

Tubercular Retropharyngeal Abscess in Association with Aberrant Retropharyngeal Internal Carotid Arteries - A Rare Entity: Imaging Diagnosis and a Word of Caution

Shuchi Bhatt¹ , Deepawali Malla¹ , Deepti Mukhija¹ , Vipin Arora² , Anupama Tandon¹ ,
Sonal Sharma³ 

¹Department of Radiology, University College of Medical Sciences and Guru Teg Bhadur Hospital, Delhi, India

²Department of Otorhinolaryngology, University College of Medical Sciences and Guru Teg Bhadur Hospital, Delhi, India

³Department of Pathology, University College of Medical Sciences and Guru Teg Bhadur Hospital, Delhi, India

Case Report

Abstract

Retropharyngeal (RP) abscess is rarely encountered in adults. Still rare is an abscess of tubercular etiology especially without involvement of the underlying cervical spine. We present a case of an immunocompetent woman with a tubercular RP abscess diagnosed on contrast-enhanced cervical computed tomography and confirmed on cytology. Another interesting feature was an aberrant RP course of the internal carotid arteries in this patient. This case report stresses the

importance of imaging in establishing an unexpected diagnosis of an RP abscess, suggesting its likely cause, and also in demonstrating the aberration in regional vascular anatomy, and warns the clinician of life-threatening hemorrhagic complication in the event of any diagnostic or therapeutic intervention.

Keywords: Retropharyngeal abscess, tuberculosis, carotid artery, diagnostic imaging

Introduction

Retropharyngeal (RP) space is a potential space between the prevertebral fascia and the pharyngeal constrictor muscles. An abscess usually develops following suppurative lymphadenitis in association with an upper respiratory tract infection (1). Owing to the abundance of RP lymph nodes in children, most of the cases are in less than 6 years old. Lymph nodes regress as the child grows; therefore, this entity is rarely encountered in adults. If present, it may result from a local trauma or an adjacent disease process (2). A high degree of clinical suspicion and a prompt and accurate diagnosis are crucial for early management.

Aberrant RP course of internal carotid artery (ICA) is a very rare cause of RP swelling, usually presenting as a pulsatile pseudotumor, but may be misdiagnosed as peritonsillar abscess or parapharyngeal neoplasm (3). Very few cases have been reported in the literature describing this anomaly, but its detection is very important to reduce the risk of life-threatening hemorrhagic complications, especially in situations requiring pharyngeal

surgery or abscess drainage (3-5). Commonly, contrast-enhanced computed tomography (CECT) is performed to evaluate the pathomorphology and the vascular anatomy in the region and should always be done before any intervention. Here we present a case of chronic tubercular RP abscess with an RP course of bilateral ICAs.

Case Presentation

A 30-year-old woman complained of pain, foreign body sensation, and feeling a lump in the throat along with occasional low-grade fever for 4-5 months. A bulge was present in the posterior pharyngeal wall with normal overlying mucosa. Neck palpation revealed small, non-tender, soft to firm lymph nodes. The cervical spine was normal. Routine investigations showed an increased erythrocyte sedimentation rate (30 mm/h). A clinical diagnosis of cervical nodal tuberculosis was made, and the patient was referred for a radiological work-up.

Plain radiograph of the neck in lateral view revealed prevertebral soft tissue enlargement (Figure 1)

ORCID IDs of the authors:

S.B. 0000-0002-7486-1431;
D.M. 0000-0002-4380-2009;
D.Mukhija. 0000-0001-7477-5704;
V.A. 0000-0003-1770-4234;
A.T. 0000-0002-7858-956X;
S.S. 0000-0003-3532-9749.

Cite this article as: Bhatt S, Malla D, Mukhija D, Arora V, Tandon A, Sharma S. Tubercular Retropharyngeal Abscess in Association with Aberrant Retropharyngeal Internal Carotid Arteries - A Rare Entity: Imaging Diagnosis and A Word of Caution. *Turk Arch Otorhinolaryngol* 2019; 57(1): 50-3.

