

World Journal of *Clinical Cases*

World J Clin Cases 2019 November 26; 7(22): 3683-3914



**REVIEW**

- 3683** Colorectal cancer: The epigenetic role of microbiome
Sabit H, Cevik E, Tombuloglu H

ORIGINAL ARTICLE**Case Control Study**

- 3698** Human podocyte injury in the early course of hypertensive renal injury
Sun D, Wang JJ, Wang W, Wang J, Wang LN, Yao L, Sun YH, Li ZL

Retrospective Cohort Study

- 3711** Relationship between acute hypercarbia and hyperkalaemia during surgery
Weinberg L, Russell A, Mackley L, Dunnachie C, Meyerov J, Tan C, Li M, Hu R, Karalapillai D

Retrospective Study

- 3718** Surgical treatment of patients with severe non-flail chest rib fractures
Zhang JP, Sun L, Li WQ, Wang YY, Li XZ, Liu Y
- 3728** Super-selective arterial embolization in the control of acute lower gastrointestinal hemorrhage
Ly LS, Gu JT
- 3734** End-stage liver disease score and future liver remnant volume predict post-hepatectomy liver failure in hepatocellular carcinoma
Kong FH, Miao XY, Zou H, Xiong L, Wen Y, Chen B, Liu X, Zhou JJ

Observational Study

- 3742** Treatment of hemorrhoids: A survey of surgical practice in Australia and New Zealand
Fowler GE, Siddiqui J, Zahid A, Young CJ
- 3751** Relationship between homocysteine level and prognosis of elderly patients with acute ischemic stroke treated by thrombolysis with recombinant tissue plasminogen activator
Li J, Zhou F, Wu FX

CASE REPORT

- 3757** Cystic fibrosis transmembrane conductance regulator functional evaluations in a G542X+/- IVS8Tn:T7/9 patient with acute recurrent pancreatitis
Caldrer S, Bergamini G, Sandri A, Vercellone S, Rodella L, Cerofolini A, Tomba F, Catalano F, Frulloni L, Buffelli M, Tridello G, de Jonge H, Assael BM, Sorio C, Melotti P

- 3765** Ulcerated intussuscepted jejunal lipoma-uncommon cause of obscure gastrointestinal bleeding: A case report
Cuciureanu T, Huiban L, Chiriac S, Singeap AM, Danciu M, Mihai F, Stanciu C, Trifan A, Vlad N
- 3772** Ultrasonographic evaluation of the effect of extracorporeal shock wave therapy on calcific tendinopathy of the rectus femoris tendon: A case report
Lee CH, Oh MK, Yoo JI
- 3778** Contrast-enhanced computed tomography findings of a huge perianal epidermoid cyst: A case report
Sun PM, Yang HM, Zhao Y, Yang JW, Yan HF, Liu JX, Sun HW, Cui Y
- 3784** Iatrogenic crystalline lens injury during intravitreal injection of triamcinolone acetonide: A report of two cases
Su J, Zheng LJ, Liu XQ
- 3792** Sagliker syndrome: A case report of a rare manifestation of uncontrolled secondary hyperparathyroidism in chronic renal failure
Yu Y, Zhu CF, Fu X, Xu H
- 3800** Pre-eclampsia with new-onset systemic lupus erythematosus during pregnancy: A case report
Huang PZ, Du PY, Han C, Xia J, Wang C, Li J, Xue FX
- 3807** Unilateral congenital scrotal agenesis with ipsilateral cryptorchidism: A case report
Fang Y, Lin J, Wang WW, Qiu J, Xie Y, Sang LP, Mo JC, Luo JH, Wei JH
- 3812** Metastatic infection caused by hypervirulent *Klebsiella pneumonia* and co-infection with *Cryptococcus meningitis*: A case report
Shi YF, Wang YK, Wang YH, Liu H, Shi XH, Li XJ, Wu BQ
- 3821** Allergic fungal rhinosinusitis accompanied by allergic bronchopulmonary aspergillosis: A case report and literature review
Cheng KJ, Zhou ML, Liu YC, Zhou SH
- 3832** Invasive aspergillosis presenting as hilar masses with stenosis of bronchus: A case report
Su SS, Zhou Y, Xu HY, Zhou LP, Chen CS, Li YP
- 3838** Retropharyngeal abscess presenting as acute airway obstruction in a 66-year-old woman: A case report
Lin J, Wu XM, Feng JX, Chen MF
- 3844** Thoracoscopic segmentectomy assisted by three-dimensional computed tomography bronchography and angiography for lung cancer in a patient living with situs inversus totalis: A case report
Wu YJ, Bao Y, Wang YL
- 3851** Single-lung transplantation for pulmonary alveolar microlithiasis: A case report
Ren XY, Fang XM, Chen JY, Ding H, Wang Y, Lu Q, Ming JL, Zhou LJ, Chen HW

