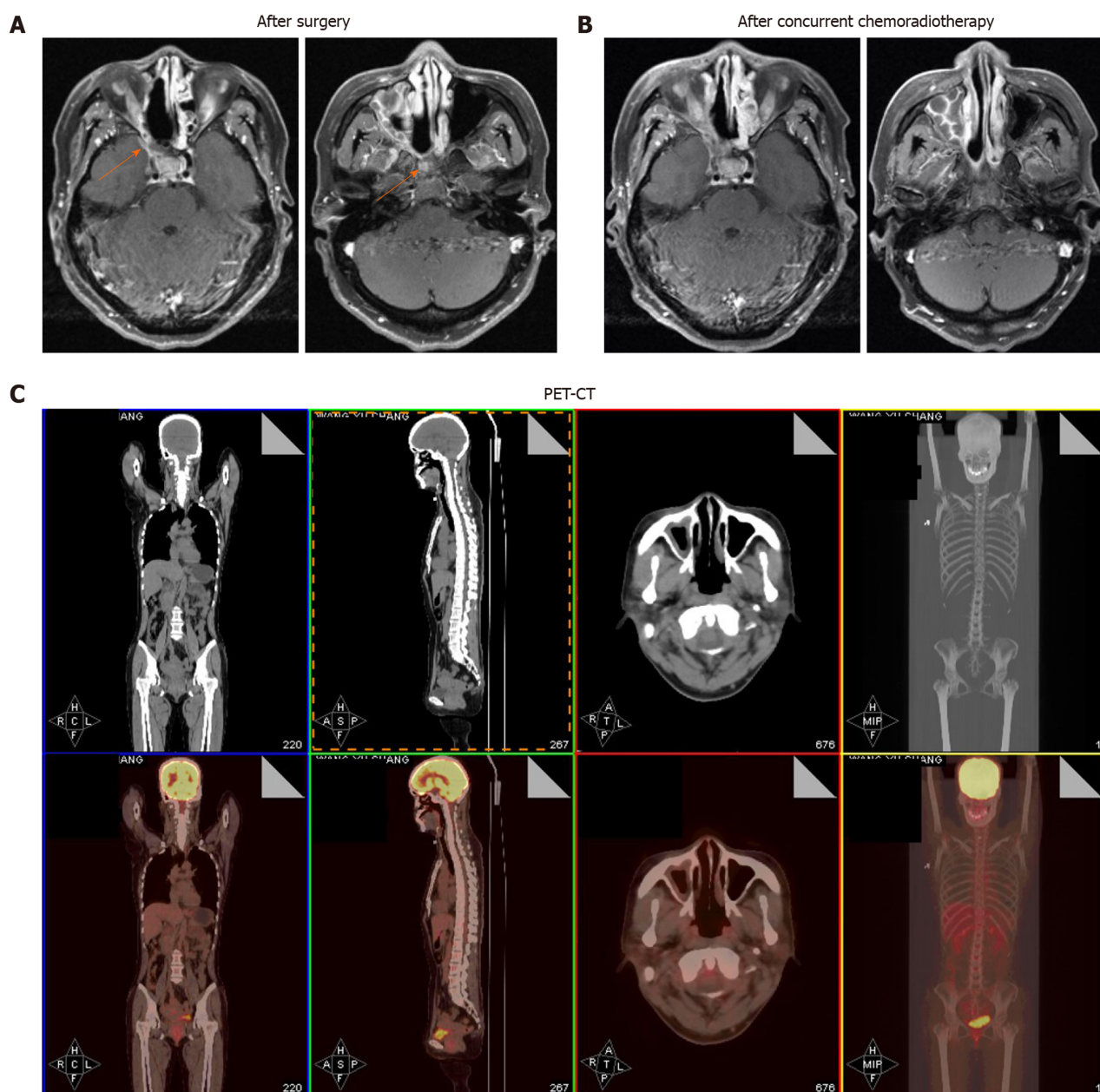


Figure 3 The patient has a complete response after chemoradiotherapy. A: Images after surgery showing postoperative residual lesions (orange arrows); B: Images after surgery showing that a complete response was achieved; C: The latest positron emission tomography-computed tomography showing no signs of recurrence or metastasis.

the larynx. Besides, laryngectomy will result in voice loss and control only the primary lesion. Therefore, a combination of systematic chemotherapy and radiotherapy is recommended for small cell carcinoma. National Comprehensive Cancer Network Guidelines of Neuroendocrine Tumors (version 2015) suggest that patients with locoregional unresectable neuroendocrine tumors receive R + C; moreover, therapeutic manner of small cell carcinoma of the lung, which combined R with systemic chemotherapy, is worth learning.

