

World Journal of *Clinical Cases*

World J Clin Cases 2022 June 16; 10(17): 5518-5933



MINIREVIEWS

- 5518 Occult hepatitis B – the result of the host immune response interaction with different genomic expressions of the virus
Gherlan GS
- 5531 Pulmonary complications of portal hypertension: The overlooked decompensation
Craciun R, Mocan T, Procopet B, Nemes A, Tefas C, Sparchez M, Mocan LP, Sparchez Z
- 5541 Ethical review of off-label drugs during the COVID-19 pandemic
Li QY, Lv Y, An ZY, Dai NN, Hong X, Zhang Y, Liang LJ

ORIGINAL ARTICLE**Case Control Study**

- 5551 Gut peptide changes in patients with obstructive jaundice undergoing biliary drainage: A prospective case control study
Pavić T, Pelajić S, Blažević N, Kralj D, Milošević M, Mikolasevic I, Lerotic I, Hrabar D

Retrospective Cohort Study

- 5566 Longitudinal assessment of liver stiffness by transient elastography for chronic hepatitis C patients
Mezina A, Krishnan A, Woreta TA, Rubenstein KB, Watson E, Chen PH, Rodriguez-Watson C

Retrospective Study

- 5577 Clinical evaluation of prone position ventilation in the treatment of acute respiratory distress syndrome induced by sepsis
Xia WH, Yang CL, Chen Z, Ouyang CH, Ouyang GQ, Li QG
- 5586 Three-dimensional arterial spin labeling and diffusion kurtosis imaging in evaluating perfusion and infarct area size in acute cerebral ischemia
Jiang YY, Zhong ZL, Zuo M
- 5595 Intrathecal methotrexate in combination with systemic chemotherapy in glioblastoma patients with leptomeningeal dissemination: A retrospective analysis
Kang X, Chen F, Yang SB, Wang YL, Qian ZH, Li Y, Lin H, Li P, Peng YC, Wang XM, Li WB
- 5606 Hepatic epithelioid hemangioendothelioma: Clinical characteristics, diagnosis, treatment, and prognosis
Zhao M, Yin F
- 5620 Difference between type 2 gastroesophageal varices and isolated fundic varices in clinical profiles and portosystemic collaterals
Song YH, Xiang HY, Si KK, Wang ZH, Zhang Y, Liu C, Xu KS, Li X

- 5634** Assessment of incidental focal colorectal uptake by analysis of fluorine-18 fluorodeoxyglucose positron emission tomography parameters

Lee H, Hwang KH, Kwon KA

Observational Study

- 5646** "Zero ischemia" laparoscopic partial nephrectomy by high-power GreenLight laser enucleation for renal carcinoma: A single-center experience

Zhang XM, Xu JD, Lv JM, Pan XW, Cao JW, Chu J, Cui XG

- 5655** High Eckardt score and previous treatment were associated with poor postperoral endoscopic myotomy pain control: A retrospective study

Chen WN, Xu YL, Zhang XG

- 5667** Higher volume growth rate is associated with development of worrisome features in patients with branch duct-intraductal papillary mucinous neoplasms

Innocenti T, Danti G, Lynch EN, Dragoni G, Gottin M, Fedeli F, Palatresi D, Biagini MR, Milani S, Miele V, Galli A

Prospective Study

- 5680** Application of a new anatomic hook-rod-pedicle screw system in young patients with lumbar spondylolysis: A pilot study

Li DM, Li YC, Jiang W, Peng BG

META-ANALYSIS

- 5690** Systematic review of Yougui pills combined with levothyroxine sodium in the treatment of hypothyroidism

Liu XP, Zhou YN, Tan CE

CASE REPORT

- 5702** Allogeneic stem cell transplantation-A curative treatment for paroxysmal nocturnal hemoglobinuria with PIGT mutation: A case report

Schenone L, Notarantonio AB, Latger-Cannard V, Fremaux-Bacchi V, De Carvalho-Bittencourt M, Rubio MT, Muller M, D'Aveni M

- 5708** Gray zone lymphoma effectively treated with cyclophosphamide, doxorubicin, vincristine, prednisolone, and rituximab chemotherapy: A case report

Hojo N, Nagasaki M, Mihara Y

- 5717** Diagnosis of spontaneous isolated superior mesenteric artery dissection with ultrasound: A case report

Zhang Y, Zhou JY, Liu J, Bai C

- 5723** Adrenocorticotrophic hormone-secreting pancreatic neuroendocrine carcinoma with multiple organ infections and widespread thrombosis: A case report

Yoshihara A, Nishihama K, Inoue C, Okano Y, Eguchi K, Tanaka S, Maki K, Fridman D'Alessandro V, Takeshita A, Yasuma T, Uemura M, Suzuki T, Gabazza EC, Yano Y