- 3859** Respiratory failure and macrophage activation syndrome as an onset of systemic lupus erythematosus: A case report
Sun J, Wang JW, Wang R, Zhang H, Sun J
- 3866** Diagnosis of gastric duplication cyst by positron emission tomography/computed tomography: A case report
Hu YB, Gui HW
- 3872** Peritoneal cancer after bilateral mastectomy, hysterectomy, and bilateral salpingo-oophorectomy with a poor prognosis: A case report and review of the literature
Ma YN, Bu HL, Jin CJ, Wang X, Zhang YZ, Zhang H
- 3881** Apatinib for treatment of a pseudomyxoma peritonei patient after surgical treatment and hyperthermic intraperitoneal chemotherapy: A case report
Huang R, Shi XL, Wang YF, Yang F, Wang TT, Peng CX
- 3887** Novel frameshift mutation causes early termination of the thyroxine-binding globulin protein and complete thyroxine-binding globulin deficiency in a Chinese family: A case report
Dang PP, Xiao WW, Shan ZY, Xi Y, Wang RR, Yu XH, Teng WP, Teng XC
- 3895** Diffuse large B-cell lymphoma arising from follicular lymphoma with warthin's tumor of the parotid gland - immunophenotypic and genetic features: A case report
Wang CS, Chu X, Yang D, Ren L, Meng NL, Lv XX, Yun T, Cao YS
- 3904** Exogenous endophthalmitis caused by *Enterococcus casseliflavus*: A case report
Bao QD, Liu TX, Xie M, Tian X

LETTER TO THE EDITOR

- 3912** Microbial transglutaminase should be considered as an environmental inducer of celiac disease
Lerner A, Matthias T

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Ridvan Hamid Alimehmeti, MD, PhD, Associate Professor, Lecturer, Surgeon, Department of Neuroscience, University of Medicine, Tirana 1000, Albania

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: Yun-Xiaojuan Wu

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.wjnet.com/2307-8960/editorialboard.htm>

EDITORIAL OFFICE

Jin-Lei Wang, Director

PUBLICATION DATE

November 26, 2019

COPYRIGHT

© 2019 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

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

GUIDELINES FOR ETHICS DOCUMENTS

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

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

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

PUBLICATION MISCONDUCT

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

ARTICLE PROCESSING CHARGE

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

STEPS FOR SUBMITTING MANUSCRIPTS

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

ONLINE SUBMISSION

<https://www.f6publishing.com>



Invasive aspergillosis presenting as hilar masses with stenosis of bronchus: A case report

Shan-Shan Su, Ying Zhou, Han-Yan Xu, Ling-Ping Zhou, Cheng-Shui Chen, Yu-Ping Li

ORCID number: Shan-Shan Su (0000-0002-5334-2827); Ying Zhou (0000-0002-4166-0350); Han-Yan Xu (0000-0003-0404-744X); Ling-Ping Zhou (0000-0003-1718-0880); Cheng-Shui Chen (0000-0002-4341-0443); Yu-Ping Li (0000-0002-5833-931X).

Author contributions: Su SS and Zhou LP were the patient's physicians, reviewed the literature and contributed to manuscript drafting; Zhou Y reviewed the literature and contributed to manuscript drafting; Xu HY interpreted the imaging findings and contributed to manuscript drafting; Chen CS and Li YP were responsible for the revision of the manuscript for important intellectual content. All authors issued final approval for the version to be submitted.

Supported by Wenzhou Municipal Science and Technology Bureau, No. ZH2017001.

Informed consent statement: Informed consent statement was obtained from the reported patient.

