

A Papillary Thyroid Carcinoma Metastasis Mimicking Brachial Cleft Cyst. A Diagnostic Delima. "How We Do It".

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ABSTRACT

Thyroid carcinoma usually appears as a nodule in the anterior aspect of the lower neck. Less Frequently, the primary tumor in the thyroid gland is occult and the lymph node metastases present as the sole manifestation of the disease. The nodal metastases usually appear in the lateral neck as a solid nodule and rarely in form of a cystic mass. Although cystic nodal metastases have been known to pathologists for many years. In this study, we describe a case of cervical cystic lymph node metastases from occult thyroid papillary carcinoma that clinically mimicked as a brachial cleft cyst. We would like to describe the initial clinical evaluation, radiological investigation, immunohistochemical staining such as p63 and role fine needle aspiration of the cystic contain that can determine the nature of the lesion and give a definitive surgical treatment as total thyroidectomy and followed by radioactive iodine ablation and thyroid hormone suppression.

Keywords

Thyroid carcinoma, Papillary thyroid carcinoma, Branchial cleft cyst, Total thyroidectomy, Radioactive iodine ablation.

Case Report

A 31 years old Indian gentleman presented with initial complaint of left sided neck swelling for the past 7 years, associated with fever. On neck examination there was a left neck swelling measuring 6cm x 5cm with an enlarged cervical Lymph node measuring 1.5cm x 1.5cm. Proceeded with computer tomography of neck and there were a cyst arising from the left supraclavicular fossa in the posterior cervical space, posterior to the sternoclavicular muscle and lateral to the left internal carotid artery. This lesion was measuring 4.5cm width x 2.8cm (anterior posterior) x 4.9cm caudocranial with mass compressing the left internal jugular vein as showed in Figure 1. There was a hypoechoic lesion arising from both thyroid glands. The lesion in the right thyroid gland was measuring 4.5cm x 4.25cm x 6.1cm trachea was pushed to the left side. The initial diagnosis was left brachial cleft cyst (3rd) with multiple thyroid nodule as showed in Figure 2. Hence this case

was referred to department of Otorhinolaryngology for further surgical management. This patient then underwent excision biopsy of the left brachial cyst. Post-operative histopathology report was papillary thyroid carcinoma. Patient was then referred to our Breast and Endocrine Centre for further evaluation. On our further history taking patient, there were a new swelling reoccur at the anterior neck region for past 1 year. Otherwise, denies complaint of no sign and symptoms of hyper or hypothyroidism, no compressive disorder or no constitutional symptoms. Laboratory investigation including thyroid function test was normal. We proceeded with total thyroidectomy. Intraoperatively noted the thyroid gland was enlarged and hard. The right thyroid gland measuring 8.5cm x 5 cm x 4 cm and the left thyroid gland was 6cm x 3.4cm x 1.4cm. The weight of the specimen was 100 grams. Right thyroid gland was adhered at the anterior and posterior part of the dorsal part of strap muscle and trachea. Enblock resection of the muscle was done and thyroid gland was able to shave from the trachea. No cervical lymph nodes enlarged. The histopathology report showed papillary thyroid carcinoma with cervical lymph node metastasis. We had referred this case to Oncologist for radioactive iodine.



Figure 1: CT neck shows there were a cyst lesion measuring 4.5 cm (w) x 2.8cm (ap) x 4.9cm (cc) with mass compressing the left internal jugular vein. This lesion was arising from the left supraclavicular fossa in the posterior cervical space, posterior to the sternoclavicular muscle and lateral to the left internal carotid artery.

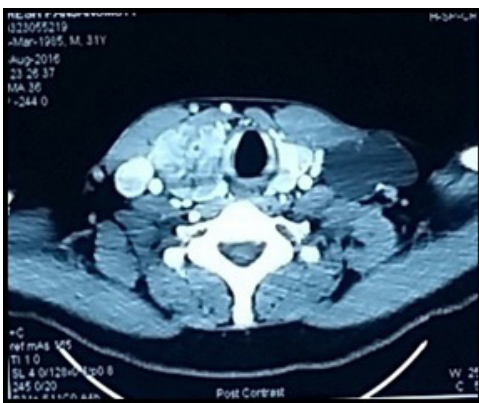


Figure 2: CT neck shows there were a hypoechoic lesion arising from both thyroid glands. The lesion in the right thyroid gland was measuring 4.5cm x 4.25 cm x 6.1 cm trachea was pushed to the left side.

