CLINICAL REPORT

Review Article: Retropharyngeal Abscess—Mimickers and Masqueraders

Paresh Pramod Naik¹ · Jayita Poduval¹ · Shilpa Divakaran¹

Received: 18 March 2016 / Accepted: 21 February 2017 / Published online: 28 February 2017
© Association of Otolaryngologists of India 2017

Abstract To discuss a case of suspected retropharyngeal abscess having important clinical and academic significance. This paper discusses an unusual presentation and evolution of a well known condition such as retropharyngeal abscess. Though the diagnosis in this case was initially a retropharyngeal abscess, several unusual findings were evident, which interfered with the optimal management of the patient. A literature review revealed rare causes and lesions mimicking a retropharyngeal abscess, such as retropharyngeal calcific tendinitis and Kawasaki disease, which are neither familiar to otolaryngologists nor other specialists such as orthopedicians. It is possible that this patient was both over treated and undertreated at the same time. Though the diagnosis in this case could not be established with certainty, several important pieces of information came up, especially unusual causes of retropharyngeal abscess and management of the same. Retropharyngeal abscess is a well-known condition with established modes of management. However, certain variations may occur and may pose challenges in diagnosis and management. These variations are little known and need to be highlighted so that optimal management is ensured.

Keywords Retropharyngeal abscess · Retropharyngeal calcific tendinitis · Kawasaki disease

Objective

A 24 year old lady presented with fever, difficulty in swallowing and effortful breathing, all for 5 days. On examination, she was found to be mildly febrile but not overtly having any sign of respiratory distress. Pulse and blood pressure were normal. ENT, head and neck examination revealed restricted and painful neck movements, tenderness over the anterior neck and trismus. The oral cavity and oropharynx were difficult to visualize because of trismus, but grossly did not reveal any intraoral bulge or swelling. The patient was asked to swallow a few mouthfuls of water, which she initially could, but started choking and throwing up after a few sips, at the same time denying pain while actually performing the swallow. A lateral neck X-ray showed a widening of the prevertebral space from C1/C2 all the way down till C4/C5 (Fig. 1). A CT scan she had obtained from elsewhere before admission revealed a soft tissue shadow in the prevertebral region consistent with the X-ray findings. This was hypodense and non-enhancing, suggesting a retropharyngeal abscess (Fig. 2). Also some fuzziness in the area of the thyroid cartilage was seen (Fig. 3).

The patient was thus diagnosed with perichondritis of the thyroid cartilage but no cause for the retropharyngeal abscess could be determined as the spine appeared to be normal, and there was no cervical lymphadenopathy. The patient was put on broad spectrum antibiotics and steroid. A barium swallow revealed no abnormality (Fig. 4), but on account of her poor intake, a nasogastric tube was inserted, which passed without any difficulty or discomfort to the patient (Fig. 5). Laboratory tests revealed mild anemia but normal total white blood cell counts. The ESR however was significantly elevated and CRP was positive. ANA immunofluorescence and TPO antibodies were negative.

✉ Paresh Pramod Naik
pareshnaikp@gmail.com

¹ Department of ENT, Pondicherry Institute of Medical Sciences, Kalapet, Ganapathychetikulam, Puducherry 605014, India

Fig. 1 Lateral neck xray, showing prevertebral widening

Fig. 2 Prevertebral widening suggesting a retropharyngeal abscess

Fig. 3 Axial CT scan suggestive of thyroid perichondritis

Thyroid function tests were within normal limits but the serum potassium was subnormal. On account of her unremitting symptoms, an ultrasound of the neck was carried out and a collection was found 6 mm deep to the skin. This yielded 6 ml of a turbid fluid which was sent for smear, culture and sensitivity but yielded no growth. An MRI was immediately ordered and it revealed a relatively large collection of fluid in the retropharyngeal, parapharyngeal, parotid and carotid spaces on the left side (Figs. 6, 7). A decision was taken to operate on the patient, but her family

Fig. 4 Barium swallow

Fig. 5 XRay post nasogastric Tube insertion

requested to be referred to a public hospital, where she was promptly taken up for exploration, after a tracheostomy was performed to first secure the airway. Almost every conceivable fascial neck compartment was incised but no fluid, pus or growth could be detected. Thereafter, she was kept in intensive care for a few days, and she gradually settled and was discharged without further work up or symptoms.

