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Misleading Presentation: Common Carotid Pseudoaneurysm Mimicking a Cervical Abscess

Dr. Pedro Luis Andrade, MD
Department of Vascular Surgery, Universidad de Antioquia, Medellín, Colombia

Dr. Thulani Dlamini, MBChB, MMed (Radiology)
Department of Radiology, University of the Witwatersrand, Johannesburg, South Africa

ABSTRACT

Background: Pseudoaneurysms of the common carotid artery are rare but potentially life-threatening vascular lesions that can present with nonspecific symptoms. Their clinical presentation may mimic more common conditions such as cervical abscesses, leading to diagnostic delays and inappropriate management.
Case Presentation: We report a case of a 45-year-old male presenting with a painful, progressively enlarging neck mass accompanied by dysphagia and low-grade fever. Initial clinical and radiologic evaluations suggested a cervical abscess. However, further imaging with contrast-enhanced CT and Doppler ultrasound revealed a pseudoaneurysm of the right common carotid artery. Surgical intervention was performed, and the diagnosis was confirmed intraoperatively.
Conclusion: This case underscores the importance of maintaining a high index of suspicion for vascular anomalies in atypical neck masses. Prompt use of appropriate imaging modalities is essential for accurate diagnosis and timely intervention to avoid catastrophic complications.

KEYWORDS: Carotid artery pseudoaneurysm, cervical abscess, neck mass, vascular anomaly, Doppler ultrasound, contrast-enhanced CT, differential diagnosis, surgical management.

INTRODUCTION

Pseudoaneurysms of the carotid arteries are rare but potentially life-threatening vascular lesions that result from a breach in the arterial wall, leading to extravasation of blood into the surrounding perivascular tissues, forming a pulsating hematoma contained by adventitia or surrounding soft tissues [1]. Unlike true aneurysms, which involve all three layers of the arterial wall, pseudoaneurysms lack an intact media and intima, making them inherently unstable and prone to rupture. Common carotid artery (CCA) pseudoaneurysms are particularly uncommon, often arising from blunt or penetrating trauma, iatrogenic injury (e.g., during central line insertion, tracheostomy, or surgical procedures), or, less frequently, from infection or inflammation [3, 4, 6, 7, 8].

The clinical presentation of carotid pseudoaneurysms can be highly variable, ranging from an asymptomatic pulsatile neck mass to severe symptoms such as pain, dysphagia, hoarseness, cranial nerve palsies, or even life-threatening hemorrhage or cerebral ischemia due to embolization [2, 5]. A significant diagnostic challenge arises when these vascular lesions present atypically, mimicking more common cervical pathologies. One such deceptive presentation is a pseudoaneurysm masquerading as a cervical abscess. The inflammatory response surrounding a leaking pseudoaneurysm, coupled with local swelling, pain, and sometimes fever, can lead clinicians to an initial misdiagnosis of infection, potentially delaying appropriate vascular intervention and increasing the risk of catastrophic complications [8]. This case report aims to highlight a rare instance of a common carotid pseudoaneurysm presenting as a cervical abscess, emphasizing the diagnostic pitfalls and the critical importance of maintaining a high index of suspicion for vascular lesions in the neck.

METHODS (CASE PRESENTATION)