Corresponding Author:

Shuchi Bhatt; drshuchi@hotmail.com

Received Date: 23.07.2018

Accepted Date: 31.10.2018

Available Online Date: 28.02.2019

© Copyright 2019 by Official Journal of the Turkish Society of Otorhinolaryngology and Head and Neck Surgery Available online at www.turkarchotolaryngol.net

DOI: 10.5152/tao.2018.3684

with no calcification or air. The skull base and the vertebrae appeared normal. Paranasal sinuses were clear. Ultrasound of the neck revealed well-defined rounded hypoechoic lesions with distal acoustic enhancement suggestive of necrotic lymph nodes. CECT of the neck demonstrated a well-defined, hypoechoic, 4.9×3.2 cm lesion with peripheral enhancement in the RP space

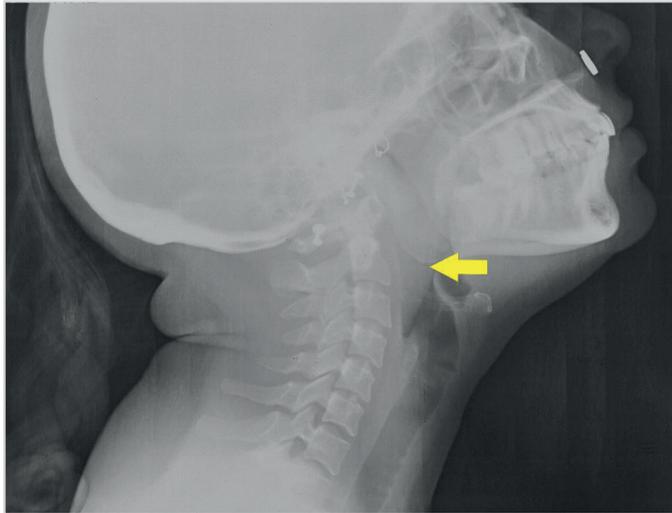


Figure 1. Plain lateral radiograph of the neck showing widening of the prevertebral soft tissue stripe (yellow arrow), causing a smooth indentation on the nasopharyngeal and oropharyngeal air columns. No calcification or air lucencies are seen within the soft tissue swelling. The skull base, the vertebrae, and other visualized bones do not reveal any abnormality

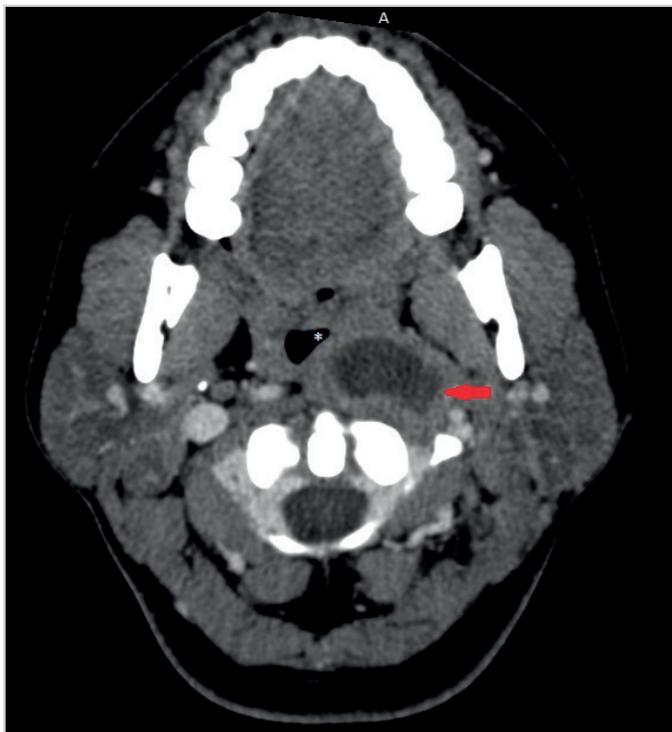


Figure 2. Axial contrast-enhanced CT of the neck showing a well-defined, hypoechoic lesion with peripheral enhancement in the retropharyngeal space on the left side (red arrow) revealing an abscess. The lesion causes partial obliteration of the oropharynx with displacement of the tonsillar fauces anteriorly (*) and obliteration of the left parapharyngeal space

(Figure 2). The prevertebral muscles and the cervical vertebrae were normal. Rounded necrotic lymph nodes displaying a peripheral echogenic rim and hypoechoic center were present bilaterally, with the largest measuring 2.1×1.5 cm at level II on the left side (Figure 3). The rest of the soft tissue structures were normal. Imaging diagnosis of RP abscess with cervical lymphadenopathy was made. Necrosis suggested a tubercular etiology though chest radiograph did not reveal any active or healed tubercular lesions. Bilateral ICA had an aberrant course in the RP space adjacent to the abscess (Figure 4, 5). Ultrasound-guided fine needle aspiration cytology was attempted from the lymph nodes, revealing granulomas suggestive of tuberculosis (Figure 6).

