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Infected Branchial Cleft Cyst Presenting as a Recurrent Peritonsillar Abscess

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ABSTRACT

BACKGROUND: Peritonsillar abscess (PTA) is the most common deep infection of the head and neck in young adults. The incidence of recurrent unilateral PTA is extremely low and a patient with recurrent unilateral PTA development deserves a more vigorous workup for other pathologic entities.

OBJECTIVES: We describe a unique clinical case illustrating the workup and diagnosis of a patient presenting with recurrent unilateral PTA, and discuss the necessity to keep a broad differential when evaluating patients presenting with “classic” symptomology.

CASE REPORT: A 40-year-old male presented to the Emergency Department with a history of five previous right-sided PTAs. The patient was again treated for “recurrent PTA” due to CT scan and physical exam findings. An outpatient CT scan later showed a residual fluid collection in the peritonsillar and parapharyngeal space. The patient was subsequently taken to the operating room for a definitive exploration where a second branchial cleft cyst was discovered and removed.

DISCUSSION: The differential for patients presenting with symptoms consistent with PTA are broad. Branchial cleft cysts have been described in the literature to present as recurrent unilateral PTA. The cysts may be asymptomatic but commonly present as recurrent infected neck abscesses. Parapharyngeal abscesses are another common diagnosis related to PTAs in both location and clinical presentation.

CONCLUSIONS: The incidence of recurrent unilateral PTA is exceedingly rare. In any patient who presents with recurrent unilateral PTAs, a broader differential diagnosis should be formulated and necessary imaging studies should be ordered to properly classify and treat these individuals.

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INTRODUCTION

Peritonsillar abscess (PTA) is the most common deep infection of the head and neck in young adults despite the widespread use of antibiotics for treating tonsillitis and pharyngitis. In the United States, the incidence is somewhere around 30 cases per 100,000 persons per year, accounting for approximately 45,000 cases annually [1].

Branchial anomalies include cysts, sinuses, and fistulae and are thought to occur due to a persistence of the branchial clefts and pouches which are vestigial remnants of our gill-bearing ancestors. Approximately 95% of all branchial anomalies occur within the second branchial cleft. With respect to second branchial cleft cysts, the cysts can occur anywhere along the path of a second branchial fistula, extending from the tonsillar fossa to the middle third of the SCM. There are four classifications of these cysts depending upon their location along this path [3]. Type I lesions are anterior to the SCM. Type II lesions pass deep to the SCM and are either anterior or posterior to the great vessels of the neck and are the most common. Type III lesions pass between the internal and external carotid arteries and are adjacent to the pharynx. Type IV lesions, which are the rarest, are located within the parapharyngeal space. Only 0.5% of all head and neck tumors are located within the parapharyngeal space and branchial cysts make up only an insignificant fraction of these with the majority being either of salivary gland or neurogenic in origin [4].

The incidence of recurrent unilateral PTAs is extremely low and tends to occur in patients with a history of chronic tonsillitis. In one study by Kronenberg et al, two hundred ninety patients treated for a PTA between 1970 and 1982 were reviewed. In their study, patients older than 40 years of age were found to have a lower incidence of throat infections than younger patients, and no PTA recurrences were observed [5]. Moreover, none of the patients in this study went on to develop a PTA after removal of their tonsils. This study brought to light the fact that a patient with recurrent unilateral PTA development deserves a more vigorous workup for other pathologic entities.

CASE REPORT

A 40-year-old male presented to the Emergency Department with fever, neck pain, odynophagia, dysphagia, fatigue, and a forty pound weight loss within one year. The patient’s medical history included six, right-sided peritonsillar abscesses over the previous five years which had all been treated with aspiration and/or incision and drainage (I&D) with antibiotics at another institution. During his second I&D he also underwent a right-sided tonsillectomy in an attempt to prevent the abscesses from recurring. Unfortunately, this did not help. During his third episode, one year after his tonsillectomy, he underwent a trans-oral exploration under general anesthesia which yielded minimal fluid as seen on CT scan.

CASE REPORT (CONT.)