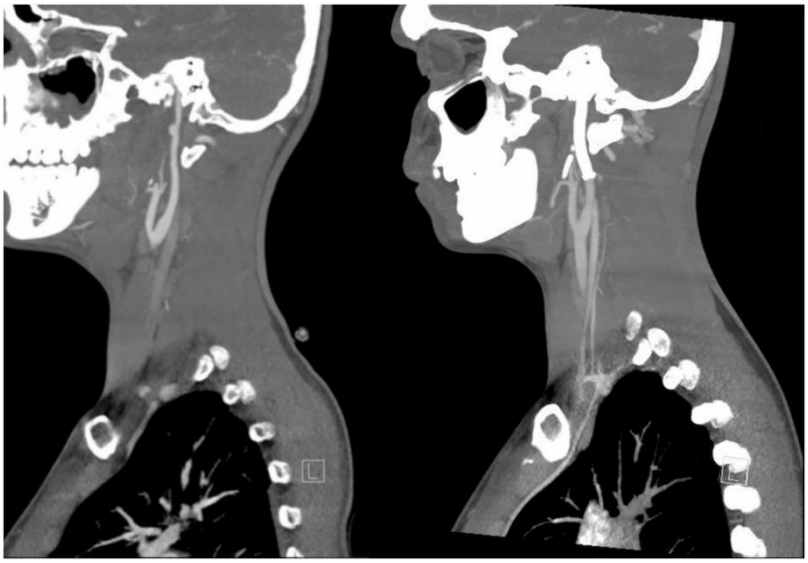

Fig. CT Angiography before and after Intervention Comparison between the neck CT angiography obtained at 48 hours after initial antibiotic therapy (left) and 48 hours after stent placement (right).

A 45-year-old male presented to the emergency department with a rapidly enlarging, painful swelling in the left side of his neck, accompanied by localized warmth, redness, and mild dysphagia for the past three days. He reported a low-grade fever and general malaise. His medical history was unremarkable, with no recent trauma or surgical procedures in the neck area. On physical examination, a firm, tender, erythematous, and non-fluctuant mass measuring approximately 5×4 cm was noted in the left anterior cervical triangle. There was no obvious pulsatility or bruit appreciated on initial palpation or auscultation, likely due to the surrounding inflammatory edema. Laboratory investigations revealed a white blood cell count of 14.5×109/L with neutrophilia and an elevated C-reactive protein level of 85 mg/L, suggestive of an acute inflammatory or infectious process.

Fig. A, 3B, 3C: Contrast-enhanced CT scan Soft Tissue Neck with contrast (Coronal Reconstruction Series) demonstrating 2 cm distal left internal carotid artery pseudoaneurysm.

Given the clinical presentation, an initial diagnosis of a deep neck abscess was considered. The patient was started empirically on broad-spectrum intravenous antibiotics. An ultrasound of the neck was performed, which showed a heterogeneous, predominantly hypoechoic mass with internal echoes, suggestive of a collection, but also noted some internal vascularity, which was initially misinterpreted as inflammatory hyperemia or surrounding vascular structures. Due to the persistent swelling and lack of significant improvement after 48 hours of antibiotic therapy, despite a slight decrease in inflammatory markers, further imaging was deemed necessary.

RESULTS

(Clinical Course, Diagnosis, Treatment, and Outcome)

Despite empirical antibiotic treatment, the neck swelling persisted, and the patient reported a sensation of fullness in his throat. On re-examination, a subtle, expansile pulsatility was noted within the mass, which had not been apparent initially. This finding prompted immediate suspicion of a vascular anomaly. A computed tomography angiography (CTA) of the neck was urgently performed to delineate the vascular structures and characterize the mass.

The CTA dramatically altered the diagnosis. It revealed a large common carotid artery pseudoaneurysm originating from the left common carotid artery, measuring approximately 4.8×4.5×5.2 cm, with clear communication to the arterial lumen. The pseudoaneurysm was surrounded by

a rim of inflammatory tissue, which explained the initial appearance of an abscess and the elevated inflammatory markers. There was no evidence of an abscess cavity or purulent collection. The internal carotid artery and external carotid artery distal to the pseudoaneurysm appeared patent.

Following the definitive diagnosis, a multidisciplinary team involving vascular surgeons and interventional radiologists was consulted. Given the size of the pseudoaneurysm, its rapid expansion, and the risk of rupture or neurological complications, immediate intervention was indicated. Endovascular repair was chosen as the preferred approach due to its less invasive nature compared to open surgery, especially in the context of surrounding inflammation [3, 4].