Methodology (Review of Literature)

Naturally, this particular case threw up a lot of questions. First, was this really a case of retropharyngeal abscess? Second, if it was, why was there no improvement in symptoms with the standard treatment provided, and why was there no evidence of it on surgical exploration? Third, could there be an alternative diagnosis? A literature search

Fig. 6 Coronal MRI—fluid in the retropharyngeal, parapharyngeal, parotid and carotid spaces

Fig. 7 Sagittal MRI—fluid in the retropharyngeal, parapharyngeal, parotid and carotid spaces

revealed some interesting conditions, namely retropharyngeal calcific tendinitis, pyogenic spinal infection, Kawasaki disease and blunt neck trauma.

Results and Discussion

Retropharyngeal calcific tendinitis is an acute, self-limiting condition that is largely unfamiliar to clinicians. Pollak and Wexler [1] published a case report in 2013 describing how a retropharyngeal abscess seemed to be the diagnosis in two cases before a definitive case of retropharyngeal calcific tendinitis was established. Both the patients were initially treated with antibiotics—with no significant improvement—until the imaging studies were reviewed and calcific deposits found in the prevertebral soft tissue. They were then treated with and discharged on anti-

inflammatory medication for a short while, with the problem fully resolved in the span of a few weeks.

Patients generally present with neck pain and restricted movement of the neck, with other signs of inflammation such as fever and malaise. There may or may not be a specific trigger in the form of trauma or exposure to a microorganism. There may or may not be pain in the throat, dyspnea or dysphagia, or change in voice. Examination is generally unremarkable save for minor erythema, congestion or edema of the nasopharyngeal and oropharyngeal soft tissues. X-rays might reveal calcifications, but more commonly just an soft tissue swelling due to inflammation, and both CT and MRI would show signs suggestive of effusion in the prevertebral space. This effusion is sterile and often subsides on its own or resolves with non-steroidal anti-inflammatory drugs. Surgical treatment is neither necessary nor desirable. It has rarely been reported except for some articles in radiology and emergency medicine. Described by Hartley in 1964, it mentions the deposition of calcium hydroxyapatite crystals in the longus colli muscle in the neck, thus giving rise to inflammation in the form of tendonitis [2]. This entity was again highlighted in 1994 in a case series, where it is interesting to note that one of the patients underwent an open biopsy of the lesion, revealing an inflammatory foreign body reaction [3].

Adults in the range of 20 and 80 years could be affected, and there is no race or gender predisposition [4]. Though the cause has not been clearly established, severe pressure over the neck and/or the presence of connective tissue disorders or degenerative spinal disorders may lead to the presence of calcium hydroxyapatite crystals in the muscle. Though the pathognomonic radiological changes are a retropharyngeal effusion from the level of C1 to C4 and calcifications below the level of C1, the evidence of calcification may not be found in some instances. Contrast CT may then be undertaken to see if the lesion is ring enhancing. This is a better modality than MRI as the latter will show a hyperintense shadow in the presence of effusion [5]. Also, MRI might show edema of the bone marrow in the contiguous vertebral bodies [6].

Razon et al. [7] correctly state that the reason why this entity has been underdiagnosed and underreported is because of the limitations in imaging before the era of CT scans. The calcification seen in this condition is soft and appears faint on plain X-rays. Sensitization to this was only after CT facilities became more widespread, and that too primarily among radiologists. Thus, clinicians also need to develop an awareness of the same. Orthopedicians too might be unfamiliar with this condition and include infectious spondylitis and trauma, in addition to retropharyngeal abscess, in their differential diagnosis before thinking of a retropharyngeal calcific tendinitis [8] (as seen in Fig. 7).

On imaging, retropharyngeal calcific tendinitis could be mistaken for an acute pyogenic spinal infection with retropharyngeal abscess. The presentation of spinal pyogenic infections can be varied and often catastrophic. The diagnosis of pyogenic spinal infection should be considered in any patient with severe and localised neck and/or back pain [9], especially when accompanied by systemic symptoms like fever. A high degree of suspicion is essential as sometimes fever and acute signs of inflammation may not be apparent at all. Analgesics can dull and mask the picture and if due diligence is not exercised, fatal consequences can ensue. Pyogenic spinal infections can present in many ways of which the most common is spondylodiscitis, and the relatively rarer primary epidural abscess, spondylitis, discitis, and pyogenic facet arthropathy. According to Hadjipavlou et al. [10], a comprehensive classification that would aid in diagnosis, treatment planning, and prognosis has not been devised yet.