- 5732** Management of the palato-radicular groove with a periodontal regenerative procedure and prosthodontic treatment: A case report

Ling DH, Shi WP, Wang YH, Lai DP, Zhang YZ

- 5741** Combined thoracic paravertebral block and interscalene brachial plexus block for modified radical mastectomy: A case report
Hu ZT, Sun G, Wang ST, Li K
- 5748** Chondromyxoid fibroma of the cervical spine: A case report
Li C, Li S, Hu W
- 5756** Preterm neonate with a large congenital hemangioma on maxillofacial site causing thrombocytopenia and heart failure: A case report
Ren N, Jin CS, Zhao XQ, Gao WH, Gao YX, Wang Y, Zhang YF
- 5764** Simultaneous multiple primary malignancies diagnosed by endoscopic ultrasound-guided fine-needle aspiration: A case report
Yang J, Zeng Y, Zhang JW
- 5770** Neuroendocrine tumour of the descending part of the duodenum complicated with schwannoma: A case report
Zhang L, Zhang C, Feng SY, Ma PP, Zhang S, Wang QQ
- 5776** Massive hemothorax following internal jugular vein catheterization under ultrasound guidance: A case report
Kang H, Cho SY, Suk EH, Ju W, Choi JY
- 5783** Unilateral adrenal tuberculosis whose computed tomography imaging characteristics mimic a malignant tumor: A case report
Liu H, Tang TJ, An ZM, Yu YR
- 5789** Modified membrane fixation technique in a severe continuous horizontal bone defect: A case report
Wang LH, Ruan Y, Zhao WY, Chen JP, Yang F
- 5798** Surgical repair of an emergent giant hepatic aneurysm with an abdominal aortic dissection: A case report
Wen X, Yao ZY, Zhang Q, Wei W, Chen XY, Huang B
- 5805** Heterotopic ossification beneath the upper abdominal incision after radical gastrectomy: Two case reports
Zhang X, Xia PT, Ma YC, Dai Y, Wang YL
- 5810** Non-alcoholic Wernicke encephalopathy in an esophageal cancer patient receiving radiotherapy: A case report
Zhang Y, Wang L, Jiang J, Chen WY
- 5816** New approach for the treatment of vertical root fracture of teeth: A case report and review of literature
Zhong X, Yan P, Fan W
- 5825** Ultrasound-guided microwave ablation as a palliative treatment for mycosis fungoides eyelid involvement: A case report
Chen YW, Yang HZ, Zhao SS, Zhang Z, Chen ZM, Feng HH, An MH, Wang KK, Duan R, Chen BD
- 5833** Pulp revascularization on an adult mandibular right second premolar: A case report
Yang YQ, Wu BL, Zeng JK, Jiang C, Chen M

- 5841** Barrett's esophagus in a patient with bulimia nervosa: A case report
Gouda A, El-Kassas M
- 5846** Spontaneous gallbladder perforation and colon fistula in hypertriglyceridemia-related severe acute pancreatitis: A case report
Wang QP, Chen YJ, Sun MX, Dai JY, Cao J, Xu Q, Zhang GN, Zhang SY
- 5854** Beware of gastric tube in esophagectomy after gastric radiotherapy: A case report
Yurttas C, Wichmann D, Gani C, Bongers MN, Singer S, Thiel C, Koehngrainer A, Thiel K
- 5861** Transition from minimal change disease to focal segmental glomerulosclerosis related to occupational exposure: A case report
Tang L, Cai Z, Wang SX, Zhao WJ
- 5869** Lung adenocarcinoma metastasis to paranasal sinus: A case report
Li WJ, Xue HX, You JQ, Chao CJ
- 5877** Follicular lymphoma presenting like marginal zone lymphoma: A case report
Peng HY, Xiu YJ, Chen WH, Gu QL, Du X
- 5884** Primary renal small cell carcinoma: A case report
Xie K, Li XY, Liao BJ, Wu SC, Chen WM
- 5893** Gitelman syndrome: A case report
Chen SY, Jie N
- 5899** High-frame-rate contrast-enhanced ultrasound findings of liver metastasis of duodenal gastrointestinal stromal tumor: A case report and literature review
Chen JH, Huang Y
- 5910** Tumor-like disorder of the brachial plexus region in a patient with hemophilia: A case report
Guo EQ, Yang XD, Lu HR
- 5916** Response to dacomitinib in advanced non-small-cell lung cancer harboring the rare delE709_T710insD mutation: A case report
Xu F, Xia ML, Pan HY, Pan JW, Shen YH
- 5923** Loss of human epidermal receptor-2 in human epidermal receptor-2+ breast cancer after neoadjuvant treatment: A case report
Yu J, Li NL