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

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

Open-Access: This article is an open-access article which was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non

Shan-Shan Su, Ying Zhou, Han-Yan Xu, Ling-Ping Zhou, Cheng-Shui Chen, Yu-Ping Li, Key Laboratory of Intervention Pulmonology of Zhejiang Province, Department of Pulmonary and Critical Care Medicine, The First Affiliated Hospital of Wenzhou Medical University, Wenzhou 325015, Zhejiang Province, China

Corresponding author: Yu-Ping Li, MD, Professor, Department of Pulmonary and Critical Care Medicine, The First Affiliated Hospital of Wenzhou Medical University, Nanbaixiang, Ouhai District, Wenzhou 325015, Zhejiang Province, China. wzliyp@163.com

Telephone: +86-577-55579273

Fax: +86-577-55579273

Abstract

BACKGROUND

Hilar masses with stenosis of the bronchus occur mainly due to malignant diseases, such as lung cancer. Hilar masses resulting from invasive aspergillosis are extremely rare and occur mostly in severely immunosuppressed patients.

CASE SUMMARY

In the current case report, we have documented a unique case of invasive aspergillosis presenting as a mass in the hilum and bronchial stenosis under bronchoscopy mimicking lung cancer in a 54-year-old man with diabetes mellitus. The histological analysis of bronchial membrane biopsy demonstrated fungal elements of 45° branching hyphae with positive Periodic Acid-Schiff and Grocott staining. After 3 mo of antifungal therapy, the symptoms, computed tomography scan and bronchoscopy manifestations all showed improvement.

CONCLUSION

We highlight that clinicians should consider a diagnosis of invasive aspergillosis when radiological examination shows pseudotumor appearance in diabetes mellitus patients.

Key words: Invasive aspergillosis; Lymph nodes; Lung cancer; Bronchoscopy; Case report

©The Author(s) 2019. Published by Baishideng Publishing Group Inc. All rights reserved.

Core tip: Hilar masses with stenosis of the bronchus occur mainly due to malignant diseases. Hilar masses resulting from invasive aspergillosis are extremely rare and occur mostly in immunosuppressed patients. Herein, we have documented a case of invasive aspergillosis presenting as a mass in the hilum and bronchial stenosis under

Commercial (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: <http://creativecommons.org/licenses/by-nc/4.0/>

Manuscript source: Unsolicited manuscript

Received: July 7, 2019

Peer-review started: July 17, 2019

First decision: September 23, 2019

Revised: October 4, 2019

Accepted: October 15, 2019

Article in press: October 15, 2019

Published online: November 26, 2019

P-Reviewer: Vosmik M, Vinh-Hung V, Wang HY

S-Editor: Zhang L

L-Editor: Filipodia

E-Editor: Wu YXJ



bronchoscopy in a 54-year-old man with diabetes mellitus. We have highlighted the importance of bronchoscopy with biopsy and culture for early diagnosis and treatment when radiological examination shows pseudotumor appearance in diabetes mellitus patients.

Citation: Su SS, Zhou Y, Xu HY, Zhou LP, Chen CS, Li YP. Invasive aspergillosis presenting as hilar masses with stenosis of bronchus: A case report. *World J Clin Cases* 2019; 7(22): 3832-3837

URL: <https://www.wjgnet.com/2307-8960/full/v7/i22/3832.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v7.i22.3832>

INTRODUCTION

Hilar masses with stenosis of the bronchus and enlarged lymph nodes are mainly due to malignant diseases, such as lung cancer. Invasive aspergillosis (IA) is a life-threatening opportunistic infection that primarily occurs in critically ill patients as well as in immunocompromised individuals. Hilar masses resulting from IA are extremely rare and occur predominantly in severely immunosuppressed patients. We herein report a unique case of IA presenting as a mass in the hilum and an abnormal appearance of bronchial membrane with bronchial stenosis under bronchoscopy mimicking lung cancer in a 54-year-old man with diabetes mellitus.

CASE PRESENTATION

Chief complaints

In April 2018, a 54-year-old man came to our hospital with pyrexia at onset along with the history of cough for 2 mo.

History of present illness

The patient's symptoms started 2 mo ago with fever and cough. At a local hospital, he received intravenous antibiotics (unknown) that improved his fever; however, his cough was not relieved.

History of past illness

His medical history included diabetes mellitus for 17 years with poor glucose control. He had a smoking history of 360 pack-years.

Personal and family history

His family history was negative.

Physical examination upon admission

On admission, vital signs were normal with no significant physical examination findings.

Laboratory examinations

Laboratory tests showed an elevated level of fasting blood glucose (15.5 mmol/L, normal range 3.9-6.1 mmol/L) with normal liver and renal function tests. Other routine blood tests indicated that blood regular test, serum C-reactive protein, procalcitonin levels and serum tumor markers were within normal ranges. Sputum culture, sputum smear for acid-fast bacillus and T-SPOT®TB were negative. The titers of total IgG, IgM, IgA and T cell subsets were also normal and screening for antinuclear antibodies and antineutrophil cytoplasmic antibodies was negative. The results of the serologic tests for human immunodeficiency virus were negative.