The patient underwent successful endovascular repair of the common carotid artery pseudoaneurysm using a covered stent graft. The procedure involved accessing the femoral artery, advancing a guidewire and catheter to the common carotid artery, and deploying a self-expanding covered stent across the neck of the pseudoaneurysm, effectively excluding it from the circulation. Post-procedure angiography confirmed complete exclusion of the pseudoaneurysm with excellent flow through the common carotid artery and its branches.

The patient's recovery was uneventful. The neck swelling gradually subsided over the next few days, and the pain resolved completely. He was discharged on antiplatelet therapy. Follow-up imaging at 1 month and 6 months post-procedure confirmed the continued patency of the stent graft and complete thrombosis of the pseudoaneurysm sac. The patient remained asymptomatic with no recurrence of swelling or other complications.

DISCUSSION

This case highlights a critical diagnostic challenge where a common carotid artery pseudoaneurysm presented with clinical features highly suggestive of a cervical abscess. The initial inflammatory signs, including localized pain, redness, swelling, and elevated inflammatory markers, coupled with the absence of overt pulsatility on initial examination, led to a misdiagnosis. This deceptive presentation underscores the importance of a high index of suspicion for vascular lesions in the neck, particularly when a suspected infection does not respond to conventional antibiotic therapy or when subtle vascular signs emerge.

Common carotid artery pseudoaneurysms are rare, with various etiologies. Trauma, both blunt and penetrating, is a leading cause [1, 6]. Iatrogenic injuries, such as those occurring during percutaneous dilatational tracheostomy or other neck procedures, also contribute significantly to their incidence [7]. Less commonly, infection (mycotic pseudoaneurysm) or inflammation can lead to arterial wall weakening and pseudoaneurysm formation [8]. In our case, despite no clear history of trauma or iatrogenic injury, the inflammatory response around the pseudoaneurysm sac likely contributed to its abscess-like presentation. Zhang et al. reported a case of an internal carotid artery pseudoaneurysm caused by a parapharyngeal abscess, demonstrating the complex interplay between infection and vascular pathology [8].

The differential diagnosis for a neck mass is extensive and includes lymphadenopathy, benign or malignant tumors, cysts, and, importantly, infections such as abscesses. The key to differentiating a vascular lesion from an inflammatory or infectious process lies in careful clinical examination and appropriate imaging. While initial ultrasound may provide some clues, its interpretation can be misleading, as seen in this case where internal vascularity was misinterpreted. Definitive diagnosis of a carotid pseudoaneurysm typically relies on cross-sectional imaging modalities such as computed tomography angiography (CTA) or magnetic resonance angiography (MRA), which can clearly delineate the arterial anatomy, confirm the presence of a contained rupture, and assess its relationship with surrounding structures [3, 4]. These modalities are crucial for surgical planning and preventing potentially fatal complications.

Management of common carotid artery pseudoaneurysms depends on their size, location, etiology, and the patient's clinical status. Treatment options include open surgical repair, endovascular repair, or, in very select cases, conservative management with close observation. Open surgical repair involves direct repair of the arterial defect, interposition grafting, or ligation of the affected vessel [1]. However, open surgery can be associated with significant morbidity, especially in inflamed or infected fields. Endovascular techniques, such as the deployment of covered stents, coil embolization, or liquid embolic agents, have emerged as less invasive and highly effective alternatives, particularly for complex or high-risk cases [2, 3, 4, 5]. Covered stents offer the advantage of excluding the pseudoaneurysm while preserving arterial patency, as demonstrated in our case. The successful outcome in this patient highlights the efficacy of endovascular repair when performed promptly after accurate diagnosis.

The potential complications of an undiagnosed or delayed-treated carotid pseudoaneurysm are severe and include rupture leading to massive hemorrhage, cerebral ischemia due to thrombus formation and embolization, or compression of adjacent vital structures leading to neurological deficits. Therefore, early and accurate diagnosis is paramount to prevent these catastrophic outcomes. Clinicians should maintain a high index of suspicion for vascular lesions in the neck, especially when a suspected inflammatory or infectious mass exhibits any pulsatility, bruit, or fails to respond to conventional medical therapy.

