

Case Report

A diagnostic dilemma: unusual case report of a dermoid cyst embellished with a tattoo in the midline of neck

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ABSTRACT

Dermoid cysts are benign congenital tumours of ectoderm origin usually arising from the midline where the fusion of embryonic structures of both sides occurs. They are true hamartomas focal malformations that can resemble neoplasms grossly and even microscopically. We hereby presented a case of a 25 year old male presented with complaints of a midline neck swelling for 5 years which was found just beneath a symbol tattooed in the skin overlying the swelling. The USG, fine needle aspiration cytology and multislice CT scan reports strongly suggested findings of a dermoid cyst. However, there was a diagnostic challenge faced when chest CT suggested old granulomatous changes around the swelling region. After thorough history taking, physical examination and radiological investigations, the swelling was successfully excised with a complete margin which was sent for histopathological examination, results of which correlated with the initial diagnosis of it being a dermoid cyst with foreign-body reactions.

Keywords: Neck midline swellings, Dermoid cyst, Foreign-body reaction

INTRODUCTION

A dermoid cyst is a benign cutaneous developmental anomaly that arises from the entrapment of ectodermal elements along the lines of embryonic closure.^{1,2} These benign tumours are lined by stratified squamous epithelium with mature skin appendages found on their wall and their lumens filled with keratin and hair.³ Dermoid cysts are considered to be congenital, but not all of them are diagnosed at birth.³⁻⁵ Only about 40% of dermoid cysts are diagnosed at birth, while about 60% of the dermoid cysts are diagnosed by five years of age.³ They are true hamartomas focal malformations that can resemble neoplasms grossly and even microscopically.

Meyer updated the concept of dermoid cyst to describe the following histological variants: true dermoid cyst, the epidermoid cyst, and the teratoid cyst. True dermoid cysts are cavities lined with epithelium showing keratinization

and with identifiable skin on the cyst wall. Epidermoid cysts are lined with simple squamous epithelium with a fibrous wall and no attached structures. The lining of a teratoid cyst varies from simple squamous to a ciliate respiratory epithelium containing derivatives of ectoderm, mesoderm, and/or endoderm. All three histological types contain a thick, greasy looking material.⁶

A swelling in the midline of the neck is a site which has an array of differential diagnoses. Of which, thyroid gland swellings, tumors, cysts, malignant lesions, lymph node swellings, lymphomas and lipomas are few of the most common ones. They usually present with increasing size which presses on the vital organs and structures beneath, leading to difficulty in breathing and swallowing. In dermoid cysts, the ideal surgical intervention is the careful complete surgical excision of the cystic lesion to avoid complications and recurrence.

CASE REPORT

We presented a case report of a 25 year old male patient who presented at the GMERS Hospital, Vadodara, Gujarat with a swelling in the central chest and neck region as seen in Figure 1.



Figure 1: 25 year old male presented with midline swelling in chest and neck region.

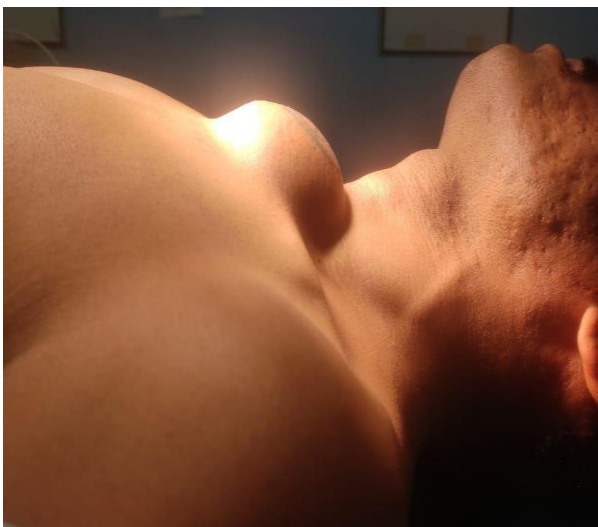


Figure 2: A well defined, semi- solid, semi cystic, non-compressible swelling which is approximately 5×5 cm in size.

Patient initially noticed a painless, swelling lower on the neck, 5 years back, which then proceeded to slowly increase in size over time. He presented for the cosmetic problem and there were no compression symptoms (breathlessness, dysphagia, change in voice) related to it. There was no history of significant weight loss, tenderness, redness, fever, or discharge from the swelling.

On palpation the swelling was well defined, semi-solid, semi cystic, non-compressible, approximately 5×5 cm in size, there was no movement with deglutition and protrusion of tongue. Cough impulse was absent as well as seen in Figure 2.

Ultrasonic examination of neck

It revealed a large, well-defined subcutaneous cystic lesion noted in midline in the suprasternal region. The lesion showed hyperechoic solid components within along with significant serpiginous linear-curvilinear hyperechoic areas.

No evidence of any significant internal vascularity was noted.

The fluid within the cyst showed low level floating echoes.

Imaging findings were suggestive of suprasternal dermoid cyst consisting of fat and hair.

Furthermore, CT correlation was recommended.

Multi-slice CT scan of the chest

It was performed using volume acquisition from the apices to the lung bases, using 0.5 mm collimation on a 128 slice MDCT, before and after IV administration of contrast. The procedure was uneventful and well tolerated by the patient, without any adverse drug reaction.

The resultant findings included a large, well defined, cystic lesion measuring 48 mm (AP)×72.7 mm (TX)×67.3 mm (SI) which was noted in subcutaneous plane in midline of suprasternal region. The lesion also showed an internal hypodense area with density of around -3 to -5 HU. A small fat density area was remarkably seen within the cystic lesion.