Imaging examinations

A contrast-enhanced chest computed tomography scan was conducted, which revealed enlarged mediastinum and hilum lymph nodes and an enlarged left hilum with a mass-like lesion leading to stenosis of the proximal part of the left upper bronchus (Figure 1).

Further diagnostic work-up

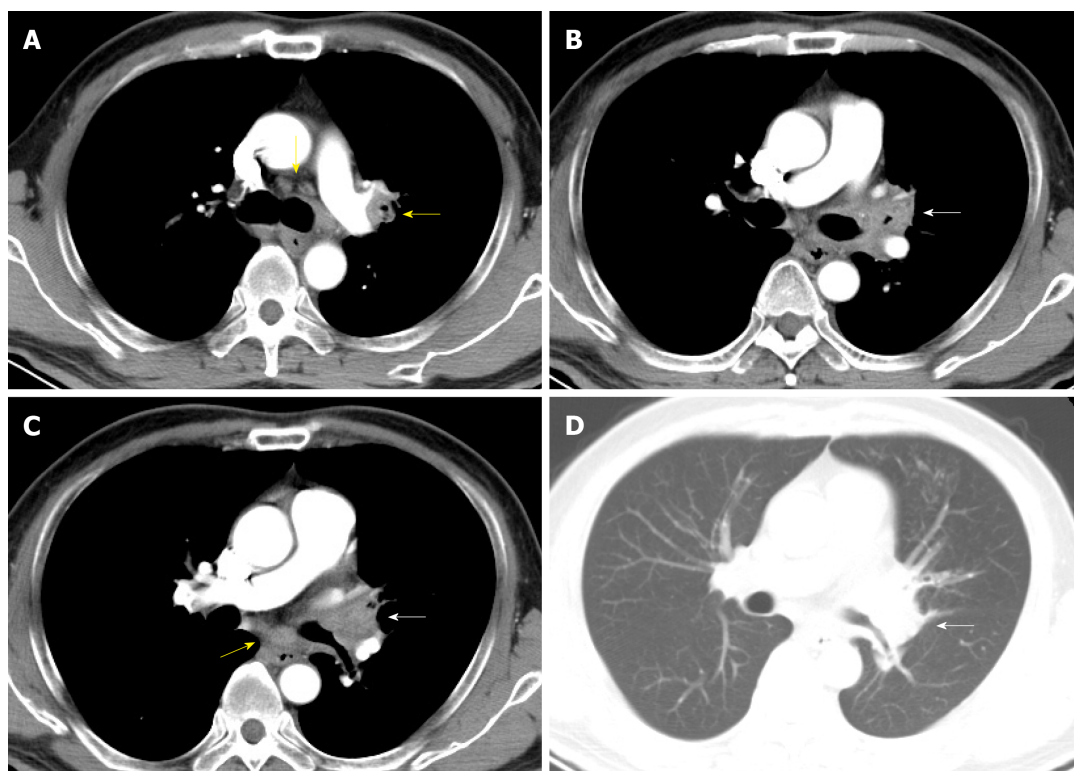


Figure 1 Contrast-enhanced chest computed tomography images (2018-04-07). A-C: Mediastinal window; D: Lung window. Contrast-enhanced chest computed tomography scan revealed enlarged mediastinum and hilum lymph nodes (yellow arrow) and an enlarged left hilum with a mass-like lesion leading to stenosis of the proximal part of the left upper bronchus (white arrow).

As the patient had normal levels of inflammatory biomarkers along with a mass-like lesion at the lung hilum, he was suspected to have lung cancer. Bronchoscopy revealed redness as well as thickening of bronchial membrane along with bronchial stenosis in the left main bronchus (Figure 2A). Bronchial membrane biopsy and histological analysis were performed, which unexpectedly demonstrated a formation of granulation tissue with 45° branching hyphae (Figure 3A). Moreover, the results of the Periodic Acid-Schiff staining and Grocott staining were positive (Figure 3B and C). But as infectious diseases were not suspected first at that moment, the culture for pathogens was not conducted. At the same time, the endobronchial ultrasound guided transbronchial needle aspiration of 7 and 11 L mediastinum/hilum lymph nodes and histological analysis were conducted, which just demonstrated as lymphocytes with no manifestations of cancer or fungal infections. Meanwhile, serum galactomannan assay indicated negative results (0.14, cut-off 0.5) along with elevated β -(1,3)-D-glucan assay (121.4 pg/mL, normal range < 100.5 pg/mL).