Discussion

Howie and Proops suggest that branchial cyst is the commonest cyst which arises from lateral part of the neck. Ectopic thyroid tissue within a branchial cleft cyst is a rare phenomenon, and papillary thyroid carcinoma arising from this tissue is extremely rare [1,2].

Papillary thyroid carcinoma is the most common form of well differentiated thyroid carcinoma. Papillary thyroid carcinoma accounts 85% of all thyroid cancers. Papillary thyroid carcinoma normally occurs in the third and fourth decades of life [1,2]. Papillary thyroid carcinoma is characterized by slow growth and indolent biological behavior, but with frequent cervical lymph node metastases. By the time of diagnosis Papillary thyroid carcinoma has already spread to cervical lymph nodes in 20% - 50% of patients [3,4]. Wallace and Betsill described that this cervical lymph node metastasis might undergo liquefaction and cystic transformation [5]. McDermott et al. and Flanagan et al. described that lateral cystic swelling in neck can be mimicked by other pathologies such as cystic hygroma, haemangioma, Hodgkins disease, tuberculous lymphadenitis or metastatic malignancy. The average age of this patient range from 50-60 years. Gourin et al. [6], have reviewed the pathological results of 121 adult patients presented with an initial

diagnosis of lateral cervical cyst. They found that in patients older than 40 years of age, one fourth of them represented metastatic squamous cell carcinoma. It is well known that a metastatic neck mass may occur as the initial manifestation of occult (smaller than 1.5 centimetres carcinoma of the thyroid. Our patient presented with solitary lateral cervical cyst which was measuring 6cm x 5 cm which is giant in size and is rare manifestation. The only initial presenting symptom of occult thyroid carcinoma is extremely rare. Approximately 40 cases have been reported in previous studies. As a surgeon practice the diagnosis may be difficult and challenging and this have recently drawn attention to the importance of not missing the diagnosis of metastatic papillary thyroid carcinoma.

We would like to describe a case of patient in his thirties who presented clinically with left neck swelling that diagnosed as left branchial cysts but who were subsequently found to have metastatic deposits from Papillary thyroid carcinoma. We would like to describe the initial clinical evaluation, radiological investigation, immunohistochemical staining and role fine needle aspiration of the cystic contain that can determine the nature of the lesion and give a definitive diagnosis.

The initial work up for a patient which present with a cystic neck lesion should include identification of the risk factors for malignancy. A head and neck examination should be carried out. Followed by radiological assessments such as ultrasound neck or CT is used to evaluate such a mass, they may give important structural information about the cystic lesion as well as its adjacent structures including also the cervical lymph nodes.

Radiological investigations can be helpful but are by no means diagnostic in differentiating cystic neck masses. Loughran et al. described the ultrasonography of a branchial cyst characterised by an echo-free lesion with a smooth inner wall producing good distal enhancement.

Nakagawa et al. [3], have described about CT neck contrasted findings between cystic metastatic lymph nodes from papillary thyroid carcinoma and branchial cysts. In cystic metastatic lesion there is a presence of intracystic enhanced elements. But in our case the findings was there were a cyst arising from the left supraclavicular fossa in the posterior cervical space, posterior to the sternoclavicular muscle and lateral to the left internal carotid artery. This lesion was measuring 4.5 cm (w)x 2.8cm (ap) x 4.9cm (cc) with mass compressing the left internal jugular vein. There were a hypoechoic lesion arising from both thyroid gland.

Thyroid scintigraphy (with technetium-99) is very useful in diagnosis, especially in case of ectopic thyroid tissue. For immunohistochemical staining, There are few immunohistochemistry staining that can be used for to differentiate the onset of papillary thyroid carcinoma. P63 is a potentially oncogenic protein that would contribute to the onset of papillary carcinoma. The detection of p63 in papillary carcinomas of branchial cleft cysts could distinguish from primary BCC or metastatic origin [7].