LETTER TO THE EDITOR

- 5929** Repetitive transcranial magnetic stimulation for post-traumatic stress disorder: Lights and shadows
Concerto C, Lanza G, Fisticaro F, Pennisi M, Rodolico A, Torrisi G, Bella R, Aguglia E

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Raden Andri Primadhi, MD, PhD, Assistant Professor, Surgeon, Department of Orthopaedics and Traumatology, Universitas Padjadjaran Medical School, Hasan Sadikin Hospital, Bandung 40161, Indonesia. randri@unpad.ac.id

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 Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports/Science Edition, Scopus, PubMed, and PubMed Central. The 2021 Edition of Journal Citation Reports® cites the 2020 impact factor (IF) for *WJCC* as 1.337; IF without journal self cites: 1.301; 5-year IF: 1.742; Journal Citation Indicator: 0.33; Ranking: 119 among 169 journals in medicine, general and internal; and Quartile category: Q3. The *WJCC*'s CiteScore for 2020 is 0.8 and Scopus CiteScore rank 2020: General Medicine is 493/793.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: *Hua-Ge Yan*; Production Department Director: *Xiang Li*; Editorial Office Director: *Jim-Lai Wang*.

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Thrice Monthly

EDITORS-IN-CHIEF

Bao-Gan Peng, Jerzy Tadeusz Chudek, George Kontogeorgos, Maurizio Serati, Ja Hyeon Ku

EDITORIAL BOARD MEMBERS

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

PUBLICATION DATE

June 16, 2022

COPYRIGHT

© 2022 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>

Lung adenocarcinoma metastasis to paranasal sinus: A case report

Wen-Jing Li, Hai-Xiang Xue, Jian-Qiang You, Chang-Jiang Chao

Specialty type: Oncology

Provenance and peer review:

Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): A

Grade B (Very good): 0

Grade C (Good): C

Grade D (Fair): 0

Grade E (Poor): 0

P-Reviewer: Nepal SP, Japan; Sezer HF, Turkey

Received: December 26, 2021

Peer-review started: December 26, 2021

First decision: January 25, 2022

Revised: February 6, 2022

Accepted: April 4, 2022

Article in press: April 4, 2022

Published online: June 16, 2022



Wen-Jing Li, Hai-Xiang Xue, Jian-Qiang You, Chang-Jiang Chao, Department of Otolaryngology Head and Neck Surgery, The Third Affiliated Hospital of Soochow University, Changzhou 213000, Jiangsu Province, China

Corresponding author: Chang-Jiang Chao, Doctor, Professor, Department of Otolaryngology Head and Neck Surgery, The Third Affiliated Hospital of Soochow University, No. 185 Juqian Street, Changzhou 213000, Jiangsu Province, China. entczyy@163.com

Abstract

BACKGROUND

Lung cancer is often metastasized to the brain, liver, kidneys, bone, bone marrow, and adrenal glands; however, metastasis of primary lung cancer to the paranasal sinuses is extremely rare.

CASE SUMMARY

In this paper, we present a case of metastatic tumors of the sinus secondary to lung adenocarcinoma. The patient was a 46-year-old woman who underwent surgical removal of lung carcinoma. Four months after the surgical removal of the lung tumor, the patient presented with epistaxis, and on investigation, the diagnosis was confirmed to be nasal sinus tumors due to metastasis of lung adenocarcinoma.

CONCLUSION

Thorough investigation of patients with epistaxis and a history of lung cancer is necessary to diagnose metastatic sinus tumors. We reviewed relevant literature and found that there are no characteristic clinical or radiologic features for metastatic sinus tumors; however, the diagnosis can be confirmed by histopathological examination of biopsied tumor sample.

Key Words: Lung adenocarcinoma; Paranasal sinus; Metastasis; Case report

©The Author(s) 2022. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: Lung adenocarcinoma metastasis restricted to the paranasal sinus is a rare phenomenon. In this report, we present a rare case of metastatic tumors of the sinus secondary to lung adenocarcinoma. After lung cancer surgery, the patient had no postoperative complications and was completely asymptomatic at the second-year postoperative follow-up. We reviewed relevant literature in order to identify the characteristic features observed in cases of sinus metastasis of lung adenocarcinoma.