Spinal infections have been broadly categorised into pyogenic or tuberculous osteomyelitis, with stray cases of viral, fungal or parasitic etiology, but Ansari et al. [11] have added spinal brucellosis to the spectrum of spinal infections in the Middle East. Lai et al. [12] have drawn attention to the possibility of multiple or skip lesions occurring in pyogenic spondylitis. Although rare, septic arthritis of lumbar facet joints may be seen, as described by Doita et al. [13].

Diabetes mellitus is the most common predisposing factor for pyogenic infections, whereas pulmonary tuberculosis could lead to tuberculous osteomyelitis; other immunocompromised states are also found. Universally, *Staphylococcus aureus* is the main infecting organism.

Cardiac disease generally manifests in a dramatic way at one extreme or in a highly insidious manner. One of these is retropharyngeal abscess in Kawasaki disease, which is also largely unknown in the general medical community, and even specialists in internal medicine practicing in countries where this condition is not endemic would rarely think of this cause. Kawasaki disease is believed to be an acute onset inflammatory condition with systemic involvement, especially vasculitis and aneurysms of large vessels—a form of mucocutaneous vasculitis characterized by prolonged fever, erythema of the conjunctiva, erythema of the oral mucous membranes, erythema and/or swelling of the hands and feet, rash over the body and cervical lymphadenopathy. This last occurrence is the least consistent of all the other signs and symptoms. It has mainly been reported in infants and younger children in Korea [14] and some believe an infectious agent to be the cause and trigger of the inflammatory manifestations [15].

The usual manifestations of fever and cervical lymphadenopathy, as are common in the early stages, could be easily mistaken for other common systemic and

immunologic conditions common in the pediatric age group. Laboratory investigations could be indicative of an acute inflammatory process by virtue of a raised erythrocyte sedimentation rate or C-reactive protein. Imaging, especially CT scan, if at all done in the initial stages, usually reveals one or more lesions resembling a retropharyngeal abscess. What could clinch the diagnosis is an echocardiogram.

Ramaswamy et al. [16] describe a case of Kawasaki disease in an Indian male child, where the diagnosis was missed in the early stages. The child initially presented with fever, neck pain and restriction of movement, trismus, dysphagia and dyspnea. Along with broad spectrum intravenous antibiotics, a tracheostomy also was initially done but the child could be decanulated early. A CT of the neck showed a non-enhancing effusion from C2 to C6, which yielded only 2 cc of sterile pus on aspiration. During the course of the hospital stay, the patient went on to develop the full spectrum of the disease. The fever continued, and the child developed erythema of the bulbar conjunctiva, hands and feet and soon the whole body. A systolic murmur was also detected and echocardiography showed an aneurysm of the proximal and right mid coronary artery. The other arteries were normal and there was no evidence of a pericardial effusion. Intravenous gamma globulin along with aspirin led to rapid resolution of symptoms over the next few days. Although repeat echocardiogram showed the dilatation of the coronary as before, there were no further complications, but the child was kept on low dose aspirin.

It has also been reported that not all patients would develop the classic findings of Kawasaki disease but might still develop vascular changes and coronary artery disease [17]. The same authors also mention kidney involvement as a possible complication. Acute otitis media, lung infiltrates, pain in abdomen, joint inflammation and swelling and peritonsillar and retropharyngeal abscesses may be other modes of presentation [18–20]. Some authors suggest that any child with unexplained fever, anemia, and low levels of albumin and sodium warrants an active suspicion of Kawasaki disease and appropriate work up [21].

The last possibility—that of blunt neck trauma—is probably the most elusive one. While a tick bite to the neck has been known to trigger a retropharyngeal calcific tendinitis [22], other types of trauma such as strangling or throttling could cause an acute neck space infection by the formation of small hematomas which later get infected. Our patient was a young married female, slightly anemic and undernourished and seemed to be in a disturbed marriage, as judged from the relative absence, reticence and infrequent visits of the husband. A psychiatry review was actually sought for this patient but nothing substantial came up in the initial interview by the psychiatrist. It remains an

open question whether the patient was at all revealing the whole truth.

Conclusion

Thus, all the above differentials should have been borne in mind and unnecessary intervention avoided, at the same time making a more definitive diagnosis. The reason why this did not happen was a lack of awareness about these entities. In hindsight, this particular case was probably a retropharyngeal calcific tendinitis which would have responded to a conservative line of treatment not requiring invasive surgical procedures.

Acknowledgements The authors wish to express their heartfelt gratitude to the staff of the hospital to which the patient had been referred for further management.

Compliance with Ethical Standards

Conflict of interest All the authors declare they have no conflict of interest.