Table 1. Differential diagnosis based on immunohistochemical staining

	Histologic composition	TG	TTF-1	p63
Lanzafame et al. (2006) [6]	TGDC			
	Lining epithelia		Negative	
	Thyroid tissue	Positive	Positive	
	Lining epithelia		Negative	Positive
BCC	Thyroid tissue	Positive	Positive	Negative
	Lining epithelia		Positive	Positive
	Thyroid tissue	Positive	Positive	Negative
	Papillae and follicles in carcinoma	Positive	Positive	Foci (+) ^b
Primary FVPTC of BCC	Lining epithelia	Positive	Positive	Positive
	Thyroid tissue	Positive	Positive	Negative
	Papillae and follicles in carcinoma	Positive	Positive	Negative
Kieft et al. (2005) [8]	TGDC			
	Lining epithelia	Negative	50% ^a	
	Thyroid tissue	Positive	Positive	
	Lining epithelia	Negative	10%	
BCC	Thyroid tissue			
	Metastatic tumor	90%	100%	
In our case	Metastatic tumor			
	PTC of BCC	Negative	Negative	Positive
	Normal thyroid tissue	All replaced by papillary carcinoma		
	The papillae and follicles in ectopic thyroid carcinoma	Positive	Positive	Negative

TGDC, thyroglossal duct cyst; BCC, branchial cleft cyst; PTC, papillary thyroid carcinoma; FVPTC, follicular variant papillary thyroid carcinoma; TG, thyroglobulin; TTF-1, thyroid-associated transcription factor-1.
^aPositive on only basal part of lining epithelium of TGDC. ^bStaining was focal rather than extensive or confluent and the extent of staining varied from multiple foci to scattered or rare foci and observed in only 1 PTC of BCC.

Fine-needle aspiration cytology is valuable diagnostic tool in the evaluation of solid neck masses, with reported sensitivity rates ranging from 90% to 100%. The use for the diagnosis of metastatic malignancies in lymph nodes is a well-established method. Lymphadenopathy may be the its usefulness in the diagnosis of cystic neck masses. However it has a false negative rate about 50%. Cystic metastases in lymph nodes are one of the most common causes of false-negative. Verg et al. [8], emphasized the usefulness of ultrasound-guided needle biopsy, that can obtain material from the wall of a cystic mass. A high level of thyroglobulin in cyst indicates for metastasis of papillary thyroid carcinoma. Meanwhile, in brachial cyst the level of thyroglobulin is undetectable.

Differential diagnosis of Fine-needle aspiration cytology primary thyroid carcinomas arising in neck branchial cyst compared metastasis papillary thyroid carcinoma. Fine-needle aspiration cytology is a well-established diagnostic only five cases of primary thyroid carcinomas arising in neck branchial cyst have been described [9-13].

Sidhu's criteria for the papillary carcinoma in branchial cleft cysts (was suggested as 1) an epithelial lining layer, subepithelial lymphoid tissue collection, 2) normal thyroid tissue adjacent to the focus of papillary carcinoma within the wall, 3) and no evidence of papillary carcinoma in the thyroid or other area. Frozen section examination is an option of the mass was noted as a papillary thyroid carcinoma metastasis.

As in our case the gold standard of treatment of brachial cyst is total surgical excision of the lesion which was conducted by the otorhinolaryngologist. The specimen was sent for histopathology and the diagnosis was papillary thyroid carcinoma. We proceeded with total thyroidectomy with en block resection with neck dissections followed by radioactive iodine ablation and thyroid hormone suppression.

Conclusion

We would like to recommend that in lateral cervical cysts in the especially in young adult patients may represent lymph node

metastasis from occult papillary thyroid carcinoma. Radiographical investigation especially CT neck can be very helpful in identification of occult papillary thyroid carcinoma. Excision biopsy of suspicious lymph node followed by histopathology staining such as p63 and TTF- 1 is very useful for confirm diagnosis. To avoid confusion between occult papillary thyroid carcinoma and brachial cleft papillary carcinoma we can use sidhu's criteria. Total thyroidectomy is the main stay for papillary thyroid carcinoma.

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