Citation: Li WJ, Xue HX, You JQ, Chao CJ. Lung adenocarcinoma metastasis to paranasal sinus: A case report. *World J Clin Cases* 2022; 10(17): 5869-5876

URL: <https://www.wjgnet.com/2307-8960/full/v10/i17/5869.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v10.i17.5869>

INTRODUCTION

Advanced lung cancer is associated with a high incidence of distant metastasis[1,2], and metastasis to distant vital organs is an important factor contributing to the high mortality rate associated with lung cancer[3-5]. Metastasis of lung cancer occurs most commonly to the bones, liver, and brain and only rarely to the pericardial, adrenal, or subcutaneous tissues, spinal cord, kidney, and other organs[6]. Occasionally, lung cancer may metastasize to the external auditory canal, orbital ball, nasal cavity, or jejunum[7]. Other very rare sites of lung cancer metastases have also been reported in the literature. With respect to pathological type, studies have also shown that the most common type of metastasizing lung cancer is the adenocarcinoma[8]. Furthermore, reports have also indicated that lung cancer with nasal and sinus metastasis is associated with a short survival period and poor prognosis[1].

In this paper, we present a rare case of metastatic sinus tumor arising from adenocarcinoma of the lungs. In addition, we review literature on metastatic tumors of the nasal cavity and paranasal sinuses secondary to primary lung carcinoma.

CASE PRESENTATION

Chief complaints

The patient was a 45-year-old woman who was diagnosed with lung adenocarcinoma and underwent surgical resection of the tumor. Four months after the tumor removal, she presented with epistaxis and left-sided headache. However, the symptoms were considered insignificant and were not investigated further. Five months after the lung surgery, the patient developed a swelling around the left eye socket, which increased progressively and was accompanied by purulent nasal discharge, nasal obstruction, decreased sense of smell, or decreased vision.

History of present illness

Previously, the patient was found to have a right upper pulmonary mass during a routine physical examination (Figure 1). To rule out malignancy, thoracoscopy was performed, which revealed a mass (diameter approximately 3 cm) located in the posterior segment of the right upper lobe of the lung. Surgical removal of the tumor was successful, with resection of the right upper lobe and adjacent lymph nodes. The tumor was firm in consistency and oval, with an intact capsule. Postoperative pathological examination revealed that the lesion was a moderately differentiated lung adenocarcinoma, with no involvement of the incision margin of the bronchus and no metastasis to the lymph nodes.

History of past illness

The patient had no previous medical history.

Personal and family history

History taking also revealed that the patient had no other relevant medical history or family history.

Physical examination

On physical examination at presentation, the external nose was found to be normal in shape. No obstruction of the nasal passages was observed on either side, and no abnormal secretion or colonization was detected. There was no obvious tenderness over the areas of the sinuses.

Laboratory examinations

Results of serum tests for tumor markers were all negative. No abnormalities were noted in the



DOI: 10.12998/wjcc.v10.i17.5869 Copyright ©The Author(s) 2022.

Figure 1 Computerized tomography examination showing a mass located in the posterior segment of the right upper lobe of the lung.

coagulation indices or in the results of routine blood tests, tests for immunoglobulin light chains, thyroid hormone levels, and tests for autoimmune antibodies.

Imaging examinations

Computed tomography (CT) and magnetic resonance imaging (MRI) examination of the sinus was performed, the findings revealed left maxillary sinusitis, bilateral ethmoid sinusitis, and septal deviation, with bone destruction of the left ethmoid sinus. (Figure 2A and B).

FINAL DIAGNOSIS

On the basis of the clinical and imaging findings, the diagnosis was established as lung cancer metastasis to the nasal cavity. The tumor in the paranasal sinus was removed and subjected to pathological examination.

TREATMENT

The patient underwent surgical treatment for the removal of the sinus tumors at our hospital. During the operation, a large number of lesions with fish-meat-like appearance of the tissue were found in the ethmoid sinus; the lesions were fragile and easily bleeding. Destruction of the cribriform plate was observed, as well as tumor pressure on the orbit through the orbital fascia. Pathological examination of the biopsied tumor tissue sample revealed that the tumor was malignant. The anterior and middle groups of the ethmoidal sinuses were debrided until the cribriform roof; the frontal sinus was then opened, and a large number of lesions with fish-meat-like appearance of tissue were found in the frontal recess and frontal sinus. An incision was made on the eyebrow arch, and the subcutaneous tissue and muscle tissue were separated. Bone destruction was also observed in the anterior frontal sinus wall, along with the presence of lesions with fish-meat-like appearance, which were removed. The frontal sinus cavity was opened, and the necrotic bone tissue was removed. Finally, the eyebrow arch incision was sutured. Postoperative pathological examination revealed the presence of adenocarcinoma infiltrate between fibrous connective tissues. The results of immunohistochemical examination were as follows: CK7(+), CK20(-), Villin(-), Syn(-), CgA(-), TTF-1(+), Napsin A(+), CDX-2(-), S100(-), CK5/6(-), and P63(-). Figure 3 shows the results of the immunohistochemical examination of tissue sample obtained from the metastatic tumors of the sinus.