FINAL DIAGNOSIS

According to the pathology and elevated β -(1,3)-D-glucan assay, the diagnosis of invasive aspergillosis was confirmed.

TREATMENT

An antifungal therapy with intravenous voriconazole (6 mg/kg every 12 h in the first 24 h, followed by 4 mg/kg every 12 h) was given for 2 wk and was followed by oral voriconazole.

OUTCOME AND FOLLOW-UP

After 3 mo of antifungal therapy, the patient withdrew the drugs without consulting as his symptoms improved. A repeated computed tomography scan and bronchoscopy were done in March 2019, and both of these tests indicated

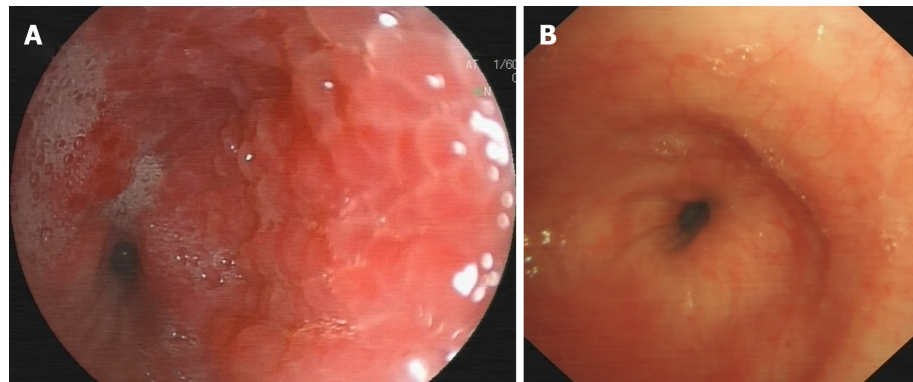


Figure 2 Bronchoscopy manifestations. A: Bronchoscopy (2018-04-16) showed redness as well as thickening of bronchial membrane and bronchial stenosis in the left main bronchus; B: Repeated bronchoscopy (2019-03-26) showed thickening of left main bronchus, which was better compared to the former done on 2018-04-16.

improvement (Figure 4 and Figure 2B). However, fungal fluorescence staining of the bronchial membrane brushing sample still revealed branching septate hyphae (Figure 3D); nonetheless, the culture was negative. Meanwhile, the level of β -(1,3)-D-glucan assay returned to normal (50.7 pg/mL) with negative galactomannan assay (0.08). The patient was asymptomatic by far without any antifungal treatment and was followed closely.

DISCUSSION

This report describes a unique case of invasive fungal infection with histological evidence mimicking lung cancer in a 54-year-old man with diabetes mellitus. The histological analysis demonstrated fungal elements of 45° branching hyphae with positive Periodic Acid-Schiff and Grocott staining. In addition, fungal fluorescence staining also showed branching septate hyphae. It is well-known that the characteristic of *Aspergillus* hyphae is angular dichotomously branching septate hyphae, which is consistent with this case. However, other organisms, such as *Fusariosis* and *Scedosporiosis* may be morphologically indistinguishable from *Aspergillus* species. Therefore, culture confirmation is of much importance to differentiate aspergillosis from other filamentous fungal infections. However, there was no positive culture result in the present case. The negative culture results might be false negative due to systemic antifungal therapy. Nonetheless, according to the guideline, proven aspergillosis requires the recovery of an organism with one important exception, which includes the fairly frequent occurrence of histopathological demonstration of hyphae consistent with *Aspergillus* species in patients with negative culture results^[1]. Besides, as culture has a poor sensitivity in the diagnosis of invasive aspergillosis, some experts^[2] have supported the concept of a proven infection on the basis of the findings of histopathology or microscopy without necessarily requiring culture confirmation. Combined with the higher morbidity of *Aspergillus* compared with other filamentous fungi, we believe that the diagnosis of this case should be proven IA.

