Case Report

Parasitic colloid cyst: A diagnostic dilemma

Amitha J. Lewis[1], Rammohankumar K[2], Hema Kini[3], Karen Boaz[1]

[1]Department of Oral Pathology and Microbiology, Manipal College of Dental Sciences Mangalore, Manipal Academy of Higher Education, Manipal, Karnataka, India, [2]Lead Consultant Maxillofacial Surgeon, Nanthan Hospital, Krishnagiri, Tamil Nadu, India, [3]Department of Pathology, Kasturba Medical College Mangalore, Manipal Academy of Higher Education, Manipal, Karnataka, India

Abstract

The pathologies of the neck are varied and at times may cause a diagnostic dilemma for the pathologist. In this report, we present a case of a 32-year-old man with a slow-growing nodular swelling in the right neck region, which was diagnosed as a simple colloid cyst arising in a parasitic thyroid nodule. Simple colloid cysts are cysts that develop due to impaired accumulation of thyroglobulin in inactive follicles. Most thyroid-related pathologies occur as midline swellings. However, the present case was unique due to its location with no connection to the thyroid gland. This case report describes the diagnostic process and adds insight into the pathology of a colloid cyst.

Keywords: Cystic, parasitic colloid cyst, simple colloid cyst, swelling, thyroid nodule, health, education

Address for correspondence: Dr. Karen Boaz, Department of Oral Pathology and Microbiology, Manipal College of Dental Sciences Mangalore, Light House Hill Road, Mangalore, Manipal Academy of Higher Education, Manipal, Karnataka, India.
E-mail: karen.boaz@manipal.edu

Submitted: 03-Apr-2023, **Revised:** 12-May-2023, **Accepted:** 19-Jun-2023, **Published:** 11-Jul-2024

INTRODUCTION

The neck has complex and intricate anatomy due to the presence of various organs and tissues, which are required for normal physiologic function.[1] Embryologically, the structures in the head and neck are formed from the pharyngeal apparatus. Hence the pathological processes occurring in this region may have varied etiology such as congenital anomalies, local or systemic inflammatory lesions, infections, benign and malignant tumours.[2] Different types of cystic lesions occur in the neck and may present diagnostic dilemmas.[3] Here we present a case of a 32-year-old man with a swelling in the right side of the neck.

CASE REPORT

A 32-year-old man, with no relevant past medical history, presented with a painless swelling in the right side of the neck of 15 years duration that had slowly increased in size. Clinical examination revealed that the swelling was present medial to the midportion of the sternocleidomastoid muscle and on the right lateral side of the midline. The swelling was located around 3.5 cm below the angle of the mandible, to 4 cm above the clavicle abutting the anterior border of the sternocleidomastoid muscle and 1.5 cm from the midline. The mass was globular, fluctuant, soft on palpation and the skin overlying the mass was freely movable [Figure 1a]. Computer Tomography scan confirmed the above findings [Figure 1b]. All routine blood investigations including thyroid function tests were within the normal limits. Based on the clinical and radiographic findings a provisional diagnosis of a branchial cleft cyst or dermoid cyst was made. The patient underwent surgical removal of the mass under general anesthesia [Figure 2a]. On table the surgeon saw a well-defined cyst that did not

Access this article online

Quick Response Code:

Website: https://journals.lww.com/JPAT/

DOI: 10.4103/jomfp.jomfp_162_23

How to cite this article: Lewis AJ, Rammohankumar K, Kini H, Boaz K. Parasitic colloid cyst: A diagnostic dilemma. J Oral Maxillofac Pathol 2024;28:321-4.

have any connection with the thyroid gland. The gross examination of the excised specimen revealed a fluctuant, globular mass measuring 5.5 cm in diameter. [Figure 2b]. The mass was bisected and showed a uniloculated thin-walled cyst containing pale yellowish-brown glistening fluid. A wet mount prepared from the fluid showed the presence of cholesterol crystals. The cyst wall was 2-3mm thick. The lining was smooth and showed no solid areas or papillary excrescences. Histopathologically, a fibro-collagenous cyst wall with denudation of epithelial lining was seen. Along the luminal surface aggregates of cholesterol crystals and fibrino hemorrhagic material were seen. A few small colloid containing, and depleted follicles were seen in the cyst wall. Compressed follicles were also present. These follicles were lined by bland cuboidal follicular epithelial cells [Figure 3a and 3b]. A diagnosis of simple colloid cyst was made. The possibility of a parasitic cyst was considered as no connection was identified between this lesion and the thyroid gland.