OUTCOME AND FOLLOW-UP

The patient had no postoperative complications and was discharged safely after 7 days. The patient did not receive further radiotherapy or chemotherapy. Follow-up was continued for 2 years, and during this period, she remained completely asymptomatic; CT scans of the lung and sinus were also normal (Figure 4A and B).

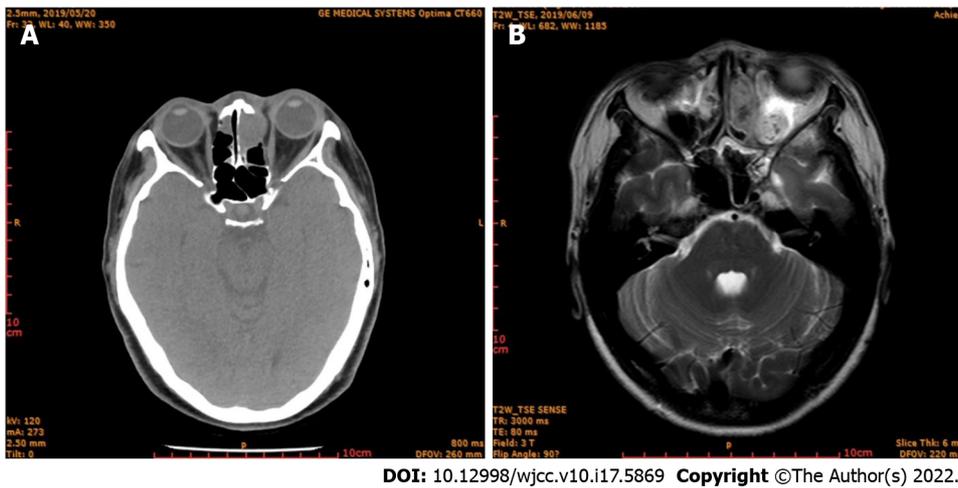


Figure 2 Imaging examination. A: Computerized tomography examination showing tumor invasion of the ethmoid sinus; B: Magnetic resonance imaging showing a mass in the ethmoid sinus.

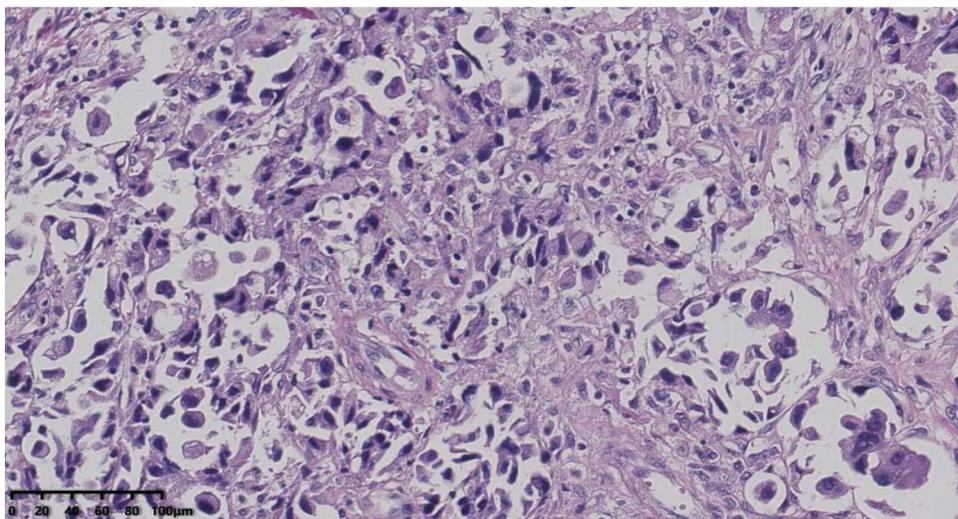


Figure 3 Pathological immunohistochemistry showing adenocarcinoma infiltrates between fibrous connective tissues, indicating lung adenocarcinoma.