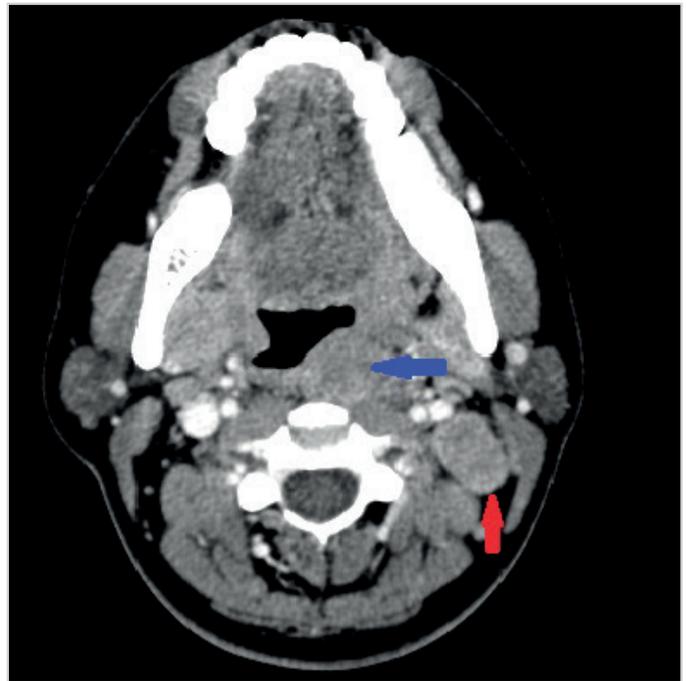


Figure 3. Axial contrast-enhanced CT image at a lower level revealing enlarged level II cervical lymph node (red arrow) on the left side with a left-sided retropharyngeal abscess (blue arrow)

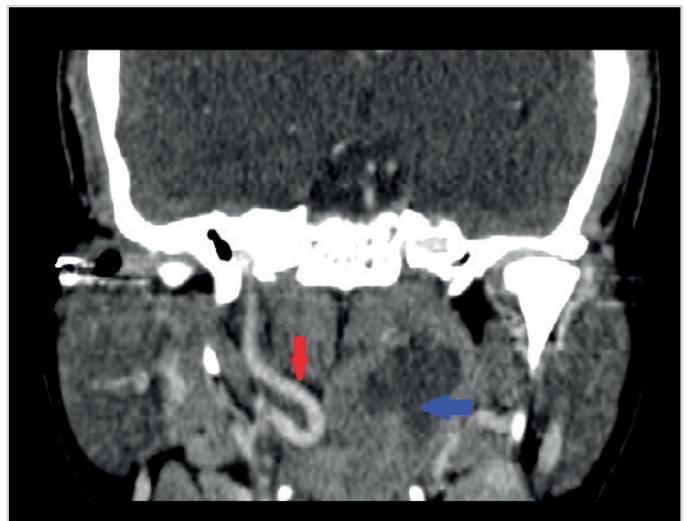


Figure 4. Coronal contrast-enhanced CT image showing an aberrant retropharyngeal course of the right internal carotid artery (red arrow) lying close to the retropharyngeal abscess on the left side (blue arrow)

No attempt was made to aspirate the RP abscess. Following the dictum of a single disease process and similar imaging findings for the abscess and the lymph nodes, the abscess was assumed to be tubercular in origin. An anti-tubercular treatment was instituted. The patient became asymptomatic after 15 days and showed resolution of lymphadenopathy on completion of the intensive phase (2 months with rifampicin, isoniazid, pyrazinamide, and ethambutol). Thereafter, a continuation phase with rifampicin, isoniazid, and ethambutol for four months was giv-