DISCUSSION

The differential diagnosis of swellings in the neck can be quite challenging, and it is important to consider several factors.[4] Almost seventy-five per cent of neck masses in adults over 40 years of age are malignant with the risk increasing with age.[5] Hence, the primary concern should be to rule out a malignancy.

Laboratory tests performed in the present case were all within the normal range and CT images characterized the lesion as being cystic. The differential diagnosis of such cysts includes branchial cleft cyst, thyroglossal duct cyst, dermoid cyst and cystic metastasis in lymph nodes. Thyroglossal duct cysts are developmental cysts that occur along the midline from the base of the tongue to the mediastinum, mainly in the region of the hyoid bone.[6] Hence this diagnosis was excluded. Branchial cysts in this location are developmental cysts that occur due to impaired obliteration of the second branchial clefts or pouches during embryogenesis. They are usually located anterior to

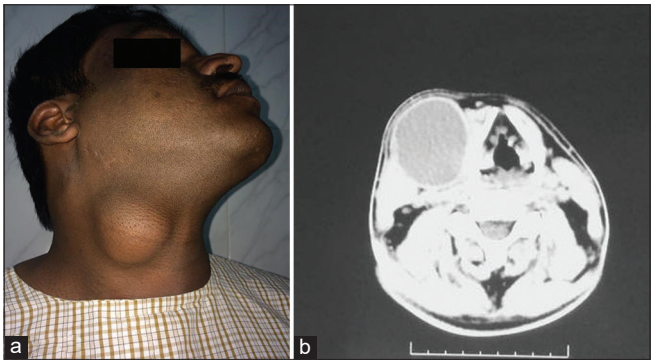

Figure 1: (a) Nodular fluctuant swelling measuring 5.5 x 6.0 x 4.2 cm medial to the sternocleidomastoid muscle. (b) Transverse section of CT showed a well-defined, encapsulated cystic lesion, displacing the pharynx laterally

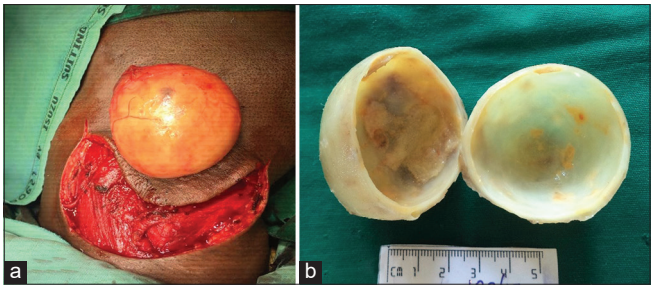

Figure 2: (a) Gross specimen cleanly shelled out during the surgery, and the lesion was fluctuant and fluid filled. (b) Grossly, the presence of a cystic lesion with thickening within the lumen. The fluid was glistening and clear, which showed abundant cholesterol crystals under a wet mount

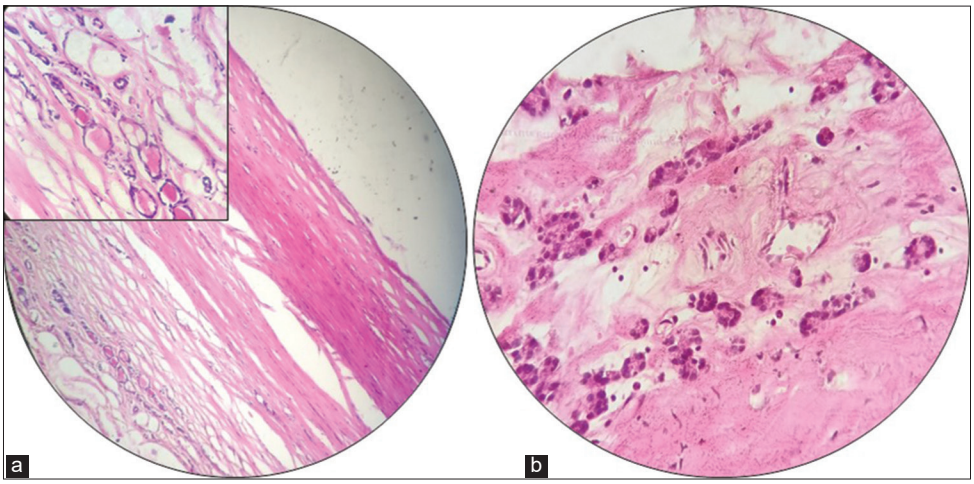

Figure 3: (a) The cystic capsule (H and E x100) shows mature collagenous capsule. (b) shows with numerous thyroid follicles in the periphery of the cyst wall