Due to the rarity of collision carcinoma of NEC and SCC in the head and neck, the treatments should be carefully designed for two different malignancies. Our case indicated that high attention should be paid to the malignant degree of both components and individual characteristics, and certain patients may benefit from postoperative concurrent radiotherapy and chemotherapy.

CONCLUSION

In a word, we have described a case of collision carcinoma of SCC and NEC in the nasal cavity and paranasal sinus. The existed literature of collision tumor in the head

Table 1 Summary of 27 cases of collision carcinoma of neuroendocrine carcinoma and squamous cell carcinoma in the head and neck

Ref.	Year	Sex/age	Site	Smoke	Treatment	Follow-up	Recurrence type
Eusebi <i>et al</i> ^[9]	1978	M/63	Larynx	Yes	S	DOD (24)	Regional
Gnepp <i>et al</i> ^[10]	1983	M/57	Larynx	Yes	S + R	DOD (3.5)	Bone
Gnepp <i>et al</i> ^[10]	1983	M/63	Larynx	Yes	S	DOD (24)	Regional
Mills <i>et al</i> ^[11]	1983	M/49	Larynx	Yes	S + R	AFD (6)	
Ferlito <i>et al</i> ^[8]	1985	M/57	Larynx	Yes	S + R	DOD (3.5)	Bone
Ferlito <i>et al</i> ^[8]	1985	M/56	Larynx	Yes	C + R	AFD (60)	
Ferlito <i>et al</i> ^[8]	1985	M/45	Larynx	Yes	C + R	DOD (21)	
Ferlito <i>et al</i> ^[8]	1985	M/47	Larynx	Yes	C + R	AWD (39)	Lung
Ferlito <i>et al</i> ^[8]	1985	M/54	Larynx	Yes	S	AFD (24)	
Chen <i>et al</i> ^[12]	1986	M/55	Larynx	No	S + R + C	DOD (9)	Bone, lung
Chen <i>et al</i> ^[12]	1986	M/56	Larynx	No	S + C	AWD (13)	Regional
Cosby <i>et al</i> ^[13]	1988	M/56	Larynx	Yes	S + R + C	uk	
Gianoli <i>et al</i> ^[14]	1992	M/83	Larynx	Yes	S	AFD (8)	
Yücel <i>et al</i> ^[15]	2000	M/32	Larynx	No	S + R + C	AWD (12)	Regional
Jaiswal <i>et al</i> ^[16]	2004	M/41	Larynx	Yes	C + R	AFD (8)	
Barbeaux <i>et al</i> ^[17]	2006	M/61	Larynx	No	C + R	AWD (44)	Local
Barbeaux <i>et al</i> ^[17]	2006	F/54	Larynx	No	C + R	AWD (36)	Breast
Aggarwal <i>et al</i> ^[18]	2010	M/59	Larynx	Yes	S + R	uk	
Kołodziej <i>et al</i> ^[19]	2010	M/59	Larynx	No	S	uk	
Barham <i>et al</i> ^[2]	2013	F/83	Nasal cavity	No	S	AWD (13)	Bone
Kayakabe <i>et al</i> ^[20]	2014	F/80	Nasal cavity	No	None	DOD (5)	
Franchi <i>et al</i> ^[21]	2015	M/75	Maxillary sinus	Yes	S + R	AFD (20)	
Yamagata <i>et al</i> ^[22]	2016	M/65	The floor of the mouth	No	C + R	AWD (12)	Local
Nakano <i>et al</i> ^[23]	2017	M/59	Palatine tonsil	Yes	S + R + C	DOD (12)	Liver, bone
Udompatanakorn <i>et al</i> ^[24]	2018	M/59	Soft palate	No	S	uk	
Yu <i>et al</i> ^[7]	2019	M/61	Larynx	No	S + R + C	AFD (13)	
Our case	2019	F/47	Nasal cavity and paranasal sinus	No	S + R + C	AFD (12)	

M: Male; F: Female; R: Radiotherapy; S: Surgery; C: Chemotherapy; R: Radiotherapy; DOD: Died of disease; AWD: Alive with disease; AFD: Alive free of disease; uk: Unknown.

and neck region has been analyzed to understand this disease. Treatments including surgery and chemoradiotherapy may lead to a good survival for patients. More cases of collision carcinoma need to be reported and summarized.