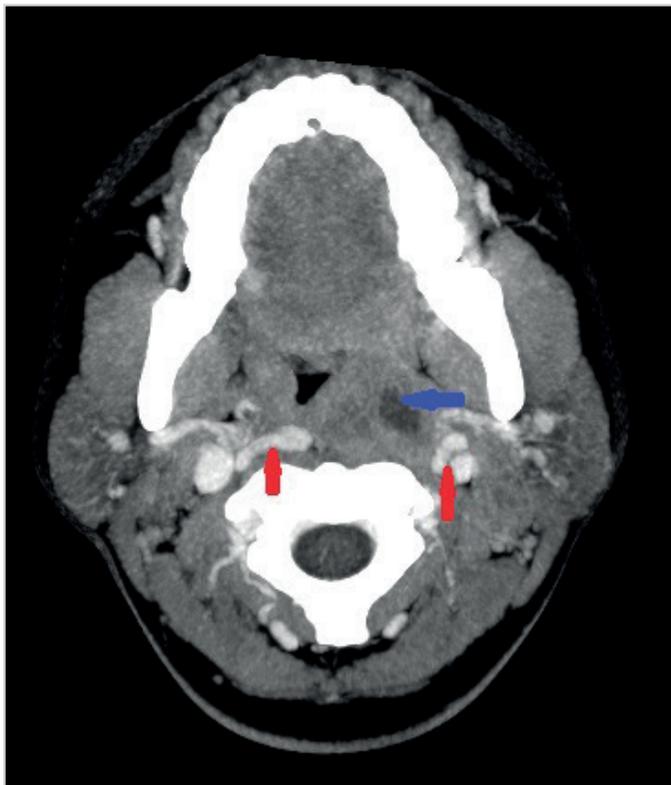


Figure 5. Axial maximum intensity projection image showing an aberrant retropharyngeal course of the internal carotid arteries on both sides (red arrows) with a left-sided retropharyngeal abscess (blue arrow)

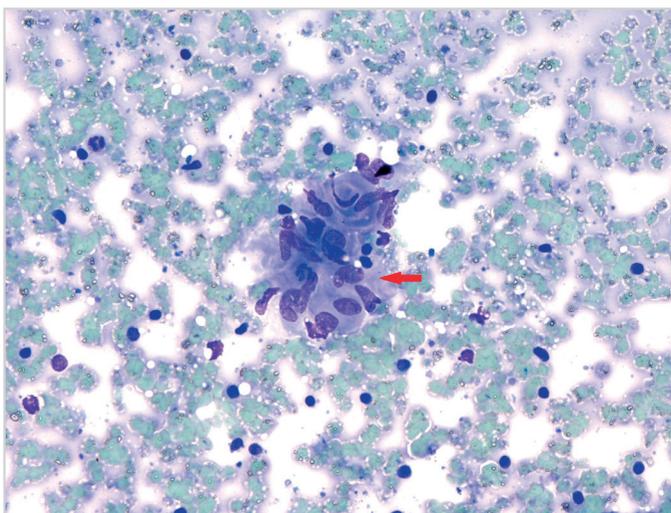


Figure 6. Low-power magnification (X100) of May-Grünwald-Giemsa-stained smear showing granuloma (red arrow) in a necrotic background that is suggestive of tuberculosis

en. Written informed consent was obtained from the patient for this publication of this report.

Discussion

Retropharyngeal space is bounded by buccopharyngeal fascia anteriorly, prevertebral fascia posteriorly, and carotid sheaths laterally. It extends from the skull base to the mediastinum inferiorly and serves as a conduit for the spread of diseases from the neck into the chest. Acute RP abscess is usually pyogenic and occurs frequently in children because of the abundant RP lymph nodes that undergo suppuration due to the spread of infection from the upper respiratory tract (6). As these lymph nodes usually disappear after 4-5 years of age, RP abscess is not encountered in adults (6). However, it may occur secondary to pharyngeal/esophageal perforation or sepsis following a penetrating injury of the pharyngeal wall (7). Chronic RP abscesses are rare in immunocompetent adults (8), and their tubercular etiology is still rarer (2). Tubercular RP abscess is usually secondary to extension from the prevertebral collection in association with Pott's spine. In rare cases, RP abscess may occur due to lymphatic spread to a persistent RP lymph node or hematogenous spread from pulmonary tuberculosis (7). The absence of vertebral or pulmonary tuberculosis eliminates the possibility of direct or hematogenous spread, respectively, and supports the hypothesis of retrograde lymphatic spread to the persistent RP lymph nodes.

The high mortality rate in RP abscesses is due to complications, such as airway obstruction, mediastinitis, aspiration pneumonia, epidural abscess, jugular venous thrombosis, necrotizing fasciitis, sepsis, and carotid artery erosion (9). Therefore, early diagnosis and urgent medical and surgical management are crucial. However, surgery or intervention should only be attempted after CECT examination of the neck has shown the extent of the disease and its relationship to the vascular structures. The radiologist should take note of any vascular anomaly in the neck and highlight the same in the report.