The radiological manifestations in this case are enlarged mediastinum and hilum lymph nodes and a mass-like lesion in the hilum narrowing the left upper bronchus. Bronchoscopy revealed stenosis of the left main bronchus. It was not clear in our patient whether invasive bronchial aspergillosis (IBA) resulted in lymph node enlargement and hilum mass or lymph nodal aspergillosis invading to the bronchus. As the most common route of entry of *Aspergillus* spores is by inhalation, we initially assumed the former one. The bronchoscopic manifestations of IBA include three different forms: *Aspergillus* tracheobronchitis, ulcerative *Aspergillus* tracheobronchitis, and pseudomembranous *Aspergillus* tracheobronchitis as described by Kramer *et al*^[3] in 1991. Radiological abnormalities of IBA consist of pulmonary infiltrates, tracheobronchial wall thickening, nodules, endobronchial mass and atelectasis^[4]. Nevertheless, in the present case, the manifestation of bronchoscopy and radiography demonstrated as none of the forms described above. Consequently, we presumed the latter one. There have been some extremely rare case reports regarding nodal aspergillosis^[5-7]. Kumar *et al*^[5] reported chest wall and mediastinal nodal aspergillosis in a 29-year-old woman with no underlying medical problems who presented with left hilar necrotic lymph nodes, enclosing the left main bronchus and mediastinal

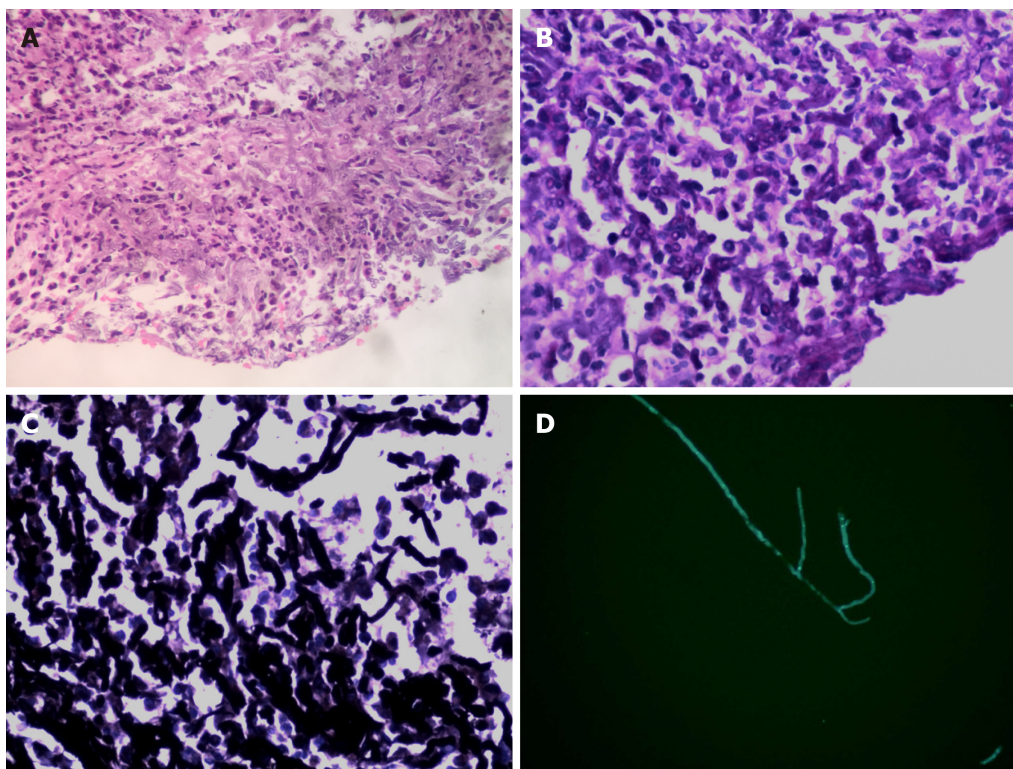


Figure 3 Histological and microbiological evidence of fungal infection. A: Fungal elements showing the 45° branching hyphae within biopsies under bronchoscopy (hematoxylin–eosin stain, 400×); B: Periodic Acid-Schiff staining was positive (400×); C: Grocott staining was positive (400×); D: Fungal fluorescence staining of bronchial membrane brushing sample done on 2019-3-26 revealed branching septate hyphae.

lymph nodes, direct extension to the left chest wall. Stern *et al*^[6] reported bulky mediastinal aspergillosis manifested as mediastinal mass surrounding the artery and compressing the left main bronchus in an immunocompetent patient. In the current case, the hilar lesions and lymph nodes on computed tomography diminished after the administration of voriconazole. Therefore, it is highly credible that lymph nodal aspergillosis existed. The negative result of lymph nodal histological analysis may be due to smaller specimen of aspiration compared to biopsy.