The lesion did not show any vascular association within. The lesion did not show any external ulceration or deeper extension into the muscular plane or deeper spaces.

Findings strongly suggested the possibility of subcutaneous suprasternal dermoid cyst.

Operative notes

Under local anaesthesia and sedation, transverse skin incision was taken over the swelling followed by blunt dissection which was carried out to separate swelling from overlying skin. We found a single thick stalk (approximately 3 cm) at the base of swelling which extended up to sternum. This stalk was resected, after which the entire swelling was removed with intact capsule and specimen was sent for histopathological examination. Complete haemostasis was achieved, and

Romo vac negative suction drain (no. 6) was placed in the residual cavity. Subcutaneous suture was taken with Vicryl 2.0 suture and skin was closed with Monocryl 3.0 sutures covered with sterile dressing.

Histopathology report of the excision biopsy

Gross description

Received already cut open cystic tissue swelling measuring 6×3×1.5 cm. On being cut open, pus like fluid oozed out and a tuft of hair was identified. Figure 3 and Figure 4 shows the excised swelling with complete margins. Figure 5 depicts the content of the swelling on being cut open.



Figure 3: Excised swelling.



Figure 4: Complete margins of the excised swelling.

Microscopic description

The sections show hyperkeratotic stratified squamous epithelial lining. Fibrocollagenous cyst wall showed chronic inflammatory infiltrates, foamy macrophages and foreign body giant cells. Dilated and congested blood

vessels were also seen. Abundant keratin flakes were also evident.

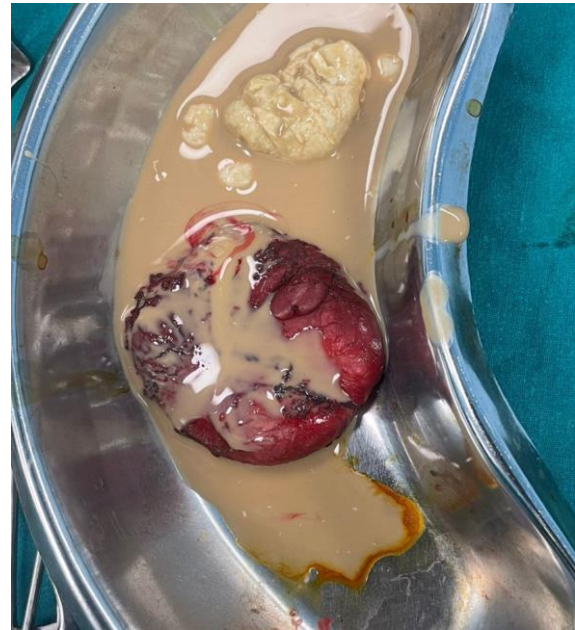


Figure 5: Contents of the swelling on cross sectioning and oozing of brownish fluid.

DISCUSSION

While discussing midline neck swellings, the most common differential diagnoses include a spectrum of cystic conditions like: epidermoid cyst, encephalocele, juvenile xanthogranuloma, lipoma, pilar cysts, meningioma, neurofibroma, teratoma, rhabdomyosarcoma, olfactory neuroblastoma, lymphoma, subcutaneous abscess, facial trauma, trichilemmal cyst, lymphatic malformation, thyroglossal duct cyst and thyroid tumours.

The clinical history and physical examination were important factors in the evaluation. Imaging modalities such as ultrasound (US), colour Doppler, computed tomography (CT) and magnetic resonance imaging (MRI) play an important role in establishing the final diagnosis as well as in delineating the extent of the lesion for planning surgical treatment.

Dermoid and epidermoid cysts are uncommon but not rare lesions when occurring in the head and neck region. They are usually discussed together in the literature because of similar histology. Dermoid and epidermoid cysts both are lined by ectodermal derived squamous epithelium.⁶

A true dermoid cyst contains skin appendages within its lining, while epidermoid does not contain skin appendages.⁷ Approximately 7% of all dermoid cysts occur in the head and neck region. Clinically, they present as painless, slowly enlarging swellings that are

usually asymptomatic with no signs of redness, tenderness or attachment with fascia below it, hence it doesn't usually move with deglutition. There is no gender predilection for dermoids occurring in the head and neck region.⁸ About 5% of dermoid cysts can undergo malignant degeneration into squamous cell carcinoma.⁹ A small fraction of dermoid cysts presents at a later stage in life like the case discussed above, making it unusual.

Usually, dermoid cysts are congenital but can occur as sequelae of any accidental event/trauma in which skin appendages are embedded into the subcutaneous tissue.

One interesting observational finding in the case report discussed above was the presence of a tattooed symbol over the swelling of this patient. The micro-trauma caused by the tattoo pricking could have been the possible explanation for foreign body reaction in the dermoid cyst which made the swelling grow.

Another diagnostic challenge that was faced was the presence of a small, calcified lung nodule noted in the anterior segment of the left upper lobe of the lung in the CT scan findings of the chest region. Additionally, few sub-centimeter sized calcified lymph nodes were noted in the right hilar and paratracheal region as well. These findings suggested the possibility of previous granulomatous changes which would have caused the midline swelling as well. This evidence caused a dilemma in reaching the final diagnosis but upon the histopathological examination of the lesion post operatively, the original diagnosis of dermoid cyst with foreign-body reaction was undoubtedly reconfirmed.

CONCLUSION

The histopathological findings are suggestive of dermoid cyst with foreign-body reactions.

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