DISCUSSION

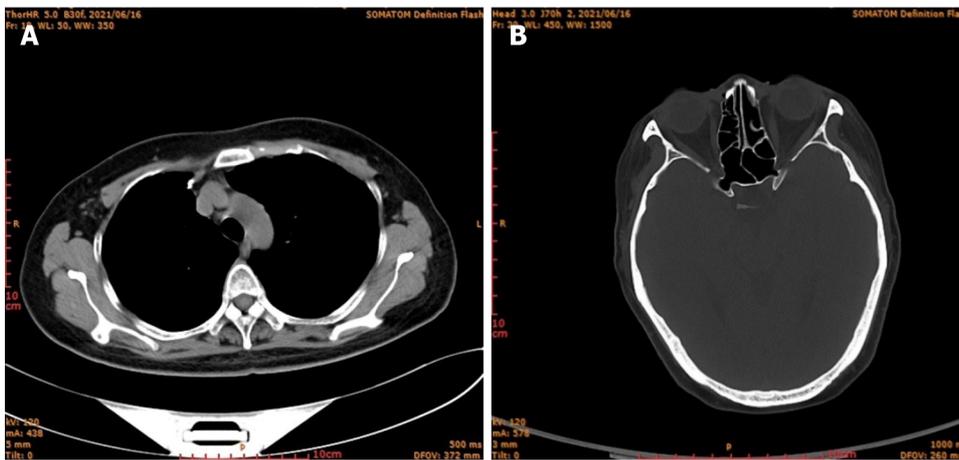
Malignant sinus tumors are mostly primary tumors, and only in rare cases are they caused by metastatic tumors originating elsewhere. Metastatic sinus tumors arising from primary tumors of the kidney, lungs, and liver have rarely been reported[9].

The most likely route by which the metastasis occurs to the sinuses may be hematogenous spread of tumor cells. Since the lungs have a rich blood supply, cells of lung adenocarcinoma may easily enter venous circulation. Intrapleural pressure and abdominal pressure may cause detachment of a tumor plug, whereby tumor cells enter blood circulation. The tumor plug may traverse to the large veins of the head, such as the wing plexus and cavernous sinus, eventually reaching the paranasal sinuses through retrograde movement. Since blood flow at the sinuses is sluggish, the tumor plug may easily fall off the circulation and plant itself, leading to the growth of metastatic tumors.

Distant metastasis of primary lung cancer generally occurs to the liver, adrenal glands, brain, or bone, and only rarely to the nasal cavity and paranasal sinuses. Four cases of lung cancer metastasizing to the nasal cavity and sinuses have been reported since 2001; in all of cases, the tumors were squamous-cell carcinoma and epistaxis was the initial clinical presentation. The distant metastasis of lung cancer is a complex process involving the detachment, transport, and growth of tumor cells[10]. Tumor cells break away from the primary tumor, adhere, and invade the basement membrane; thus, they come into close contact with local capillary or lymphatic capillary endothelial cells. The tumor cells pass through the walls of the blood or lymph vessels and are transported *via* the blood or lymphatic circulation; platelet

Table 1 Number of cases for different pathological type of metastatic tumors to the nasal cavity and sinuses from primary lung cancer

Pathological type	No. of cases
Adenocarcinoma	46
Squamous-cell carcinoma	39
Small-cell carcinoma	23
Adenosquamous carcinoma	3
Carcinoma gigantocellulare	2
Non-small-cell lung cancer	2
Large-cell lung cancer	2
Small-round-cell malignant tumors	1
Sarcomatoid carcinoma	1
Papilocarcinoma	1
Mucoepidermoid carcinoma	1
Neuroendocrine carcinoma	1
Germ-cell tumor	1



DOI: 10.12998/wjcc.v10.i17.5869 Copyright ©The Author(s) 2022.

Figure 4 Computed tomography images. A: Computed tomography (CT) of lung obtained two years later, showing no recurrence; B: CT of paranasal sinus obtained two years later, showing no recurrence.

agglutination may then occur, leading to the formation of a tumor thromboembolus, which reaches the target tissue to give rise to the metastatic tumor[11]. Lung cancer may metastasize through hematogenous spread, lymphatic spread, or direct invasion[12]. Adenocarcinoma and squamous-cell carcinoma of lung are mainly metastasized *via* blood circulation and lymphatic circulation, respectively; additionally, in lung cancer, metastasis to lymph nodes generally occurs earlier than other metastases [13].

We conducted a literature search of relevant literature with “lung cancer” and “metastasis” as search terms. The PubMed, Scopus, CNKI, and WANFANG MED ONLINE databases were searched for entries published since 2001, and case reports were screened out. One hundred and thirty-eight cases of lung cancer with distant metastasis were identified. The case reports included 100 males and 38 females, and the youngest patient was 17 years old, while the oldest was 97 years old. In all, 123 cases with confirmed pathological results and metastatic sites were identified; among these cases, adenocarcinoma (Table 1) was the most common pathological type and the sites of metastatic tumors were diverse (Table 2).

Metastasis of lung cancer to the sinus is rare and its presentation nonspecific. No characteristic clinical or radiologic features have been described to differentiate metastatic tumors from primary malignancy of the sinus[3]. However, nasal and sinus tumors commonly present with epistaxis, and the diagnosis can be confirmed by histopathologic examination of biopsy tissue[4].