the sternocleidomastoid and occur frequently in patients aged 11 to 38 years. These cysts are lined by stratified squamous epithelium with lymphoid aggregates in the underlying stroma.[7,8] These features were absent in our case. Dermoid cysts are true developmental cysts that arise due to the entrapment of the ectodermal elements along the line of embryonic closure. They are lined by stratified squamous epithelium, with skin appendages and the lumen is filled with pultaceous material and hair.[9] In the present case as the cyst was lateral to the midline and lacked the above histological features dermoid cyst was ruled out.

Thyroid nodules are relatively common and may occur in a variety of thyroid disorders. Some may be palpable whereas others may be detected incidentally on imaging. Palpable thyroid nodules are present in 4 to 7 percent of the population. Thyroid nodules may be cystic. These include single or multiple cysts in a multinodular goiter, cystic papillary thyroid carcinoma or its metastasis in surrounding lymph nodes, cystic degeneration within other solid thyroid tumours and abscesses associated with acute thyroiditis. About 15-40% of thyroid nodules may be partly or entirely cystic. Though common, the clinical relevance of detecting these nodules is primarily to exclude malignancy.[10] Of concern are the cystic carcinomas of the thyroid which may mimic benign lesions clinically. The most common type of malignant thyroid cyst is papillary thyroid carcinoma (PTC). Metastatic PTC appears as multiple bluish cystic lymph nodes which are dissected by the surgeon either by berry picking or anatomic neck dissection. Extensively cystic metastasis may show attenuation of the epithelial component. However, the epithelial nuclear features of PTC clinch the diagnosis. A rim of residual lymphoid tissue may still be evident at the periphery.[11,12]

Heterotropic thyroid tissue is usually located in the midline anywhere between the foramen cecum at the base of tongue to the suprasternal notch. Other than thyroglossal duct cyst the occurrence of ectopic thyroid tissue is a rarity and is almost exclusively seen located in or close to the midline above the hyoid bone. Rarely thyroid tissue may occur within fat or muscles of the neck as a developmental aberration.[13,14] Parasitic thyroid nodule is a non-neoplastic thyroid tissue that is usually separated from the main thyroid gland or may be connected by a thin fibrous strand that may not be clinically discernible. Sequestration of this thyroid tissue may occur due to mechanical action of the neck muscles, prior surgery or trauma. Pathological processes that affect the normal thyroid gland may also cause similar changes in this aberrant thyroid tissue.[13,15] In our case the surgeon noted that the cyst was not connected to the thyroid gland. Hence the possibility of a colloid cyst arising in a parasitic nodule or ectopic thyroid tissue was considered.

Simple colloid cysts of the thyroid may occur due to excessive colloid accumulation within inactive follicles. On aspiration these cysts may collapse. A smear prepared exhibits abundant colloid with simple bland monolayered sheets of follicular cells containing pyknotic nuclei. In some cases, the follicular cells may be sparse or even absent with only an abundance of colloid.[16]

Histopathologically, there is marked dilatation of the follicles with flattening of the epithelium. The lumen may contain dense viscous material, which is made up of a concentrated solution of thyroglobulin.[16] Iodine deficiency and presence of substances like goitrogens, industrial chemicals and antithyroid drugs can induce hyperplasia of the thyroid gland. These thyroid nodules may then undergo necrosis, colliquation and finally lead to the formation of a cyst, due to an imbalance between growth and angiogenesis. Defective intraluminal reabsorption of thyroglobulin has been postulated to be a cause for cystic enlargement. Pathogenesis that has been put forth is that the colloid is made up of insoluble globules wherein the concentrated solution of thyroglobulin is condensed into a polymeric form which is considered osmotically inert. In cystic lesions / nodules the accumulation of an altered configuration of thyroglobulin having different osmotic properties may lead to continuous enlargement of the follicle.[10]

Among the various nodules and cysts found in the thyroid, colloid cysts, thyroid nodules and thyroiditis make up 80% of cases.[17] However, it is important to note that cystic lesions tend to be malignant in 5% of cases. In a recent study conducted by Moon JH (2018), it was found that of 72,319 patients, 34% had nodules and cysts, with 76.3% of them being less than 1 cm in size.[18]

It is crucial to emphasise that while the thyroid colloid cyst is a common thyroid lesion, a size greater than 5 cm is a rare occurrence and can lead to an erroneous indication of malignant transformation. Additionally, the location of the lesion can further complicate the differential diagnosis. It is also worth noting that neck lesions rarely come to Oral Pathology Laboratories, which can pose a diagnostic challenge for practising oral pathologists.