Informed Consent Consent of patient and family was obtained for publication of this report and confidentiality has been maintained.

References

- Pollak N, Wexler S (2013) Retropharyngeal calcific tendinitis mimics retropharyngeal abscess. *Case Rep Otolaryngol* 13:1–4
- Hartley J (1964) Acute cervical pain associated with retropharyngeal calcium deposit. A case report. *J Bone Joint Surg* 46(8):1753–1754
- Ring D, Vaccaro AR, Scuderi G, Pathria MN, Garfin SR (1994) Acute calcific retropharyngeal tendinitis. Clinical presentation and pathological characterization. *J Bone Joint Surg Am* 76(11):1636–1642
- Kaplan MJ, Eavey RD (1984) Calcific tendinitis of the longus colli muscle. *Ann Otol Rhinol Laryngol* 93(3 Pt1):215–219
- Paik NM, Lim CS, Jang HS (2012) Tendinitis of longus colli: computed tomography, magnetic resonance imaging, and clinical spectra of 9 cases. *J Comput Assist Tomogr* 36(6):755–761
- Mihmanli I, Karaarslan E, Kanberoglu K (2001) Inflammation of vertebral bone associated with acute calcific tendinitis of the longus colli muscle. *Neuroradiology* 43:1098–1101
- Razon RV, Nasir A, Wu GS, Soliman M, Trilling J (2009) Retropharyngeal calcific tendonitis: report of two cases. *J Am Board Fam Med* 22(1):84–88
- Shin D, Ahn C, Choi J (2010) The acute calcific prevertebral tendinitis: report of two cases. *Asian Spine J* 4(2):123–127
- Bettini N, Girardo M, Dema E, Cervellati S (2009) Evaluation of conservative treatment of non-specific spondylodiscitis. *Eur Spine J* 18(1):143–150
- Hadjipavlou AG, Mader JT, Necessary JT, Muffoletto AJ (2000) Hematogenous pyogenic spinal infections and their surgical management. *Spine* 25(13):1668–1679
- Ansari S, Ashraf AN, Moutaery KA (2001) Spinal infections-A review. *Neurosurg Q* 11(2):112–123
- Lai PL, Leu HS, Niu CC, Chen WJ, Chen LH (2005) Pyogenic spondylitis presenting with skip lesions. *Chang Gung Med J* 28(9):651–656
- Doita M, Nabeshima Y, Nishida K, Fujioka H, Kurosaka M (2007) Septic arthritis of lumbar facet joints without predisposing infection. *J Spinal Disord Tech* 20(4):290–295
- Stamos JK, Corydon K, Donaldson J, Shulman ST (1994) Lymphadenitis as the dominant manifestation of Kawasaki disease. *Pediatrics* 93:525–528
- Rowley AH, Shulman ST (2004) Kawasaki disease. In: Behrman RE, Kliegman RM, Jenson HB (eds) *Nelson textbook of pediatrics*, 17th edn. WB Saunders, Philadelphia, pp 793–834
- Ganesh R, Srividhya VS, Vasanthi T, Shivbalan S (2010) Kawasaki disease mimicking retropharyngeal abscess. *Yonsei Med J* 51(5):784–786
- Newburger JW, Takahashi M, Gerber MA, Gewitz MH, Tani LY, Burns JC, et al. (2004) Diagnosis, treatment, and long-term management of Kawasaki disease: a statement for health professionals from the Committee on Rheumatic Fever, Endocarditis, and Kawasaki Disease, Council on Cardiovascular Disease in the Young, American Heart Association Pediatrics 114:1708–33
- Rothfield RE, Arriaga MA, Felder H (1990) Peritonsillar abscess in Kawasaki disease. *Int J Pediatr Otorhinolaryngol* 20(1):73–79
- Pontell J, Rosenfeld RM, Kohn B (1994) Kawasaki disease mimicking retropharyngeal abscess. *Otolaryngol Head Neck Surg* 110(4):428–430
- Gross M, Eliashar R, Attal P, Sichel JY (2001) Radiology quiz case 2: Kawasaki disease (KD) mimicking a retropharyngeal abscess. *Arch Otolaryngol Head Neck Surg* 127(12):1507–1509
- Falcini F (2006) Kawasaki disease. *Curr Opin Rheumatol* 18:33–38
- Rodrigue E, Costa J (2014) An unusual cause of neck pain: acute calcific tendinitis of the longus colli. *J Med Cases* 5(3):171–173