During his fourth episode 20 milliliters of fluid were initially drained with aspiration and then later, as his condition worsened, he was taken to the operating room and explored with a trans-cervical approach. An additional five milliliters of fluid were drained. During his fourth right-sided “PTA” exploration and drainage he also underwent a left-sided tonsillectomy as well as removal of residual tonsillar tissue from the right side. Cultures later revealed *strep viridians*, *bacteroides* and *fusobacterium*.

Three years later, the patient presented to our institution. On two separate occasions within a one year period, the patient had two additional abscesses drained in the emergency department, both on the right side (Figure 2). After drainage of the sixth right-sided “PTA,” the patient was more extensively examined during his post-operative visit. A differential diagnosis was formulated which included cancer, considering his weight loss, 25 pack year smoking history and 8 cans of beer per day drinking history. Both second branchial cleft anomaly and lateral neck cyst were also high on the differential. Recurrent peritonsillar abscesses was low on the differential considering the patient’s history of tonsillectomies and the un-abating course of his disease.

Three weeks later the patient was taken to the operating room for a definitive exploration of the parapharyngeal space. The cystic mass was revealed just superior to the glossopharyngeal nerve and was found in between the pharyngeal wall medially, the internal carotid artery laterally, the prevertebral fascia and musculature posteriorly, and the palatal musculature and eustachian tube superiorly. Final gross and histologic pathology of the specimen showed the cyst to be a second branchial cleft cyst (Figure 4).