In summary, understanding the prevalence and potential malignancy of thyroid nodules and cysts is essential for accurate diagnosis and treatment. Further research and attention to rare occurrences and location can improve diagnostic accuracy and patient outcomes.

CONCLUSION

The lesions that occur in the neck can be a cause of diagnostic dilemma for pathologists. While some cysts are more common than others their aberrant location may further complicate their diagnosis. Awareness of the possibility of such aberrations requires a high index of suspicion.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Roesch ZK, Tadi P. Anatomy, Head and Neck, Neck. [Updated 2021 Jul 26]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan. Available from: https://www.ncbi.nlm.nih.gov/books/NBK542313/. [Last accessed 2022 Feb 01].
2. Stathakios J, Carron MA. Anatomy, Head and Neck, Posterior Cervical Region. [Updated 2021 Jul 27]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan. Available from: https://www.ncbi.nlm.nih.gov/books/NBK551521/. [Last accessed 2022 Feb 01].
3. Franzen A, Günzel T, Buchali A, Coordes A. Cystic lateral neck lesions: Etiologic and differential diagnostic significance in a series of 133 patients. Anticancer Res 2019;39:5047-52.
4. de Figueiredo IR, Alves RV, Castro SG, Lourenço F, Antunes AM, Martins M, *et al*. A submandibular mass in an elderly patient. J Geriatr Med Gerontol 2019;5:064.
5. Gleeson M, Herbert A, Richards A. Management of lateral neck masses in adults. BMJ 2000;320:1521-4.
6. Patel S, Bhatt AA. Thyroglossal duct pathology and mimics. Insights Imaging 2019;10:12.
7. Daoud FS. Branchial cyst: An often forgotten diagnosis. Asian J Surg 2005;28:174-8.
8. Roşu S. Giant benign mass of the lateral neck: A case report. Rom J Morphol Embryol 2014;55:483-5.
9. Shareef S, Ettefagh L. Dermoid Cyst. [Updated 2021 Sep 3]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan. Available from: https://www.ncbi.nlm.nih.gov/books/NBK560573/. [Last accessed 2022 Feb 01].
10. Salabè GB. Pathogenesis of thyroid nodules: Histological classification? Biomed Pharmacother 2001;55:39-53.
11. Welker MJ, Orlov D. Thyroid nodules. Am Fam Physician 2003;67:559-66.
12. Musacchio MJ, Kim AW, Vijungco JD, Prinz RA. Greater local recurrence occurs with "berry picking" than neck dissection in thyroid cancer. Am Surg 2003;69:191-6.
13. Wenig BM. Atlas of head and neck pathology. 2nd Edition. Saunders Elsevier UK; 2008. p. 824.
14. Li Z, Li W, Liyanarachchi S, He H, Shen R. Parasitic thyroid nodule with nodular hyperplasia supported by microRNA signature and molecular mutation study: A case report. Int J Clin Exp Pathol 2017;10:7011-16.
15. dos Santos VM, de Lima MA, Marinho EO, Marinho MA, dos Santos LA, Raphael CM. Parasitic thyroid nodule in a patient with hashimoto's chronic thyroiditis. Rev Hosp Clin Fac Med Sao Paulo 2000;55:65-8.
16. Boerner SL, Asa SL. Biopsy interpretation of the thyroid. 2nd Edition. Wolters Kluwer: Philadelphia; 2016. p. 47-8.
17. Afodun AM, Quadri KK, Okesina AA, Ojewale AO, Bakare AA, Eze ED, *et al*. Right thyroid lobed cyst in a middle-aged woman: A case report. Journal of Biomedical Sciences 2020;7:4-10.
18. Moon JH, Hyun MK, Lee JY, Shim JI, Kim TH, Choi HS, *et al*. Prevalence of thyroid nodules and their associated clinical parameters: a large-scale, multicenter-based health checkup study. Korean J Intern Med 2018;33:753-62.