Table 2 Metastatic sites and number of cases

Metastatic site	No. of cases	Metastatic site	No. of cases
Eyeball	12	Cerebrum	16
Choroid	11	Peripheral nerve	3
Iris	5	Bone	15
Eyelid	2	Skin	8
Retina	1	Cardioid	8
Colon	4	Marrow	6
Jejunum	3	Nasal cavity	4
Pancreas	3	Oral cavity	3
Spleen	2	Mammary gland	3
Intestine	2	Tonsil	2
Rectal	2	Inguinal glands	2
Stomach	1	Thyroid	2
Liver	1	Kidney	2
Appendix	1	Pituitary	2
Cervix	3	Greater omentum	1
Ovary	2	Abdominal wall	1
Penis	1	Abdominal cavity	1
Prostate	1	Thyroid cartilage	1
Testis	1		

Distant metastasis of lung cancer generally occurs in the middle and late stages of cancer, and the survival period for patients is less than 1 year, with poor prognosis[14]. No effective treatments have been identified thus far. The survival of the patients may be improved by surgical resection of the primary and metastatic lesions and subsequent radiotherapy and chemotherapy[4]. Currently, targeted therapy combined with radiotherapy and chemotherapy are mostly used for brain metastasis of lung cancer, while chemotherapy is mainly used for bone metastasis of lung cancer[15]. Surgery combined with radiotherapy is mostly used for eyeball metastasis of lung cancer[16,17], and there is no standard treatment plan for choroidal metastasis of lung cancer[18]. In this case report, the patient received no other treatment except surgical resection of the lesion, and no recurrence was observed during follow-up for two years. Complete spontaneous remission of metastatic non-small-cell carcinoma has also been reported, which may be related to the differentiation of malignant cells into normal phenotype and/or cell death caused by apoptosis or inflammatory necrosis[19]. However, data on the efficacy of treatment are still limited, and further investigation, including large-scale clinical trials, are warranted.

CONCLUSION

To summarize, we presented a rare case of metastatic sinus tumor secondary to primary lung adenocarcinoma. We also reviewed relevant literature and found that the findings of metastatic sinus tumors were nonspecific. Therefore, physicians should be aware of the possibility of metastatic sinus lesions in patients with a history of primary lung cancer presenting with epistaxis; investigating such patients for sinus metastasis would help early diagnosis and timely initiation of appropriate treatment measures.

FOOTNOTES

Author contributions: Li WJ contributed to formal analysis, methodology, data processing, resources, investigation, writing-original draft, writing-review and editing; Xue HX contributed to investigation, methodology, validation; You JQ contributed to methodology, validation; Chao CJ contributed to methodology, supervision, writing-review and editing.

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

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 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: <https://creativecommons.org/licenses/by-nc/4.0/>

Country/Territory of origin: China

ORCID number: Wen-Jing Li 0000-0003-4915-8119; Hai-Xiang Xue 0000-0002-9349-805X; Jian-Qiang You 0000-0001-6958-0646; Chang-Jiang Chao 0000-0001-6666-7877.