REFERENCES

- 1 **Coca-Pelaz A**, Triantafyllou A, Devaney KO, Rinaldo A, Takes RP, Ferlito A. Collision tumors of the larynx: A critical review. *Am J Otolaryngol* 2016; **37**: 365-368 [PMID: [27105979](#) DOI: [10.1016/j.amjoto.2016.02.010](#)]
- 2 **Barham HP**, Said S, Ramakrishnan VR. Colliding tumor of the paranasal sinus. *Allergy Rhinol (Providence)* 2013; **4**: e13-e16 [PMID: [23772319](#) DOI: [10.2500/ar.2013.4.0040](#)]
- 3 **Solcia E**, Kloppel G, Sobin LH. Histological typing of endocrine tumours. WHO International Histological Classification of Tumours, 2nd edition. Berlin: Springer, 2000
- 4 **Volante M**, Rindi G, Papotti M. The grey zone between pure (neuro)endocrine and non-(neuro)endocrine tumours: a comment on concepts and classification of mixed exocrine-endocrine neoplasms. *Virchows Arch* 2006; **449**: 499-506 [PMID: [17033797](#) DOI: [10.1007/s00428-006-0306-2](#)]
- 5 **DeLellis RA**, Lloyd RA, Heitz PU, Eng C. World Health Organization Classification of Tumours. Pathology and Genetics of Tumours of Endocrine Organs. Lyon: IARC Press, 2004
- 6 **Travis WD**, Brambilla E, Burke AP, Marx A, Nicholson AG. World Health Organization Classification of Tumours. Pathology Genetics of Tumours of the Lung, Pleura, Thymus and Heart. Lyon: IARC Press, 2015
- 7 **Yu Q**, Chen YL, Zhou SH, Chen Z, Bao YY, Yang HJ, Yao HT, Ruan LX. Collision carcinoma of squamous cell carcinoma and small cell neuroendocrine carcinoma of the larynx: A case report and review of the literature. *World J Clin Cases* 2019; **7**: 242-252 [PMID: [30705902](#) DOI: [10.12998/wjcc.v7.i2.242](#)]
- 8 **Ferlito A**, Recher G, Caruso G. Primary combined small cell carcinoma of the larynx. *Am J Otolaryngol* 1985; **6**: 302-308 [PMID: [2994505](#) DOI: [10.1016/s0196-0709\(85\)80059-4](#)]
- 9 **Eusebi V**, Betts CM, Giangaspero F. Primary oat-cell carcinoma of the larynx. *Virchows Arch A Pathol Anat Histol* 1978; **380**: 349-354 [PMID: [214939](#) DOI: [10.1007/bf00431320](#)]