As this case showed, *Aspergillus* infections can present as pseudotumors with radiological appearance and features similar and indistinguishable from lung cancer. Our case illustrates that *Aspergillus* infections should be considered in the differential diagnosis of mediastinal nodal and hilum involvement, even in immunocompetent patients. Bronchoscopy with mucous biopsies and culture is essential to make an early diagnosis and differential diagnosis in the clinical setting.

IA is a life-threatening opportunistic infection that primarily occurs in critically ill patients as well as in immunocompromised individuals. Major risk factors include neutropenia, prolonged immunosuppressive therapy, lung transplantation and hematological malignancy^[8]. Recently, uncontrolled diabetes mellitus is considered as a low risk factor for aspergillosis. Diabetes mellitus can alter the normal immunologic response to infections, including reduced cytokine production, decreased granulocyte phagocytic ability and altered polymorphonuclear leucocyte response.

The latest Infectious Diseases Society of America guidelines^[9] recommend voriconazole as the first line therapy. However, the optimal duration of antifungal therapy is not well defined. The guidelines generally recommend that treatment of IA be continued for a minimum of 6–12 wk, depending on the severity and continuation of immunosuppression as well as the extent of resolution of clinical disease. In this case, the patient underwent 3 mo of antifungal therapy with radiological and bronchoscopic improvement but not complete absorption. At 7 mo after the initial diagnosis, the IA had not recurred.

CONCLUSION

This case recommends that diagnosis of mediastinal and hilar lymphadenopathy does not always mean malignancy even in a heavy smoker. The clinicians should always

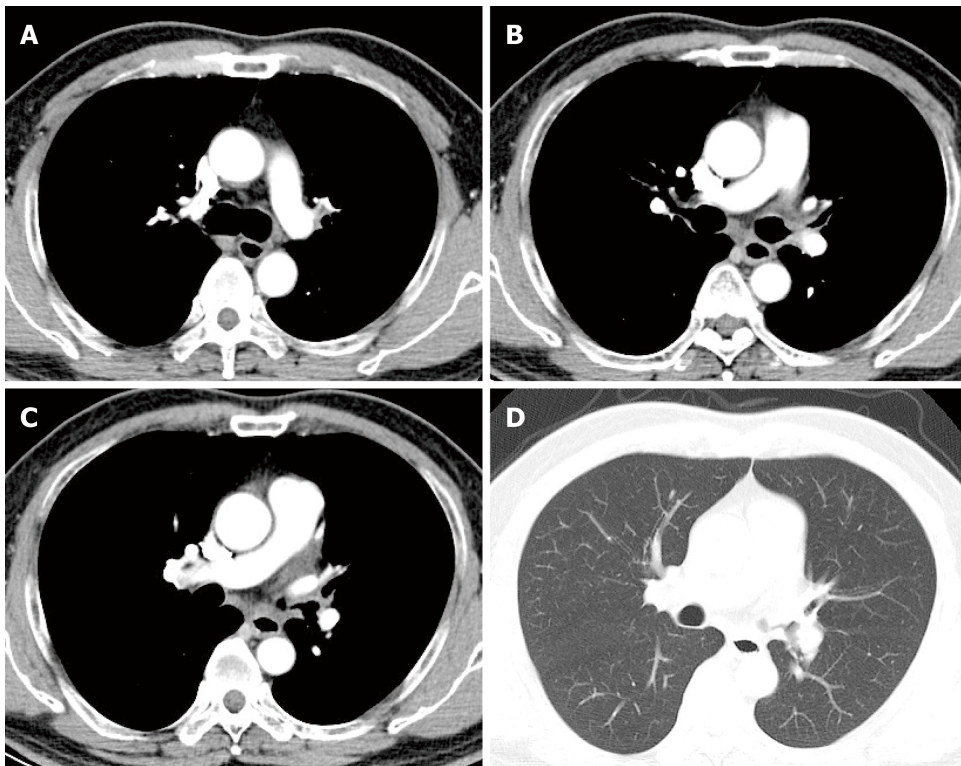


Figure 4 Repeated chest computed tomography scan images (2019-03-24). A-C: Mediastinal window; D: Lung window. Repeated chest computed tomography scan revealed improvement and diminishment of the mass-like lesion and mediastinum and hilum lymph nodes compared to the computed tomography scan done on 2018-4-7.

consider a diagnosis of IA when radiological examination shows pseudotumor appearance in diabetes mellitus patients. Bronchoscopy with biopsy and culture is of great importance to confirm the diagnosis.