The incidence of an aberrant carotid artery is <0.2% (4). Both common carotid arteries are deeply situated at the root of the neck, become more superficial in the carotid triangle, and divide into the external and internal carotid arteries. The ICA is accompanied by the internal jugular vein and the vagus nerve courses within the carotid sheath along the pharynx to reach the skull base, where it enters the middle cranial fossa through the carotid canal. In the suprahyoid location, the carotid sheath does not have complete anatomical boundaries and may potentially communicate with the para- or RP space (10). Munoz et al. (4) reported a complete RP course of carotid arteries and termed them "kissing carotids." It is especially dangerous when the ICA comes in contact with the tonsillar fossa or the posterior pharyngeal wall, and may cause massive hemorrhage during tonsillectomy, uvulopalatopharyngoplasty, or incision and drainage of a peritonsillar or an RP abscess (3). Therefore, awareness of an aberrant ICA will prevent vascular trauma during surgical, interventional, or anesthesia-related procedures. Our case report highlights the importance of

CECT in identifying an aberrant vascular anatomy in association with a rare RP presentation of a tubercular abscess in an adult in the absence of Pott's spine. In addition, it helps in selecting a safe site for obtaining the tissue for establishing the diagnosis.

Conclusion

Retropharyngeal abscess is rare in adults, and a tubercular etiology occurring in the absence of Pott's spine is the rarest presentation. A possibility of tuberculosis should be considered when the clinical and/or radiological features are suggestive, especially in an endemic region. CECT plays an important role in diagnosing and detecting imminent complications. If present, aberrant RP ICA requires a cautious approach in candidates requiring interventions of the RP region in order to avoid massive life-threatening hemorrhage.

Informed Consent: Written informed consent was obtained from patient who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - S.B., D.M., D.Mukhija., V.A., A.T., S.S.; Design - S.B., D.M., D.Mukhija., V.A., A.T., S.S.; Supervision - S.B., D.M., D.Mukhija., V.A., A.T., S.S.; Materials - D.M., D.Mukhija., V.A., S.S.; Data Collection and/or Processing - S.B., D.M., D.Mukhija.; Analysis and/or Interpretation - S.B., V.A.; Literature Search - S.B., D.M., D.Mukhija., A.T.; Writing - S.B., D.M., D.Mukhija., V.A., A.T., S.S.; Critical Reviews - S.B., D.M., D.Mukhija., V.A., A.T., S.S.

Conflict of Interest: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

References

1. Pontell J, Har-El G, Lucente FE. Retropharyngeal abscess: clinical review. *Ear Nose Throat J* 1995; 74: 701-4.
2. Arora S, Sharma J, Pippal S, Yadav A, Najmi M, Singhal D. Retropharyngeal abscess following a gun shot injury. *Braz J Otorhinolaryngol* 2009; 75: 909. [\[CrossRef\]](#)
3. Battal B, Karaman B, Akay S, Tasar M. Aberrant retropharyngeal internal carotid artery associated with retropharyngeal abscess: determination of a safe drainage zone with computed tomography. *JBR-BTR* 2012; 95: 37. [\[CrossRef\]](#)
4. Muñoz A, De Vergas J, Crespo J. Imaging and clinical findings in patients with aberrant course of the cervical internal carotid arteries. *Open Neuroimaging J* 2010; 4: 174-81. [\[CrossRef\]](#)
5. Prakash M, Abhinaya S, Kumar A, Khandelwal N. Bilateral retropharyngeal internal carotid artery: A rare and potentially fatal anatomic variation. *Neurol India* 2017; 65: 431-2. [\[CrossRef\]](#)
6. Marques PM, Spratley JE, Leal LM, Cardoso E, Santos M. Parapharyngeal abscess in children: five year retrospective study. *Braz J Otorhinolaryngol* 2009; 75: 826-30. [\[CrossRef\]](#)
7. Singh J, Velankar H, Shinde D, Chordia N, Budhwani S. Retropharyngeal cold abscess without Pott's spine. *S Afr J Surg* 2012; 50: 137-9. [\[CrossRef\]](#)
8. Harkani A, Hassani R, Ziad T, Aderdour L, Nouri H, Rochdi Y, et al. Retropharyngeal abscess in adults: Five case reports and review of the literature. *ScientificWorldJournal* 2011; 11: 1623-9. [\[CrossRef\]](#)
9. Herzon FS, Martin AD. Medical and surgical treatment of peritonsillar, retropharyngeal, and parapharyngeal abscesses. *Curr Infect Dis Rep* 2006; 8: 196-202. [\[CrossRef\]](#)
10. Som PM, Curtin HD. Fasciae and Spaces. In: Som PM, Curtin HD, Eds. *Head and Neck imaging*. Mosby Yearbook Inc. 1996; 738-47.