S-Editor: Gong ZM

L-Editor: A

P-Editor: Gong ZM

REFERENCES

- Katz TS, Mendenhall WM, Morris CG, Amdur RJ, Hinerman RW, Villaret DB. Malignant tumors of the nasal cavity and paranasal sinuses. *Head Neck* 2002; **24**: 821-829 [PMID: 12211046 DOI: 10.1002/hed.10143]
- Clarkson JH, Kirkland PM, Mady S. Bronchogenic metastasis involving the frontal sinus and masquerading as a Pott's puffy tumour: a diagnostic pitfall. *Br J Oral Maxillofac Surg* 2002; **40**: 440-441 [PMID: 12379194 DOI: 10.1016/s0266-4356(02)00131-6]
- King AD, Tse GM, Ahuja AT, Yuen EH, Vlantis AC, To EW, van Hasselt AC. Necrosis in metastatic neck nodes: diagnostic accuracy of CT, MR imaging, and US. *Radiology* 2004; **230**: 720-726 [PMID: 14990838 DOI: 10.1148/radiol.2303030157]
- Huang CT, Hong RL. Nasion swelling as the presenting symptom of lung adenocarcinoma. *J Thorac Oncol* 2009; **4**: 555-558 [PMID: 19333075 DOI: 10.1097/JTO.0b013e3181949f30]
- Porceddu S, Martin J, Shanker G, Weih L, Russell C, Rischin D, Corry J, Peters L. Paranasal sinus tumors: Peter MacCallum Cancer Institute experience. *Head Neck* 2004; **26**: 322-330 [PMID: 15054735 DOI: 10.1002/hed.10388]
- Chhiber SS, Nizami FA, R. KA. Renal cell carcinoma presenting as metastasis to frontal sinus in a young male: a case report. *Neurosurg Q* 2011; **21**: 288-291 [DOI: 10.1097/WNQ.0b013e31821d0626]
- Orvidas LJ, Lewis JE, Weaver AL, Bagniewski SM, Olsen KD. Adenocarcinoma of the nose and paranasal sinuses: a retrospective study of diagnosis, histologic characteristics, and outcomes in 24 patients. *Head Neck* 2005; **27**: 370-375 [PMID: 15714475 DOI: 10.1002/hed.20168]
- Rombaux P, Hamoir M, Liistro G, Bertrand B. Frontal sinus tumor as the first sign of adenocarcinoma of the lung. *Otolaryngol Head Neck Surg* 2005; **132**: 816-817 [PMID: 15886645 DOI: 10.1016/j.otohns.2004.09.070]
- Koktekir E, Koktekir BE, Recber F, Akdemir G. Lung adenocarcinoma metastasis to frontal sinus mimicking Pott's puffy tumor. *J Craniofac Surg* 2013; **24**: e538-e539 [PMID: 24220459 DOI: 10.1097/SCS.0b013e318285d98a]
- Lachhab L, Fikri M, Aitbenhaddou EH, Arkha Y, Regragui W, Jiddane M, Benomar A, Yahyaoui M. [Atypical metastatic sites for adenocarcinoma of the lung]. *J Fr Ophthalmol* 2013; **36**: e23-e26 [PMID: 23083771 DOI: 10.1016/j.jfo.2012.03.009]
- Nagano H, Yoshifuku K, Deguchi K, Kurono Y. Adenocarcinoma of the paranasal sinuses and nasal cavity with lung metastasis showing complete response to combination chemotherapy with docetaxel, cisplatin and 5-fluorouracil (TPF): a case report. *Auris Nasus Larynx* 2010; **37**: 238-243 [PMID: 19560300 DOI: 10.1016/j.anl.2009.05.007]
- Agrawal S, Jayant K, Agarwal RK, Dayama KG, Arora S. An unusual case of metastatic male breast cancer to the nasopharynx-review of literature. *Ann Palliat Med* 2015; **4**: 233-238 [PMID: 26541404 DOI: 10.3978/j.issn.2224-5820.2015.08.02]
- Tang WF, Wu M, Bao H, Xu Y, Lin JS, Liang Y, Zhang Y, Chu XP, Qiu ZB, Su J, Zhang JT, Zhang C, Xu FP, Chen JH, Fu R, Chen Y, Yang T, Chen QK, Wu TT, Wu X, Shao Y, Zheng JT, Xie Z, Lv ZY, Dong S, Wu YL, Zhong WZ. Timing and Origins of Local and Distant Metastases in Lung Cancer. *J Thorac Oncol* 2021; **16**: 1136-1148 [PMID: 33722707 DOI: 10.1016/j.jtho.2021.02.023]
- Ates I, Yazici O, Ates H, Ozdemir N, Zengin N. Unusual metastases of lung cancer: bulbus oculi and maxillary sinus. *Exp Oncol* 2015; **37**: 231-232 [PMID: 26928715 DOI: 10.31768/2312-8852.2015.37(3):231-232].]
- D'Antonio C, Passaro A, Gori B, Del Signore E, Migliorino MR, Ricciardi S, Fulvi A, de Marinis F. Bone and brain metastasis in lung cancer: recent advances in therapeutic strategies. *Ther Adv Med Oncol* 2014; **6**: 101-114 [PMID: 24790650 DOI: 10.1177/1758834014521110]
- De Potter P. Ocular manifestations of cancer. *Curr Opin Ophthalmol* 1998; **9**: 100-104 [PMID: 10387328 DOI: 10.1097/00055735-199812000-00018]

- 17 **Chen HF**, Wang WX, Li XF, Wu LX, Zhu YC, Du KQ, Xu CW. Eye metastasis in lung adenocarcinoma mimicking anterior scleritis: A case report. *World J Clin Cases* 2020; **8**: 410-414 [PMID: 32047793 DOI: 10.12998/wjcc.v8.i2.410]
- 18 **Arepalli S**, Kaliki S, Shields CL. Choroidal metastases: origin, features, and therapy. *Indian J Ophthalmol* 2015; **63**: 122-127 [PMID: 25827542 DOI: 10.4103/0301-4738.154380]
- 19 **Kappauf H**, Gallmeier WM, Wunsch PH, Mittelmeier HO, Birkmann J, Büschel G, Kaiser G, Kraus J. Complete spontaneous remission in a patient with metastatic non-small-cell lung cancer. Case report, review of the literature, and discussion of possible biological pathways involved. *Ann Oncol* 1997; **8**: 1031-1039 [PMID: 9402178 DOI: 10.1023/a:1008209618128]



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>