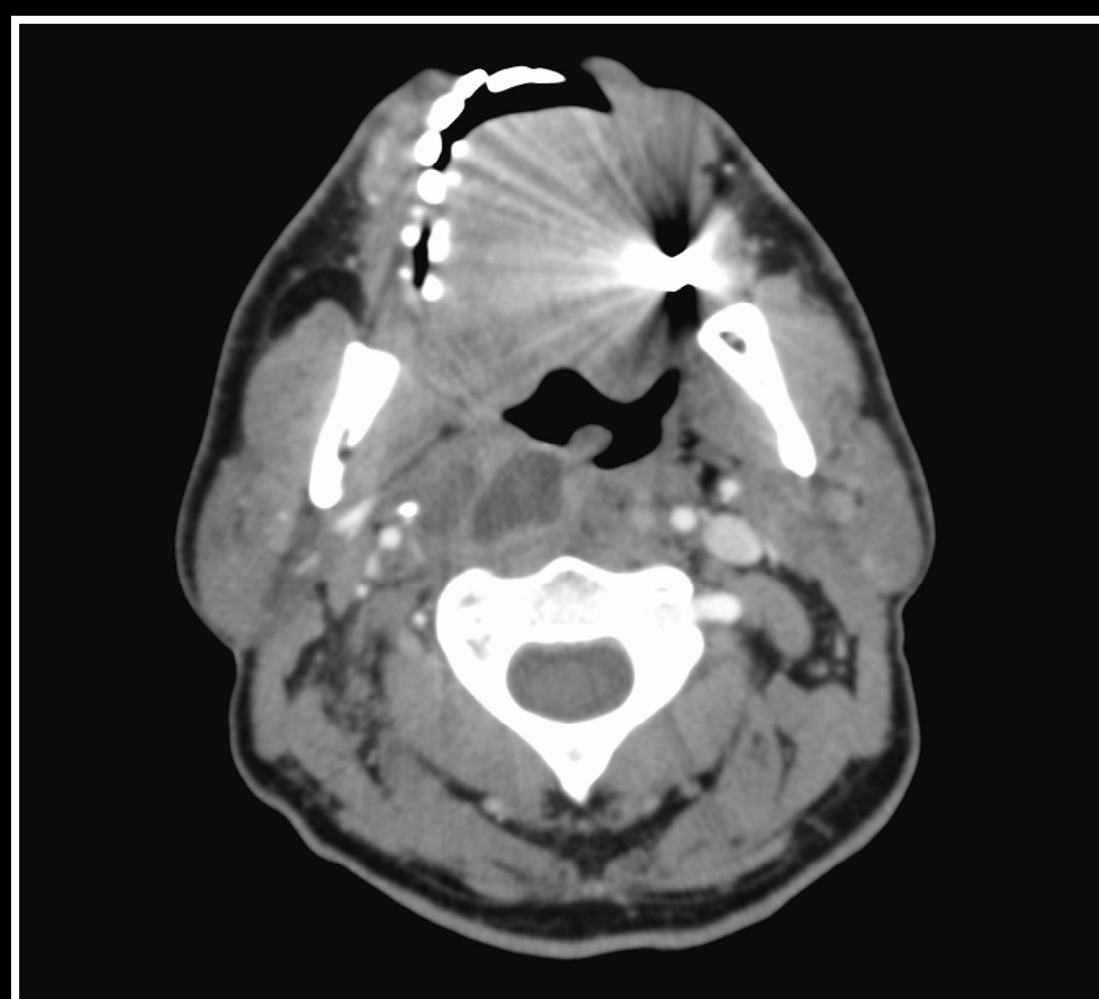


Figure 1. “PTA” prior to its sixth drainage

DISCUSSION

As indicated previously, recurrent unilateral PTA is a rare diagnosis and should raise the clinician’s index of suspicion to include a broad differential. A 2001 study analyzing a cohort of 83 patients revealed no recurrent unilateral PTAs. A more recent study of a single site cohort of patients with PTA revealed a recurrence rate of 11% in patients with previous diagnoses, and interestingly, a male predominance was also observed [11]. As illustrated by our clinical case, a comprehensive workup of recurrent deep neck infections will often reveal a congenital cystic etiology [12].

Parapharyngeal abscesses are the second most common deep neck abscess after PTA and are closely related to PTA in both location and clinical presentation. They are usually the result of polymicrobial infections. The combination of sore throat, oropharyngeal asymmetry and a painful lateral cervical mass are most consistent with this diagnosis [9]. These infections are often concurrent with tonsillitis or pharyngitis. As with PTA, fever is an inconsistent finding. Branchial cleft cysts have been described in the literature to present as recurrent unilateral PTA [6]. The cysts may be asymptomatic but commonly present as recurrent infected neck abscesses with pain, swelling, dysphagia, and odynodysphagia. These cysts present within a wide age range from infant to adult but the average age at presentation is about 36 years [7]. The histology of these lesions is variable but they are generally thought to have a lining of stratified squamous epithelium resting on a band of lymphoid tissue with part of the wall resembling a lymph node [8]. Drainage is often found to be sterile.



Figure 2. Second branchial cleft cyst resected at the patient's final surgery.

DISCUSSION (CONT.)

Computed tomography scanning is often considered first-line imaging modality in the emergency setting, so it is important that clinicians delivering emergent care be familiar with CT findings in cases where a peritonsillar or parapharyngeal abscess is not clinically obvious, a full exam cannot take place (e.g. trismus), or when pathological borders are not easily delineated [12]. A contrast-enhanced CT has a specificity of approximately 75% and sensitivity that approaches 100%; however, false-positive results can occur when a frank abscess is confused with a phlegmon [13]. As mentioned previously, peritonsillar abscess is the endpoint on an infectious continuum, and likewise findings on CT imaging fall on a continuum as well. Peritonsillar cellulitis can manifest itself on CT imaging with tonsillar enlargement and striated enhancement of the palatine tonsils and posterior pharyngeal soft tissues [12]. A include the commonly described “kissing tonsils” appearance caused by medialization of the inflamed tonsils. Central liquefaction with surrounding rimlike enhancement is diagnostic of peritonsillar abscess. While imaging is valuable to diagnose equivocal cases of PTA and parapharyngeal abscess, the addition of CT to the initial workup can also often provide early evidence in cases where suspected deep neck abscesses are caused by congenital cysts or other atypical pathology.

CONCLUSIONS

The incidence of recurrent unilateral PTA is exceedingly rare. In any patient who presents with recurrent unilateral PTAs, a broader differential diagnosis should be formulated. The possibility of a parapharyngeal abscess related to a branchial cleft cyst is present and the patient should undergo imaging of the pharynx and neck by way of CT scan.

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