REFERENCES

- 1 **Walsh TJ**, Anaissie EJ, Denning DW, Herbrecht R, Kontoyiannis DP, Marr KA, Morrison VA, Segal BH, Steinbach WJ, Stevens DA, van Burik JA, Wingard JR, Patterson TF; Infectious Diseases Society of America. Treatment of aspergillosis: clinical practice guidelines of the Infectious Diseases Society of America. *Clin Infect Dis* 2008; **46**: 327-360 [PMID: [18177225](#) DOI: [10.1086/525258](#)]
- 2 **Ascioglu S**, Rex JH, de Pauw B, Bennett JE, Bille J, Crokaert F, Denning DW, Donnelly JP, Edwards JE, Erjavec Z, Fiere D, Lortholary O, Maertens J, Meis JF, Patterson TF, Ritter J, Selleslag D, Shah PM, Stevens DA, Walsh TJ; Invasive Fungal Infections Cooperative Group of the European Organization for Research and Treatment of Cancer; Mycoses Study Group of the National Institute of Allergy and Infectious Diseases. Defining opportunistic invasive fungal infections in immunocompromised patients with cancer and hematopoietic stem cell transplants: an international consensus. *Clin Infect Dis* 2002; **34**: 7-14 [PMID: [11731939](#) DOI: [10.1086/323335](#)]
- 3 **Kramer MR**, Denning DW, Marshall SE, Ross DJ, Berry G, Lewiston NJ, Stevens DA, Theodore J. Ulcerative tracheobronchitis after lung transplantation. A new form of invasive aspergillosis. *Am Rev Respir Dis* 1991; **144**: 552-556 [PMID: [1654038](#) DOI: [10.1164/ajrccm/144.3_Pt_1.552](#)]
- 4 **Fernández-Ruiz M**, Silva JT, San-Juan R, de Dios B, García-Luján R, López-Medrano F, Lizasoain M, Aguado JM. Aspergillus tracheobronchitis: report of 8 cases and review of the literature. *Medicine (Baltimore)* 2012; **91**: 261-273 [PMID: [22932790](#) DOI: [10.1097/MD.0b013e31826c2ccf](#)]
- 5 **Kumar J**, Seith A, Kumar A, Madan K, Guleria R. Chest wall and mediastinal nodal aspergillosis in an immunocompetent host. *Diagn Interv Radiol* 2009; **15**: 176-178 [PMID: [19728262](#)]
- 6 **Stern JB**, Wyplosz B, Validire P, Angoulvant A, Fregeville A, Caliendo R, Gossot D. Bulky mediastinal aspergillosis mimicking cancer in an immunocompetent patient. *Ann Thorac Surg* 2014; **98**: 1472-1475 [PMID: [25282220](#) DOI: [10.1016/j.athoracsur.2013.11.055](#)]
- 7 **Mazzoni A**, Ferrarese M, Manfredi R, Facchini A, Sturani C, Nanetti A. Primary lymph node invasive aspergillosis. *Infection* 1996; **24**: 37-42 [PMID: [8852462](#) DOI: [10.1007/bf01780649](#)]
- 8 **Kosmidis C**, Denning DW. The clinical spectrum of pulmonary aspergillosis. *Thorax* 2015; **70**: 270-277 [PMID: [25354514](#) DOI: [10.1136/thoraxjnl-2014-206291](#)]
- 9 **Patterson TF**, Thompson GR, Denning DW, Fishman JA, Hadley S, Herbrecht R, Kontoyiannis DP, Marr KA, Morrison VA, Nguyen MH, Segal BH, Steinbach WJ, Stevens DA, Walsh TJ, Wingard JR, Young JA, Bennett JE. Practice Guidelines for the Diagnosis and Management of Aspergillosis: 2016 Update by the Infectious Diseases Society of America. *Clin Infect Dis* 2016; **63**: e1-e60 [PMID: [27365388](#) DOI: [10.1093/cid/ciw326](#)]



Published By Baishideng Publishing Group Inc
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA
Telephone: +1-925-2238242
E-mail: bpgoffice@wjgnet.com
Help Desk: <https://www.f6publishing.com/helpdesk>
<https://www.wjgnet.com>