- 10 **Gnepp DR**, Ferlito A, Hyams V. Primary anaplastic small cell (oat cell) carcinoma of the larynx. Review of the literature and report of 18 cases. *Cancer* 1983; **51**: 1731-1745 [PMID: [6299507](#) DOI: [10.1002/1097-0142\(19830501\)51:9<1731::aid-cnrcr2820510929>3.0.co;2-6](#)]
- 11 **Mills SE**, Cooper PH, Garland TA, Johns ME. Small cell undifferentiated carcinoma of the larynx. Report of two patients and review of 13 additional cases. *Cancer* 1983; **51**: 116-120 [PMID: [6295589](#) DOI: [10.1002/1097-0142\(19830101\)51:1<116::aid-cnrcr2820510123>3.0.co;2-a](#)]
- 12 **Chen DA**, Mandell-Brown M, Moore SF, Johnson JT. "Composite" tumor--mixed squamous cell and small-cell anaplastic carcinoma of the larynx. *Otolaryngol Head Neck Surg* 1986; **95**: 99-103 [PMID: [3033580](#) DOI: [10.1177/019459988609500119](#)]
- 13 **Cosby WN**, Babin RW. Simultaneous oat cell and squamous cell carcinoma of the larynx. *Mil Med* 1988; **153**: 196-198 [PMID: [2838769](#) DOI: [10.1093/milmed/153.4.196](#)]
- 14 **Gianoli GJ**, Butcher RB, Martin EJ. Composite tumor of the larynx. *Ear Nose Throat J* 1992; **71**: 81-82, 85-87 [PMID: [1315242](#)]
- 15 **Yücel OT**, Sökmensüer C, Gedikoglu G, Ayas K. Combined small cell and squamous cell carcinoma of the larynx: short communication. *Tumori* 2000; **86**: 434-436 [PMID: [11130578](#) DOI: [10.1177/030089160008600515](#)]
- 16 **Jaiswal VR**, Hoang MP. Primary combined squamous and small cell carcinoma of the larynx: a case report and review of the literature. *Arch Pathol Lab Med* 2004; **128**: 1279-1282 [PMID: [15504064](#) DOI: [10.1043/1543-2165\(2004\)128<1279:PCSASC>2.0.CO;2](#)]
- 17 **Barbeaux A**, Duck L, Weynand B, Desuter G, Hamoir M, Gregoire V, Baurain JF, Machiels JP. Primary combined squamous and small cell carcinoma of the larynx: Report of two cases and discussion of treatment modalities. *Eur Arch Otorhinolaryngol* 2006; **263**: 786-790 [PMID: [16718502](#) DOI: [10.1007/s00405-006-0060-8](#)]
- 18 **Aggarwal G**, Jackson L, Sharma S. Primary combined small cell carcinoma of larynx with lateralized histologic components and corresponding side-specific neck nodal metastasis: report of a unique case and review of literature. *Int J Clin Exp Pathol* 2010; **4**: 111-117 [PMID: [21228933](#)]
- 19 **Kolodziej P**, Ostasiewicz P, Ziolkowski P. Combined small cell and squamous cell carcinoma of the larynx. *Contemp Oncol (Pozn)* 2012; **16**: 350-352 [PMID: [23788908](#) DOI: [10.5114/wo.2012.30067](#)]
- 20 **Kayakabe M**, Takahashi K, Okamiya T, Segawa A, Oyama T, Chikamatsu K. Combined small cell carcinoma of the sinonasal tract associated with syndrome of inappropriate secretion of antidiuretic hormone: A case report. *Oncol Lett* 2014; **7**: 1253-1256 [PMID: [24944702](#) DOI: [10.3892/ol.2014.1882](#)]
- 21 **Franchi A**, Rocchetta D, Palomba A, Degli Innocenti DR, Castiglione F, Spinelli G. Primary combined neuroendocrine and squamous cell carcinoma of the maxillary sinus: report of a case with immunohistochemical and molecular characterization. *Head Neck Pathol* 2015; **9**: 107-113 [PMID: [24327102](#) DOI: [10.1007/s12105-013-0513-5](#)]
- 22 **Yamagata K**, Terada K, Uchida F, Kanno N, Hasegawa S, Yanagawa T, Bukawa H. A Case of Primary Combined Squamous Cell Carcinoma with Neuroendocrine (Atypical Carcinoid) Tumor in the Floor of the Mouth. *Case Rep Dent* 2016; **2016**: 7532805 [PMID: [28116178](#) DOI: [10.1155/2016/7532805](#)]
- 23 **Nakano T**, Motoshita J, Tanaka R, Okabe M, Tamae A, Shiratsuchi H, Yasumatsu R, Nakashima T, Nakagawa T. Primary combined small cell carcinoma and squamous cell carcinoma of the oropharynx with special reference to EGFR status of small cell carcinoma component: Case report and review of the literature. *Auris Nasus Larynx* 2017; **44**: 472-478 [PMID: [27496009](#) DOI: [10.1016/j.anl.2016.07.011](#)]
- 24 **Udompatanakorn C**, Yada N, Ishikawa A, Miyamoto I, Sato Y, Matsuo K. Primary Neuroendocrine Carcinoma Combined with Squamous Cell Carcinoma of the Soft Palate: A Case Report and Review of Literature. *Open J Stomatol* 2018; **8**: 90-99 [DOI: [10.4236/ojst.2018.83008](#)]



Published by Baishideng Publishing Group Inc
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA
Telephone: +1-925-3991568
E-mail: bpgoffice@wjgnet.com
Help Desk: <https://www.f6publishing.com/helpdesk>
<https://www.wjgnet.com>