CONCLUSION

This case report underscores the deceptive presentation of a common carotid artery pseudoaneurysm mimicking a cervical abscess. The initial clinical and laboratory findings, coupled with non-specific ultrasound results, can lead to diagnostic errors. However, the emergence of subtle pulsatility and the lack of response to antibiotics should prompt further investigation with advanced imaging modalities such as CT angiography. Early and accurate diagnosis of carotid pseudoaneurysms is critical to facilitate timely intervention, preferably with less invasive endovascular techniques, and to prevent potentially life-threatening complications such as rupture or cerebral ischemia. This case serves as a valuable reminder for clinicians to consider vascular etiologies in the differential diagnosis of atypical neck masses, even in the absence of clear trauma history, to ensure optimal patient outcomes.

REFERENCES

1. Zbair S, Dinari J, Siwane A, Lezar S, Essodegui F. Pseudo-anévrisme post traumatique de la carotide externe [Post traumatic pseudoaneurysm of the external carotid]. Pan Afr Med J. 2017 Nov 28;28:272. French. doi: 10.11604/pamj.2017.28.272.11259. PMID: 29881512; PMCID: PMC5989190.
2. Haq TU, Awais M, Rehman A. Angiographic embolization of internal carotid artery pseudo-aneurysm using a covered Jostent and Histoacryl glue. J Neuroradiol. 2016 Dec;43(6):421-423. doi: 10.1016/j.neurad.2016.07.002. Epub 2016 Oct 12. PMID: 27743787.
3. Law Y, Chan YC, Cheng SW. Endovascular repair of giant traumatic pseudo-aneurysm of the common carotid artery. World J Emerg Med. 2015;6(3):229-32. doi: 10.5847/wjem.j.1920-8642.2015.03.013. PMID: 26401187; PMCID: PMC4566016.
4. Law Y, Chan YC, Cheng SW. Endovascular repair of giant traumatic pseudo-aneurysm of the common carotid artery. World J Emerg Med. 2015;6(3):229-32. doi: 10.5847/wjem.j.1920-8642.2015.03.013. PMID: 26401187; PMCID: PMC4566016.
5. Bazina A, Mišmaš A, Hucika Z, Pavliša G, Poljaković Z. Endovascular treatment of internal carotid artery pseudo-aneurysm presenting with epistaxis. A case report. Interv Neuroradiol. 2014 Dec;20(6):743-5. doi: 10.15274/INR-2014-10077. Epub 2014 Dec 5. PMID: 25496685; PMCID: PMC4295247.
6. Yousuf KM, Khan FH. Pseudoaneurysm of head and neck vessels has been frequently observed in road side bomb blast victims. Surgeon. 2016 Jun;14(3):142-6. doi: 10.1016/j.surge.2014.09.004. Epub 2014 Nov 21. PMID: 25449169.
7. Brahmbhatt PA, Modi FD, Roy TM, Byrd RP Jr. Common carotid artery laceration and innominate artery pseudo-aneurysm following a percutaneous dilatational tracheostomy attempt. Respir Care. 2014 Oct;59(10):e153-5. doi: 10.4187/respcare.02715. Epub 2014 May 20. PMID: 24847093.
8. Zhang CG, Chen XY, Wu S, Feng LL, Wang Y, Chen Y, Duan M, Wang K, Song LL. [Internal carotid artery pseudoaneurysm caused by parapharyngeal abscess: A case report]. Beijing Da Xue Xue Bao Yi Xue Ban. 2023 Dec 18;55(6):1135-1138. Chinese. doi: 10.19723/j.issn.1671-167X.2023.06.028. PMID: 38101801; PMCID: PMC10724003.