AUCKLAND RADIOLOGY GROUP

SCAN
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CYSTIC NECK LESIONS

Lymphadenopathy is the most common cause for a lump in the neck in all age groups, and lymph node number, size, architecture and vascularity can all be well assessed with ultrasound. A number of congenital cystic lesions form the next most common group and, although these masses are congenital, they may not present until adulthood. Ultrasound is the appropriate first test for characterisation of most neck masses, and will allow accurate differentiation of cystic from solid lesions. Most cystic neck masses have non-specific ultrasound features, and these features can be complicated by infection or haemorrhage. However, the correct diagnosis can often be determined by careful evaluation of the position of the lesion.

THYROGLOSSAL DUCT CYSTS

Incidence: The most common congenital cystic neck lesion (70%) is the thyroglossal duct cyst. Only 50% present before the age of 20 years. 1% have an associated thyroid cancer (usually papillary).

Pathology: These lesions occur anywhere along the embryological course of descent of the thyroid bud from foramen caecum in the tongue, to the root of the neck. They are midline/paramedian (always within 2 cm of the midline) and move upwards with tongue protrusion.

Imaging: Ultrasound classically demonstrates an anechoic, thin walled, midline cyst, at or below the level of the hyoid. Often the cyst appearances will be modified by proteinaceous contents, infection or haemorrhage.

Differential: The main differential is a dermoid cyst, but these are far less common. A plunging ranula is generally off midline, and has a neck extending into the floor of the mouth, between the mandible and the mylohyoid muscle.

Management: Specialist referral is appropriate. Excision is usually contemplated because of the tendancy to become infected and the small risk of associated malignancy.

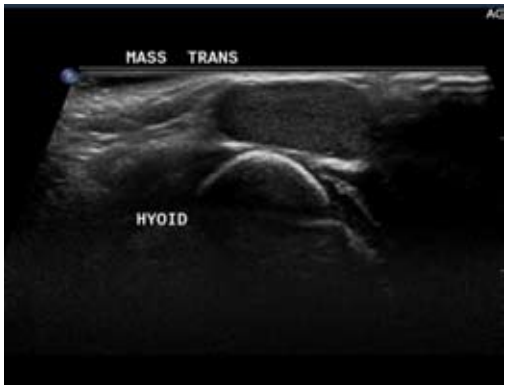

Fig. 1 A transverse image at the level of the hyoid bone, shows a well circumscribed cyst with complex internal contents.

BRANCHIAL APPARATUS LESIONS

Pathology: Congenital lesions related to the embryologic branchial apparatus are usually cysts (70%). The second branchial cleft is the most commonly affected (95%), followed by the first branchial cleft (5%). Third and fourth branchial cleft lesions are rare.
Less frequently branchial apparatus lesions may be sinuses or fistulas, associated with a discharging punctum around the ear (1st branchial cleft) or in the root of the neck over the anterior border of sternocleidomastoid (usually the 2nd branchial cleft). Fistulas and sinuses present in infancy or early childhood, but cysts often present in older children or even into adulthood.

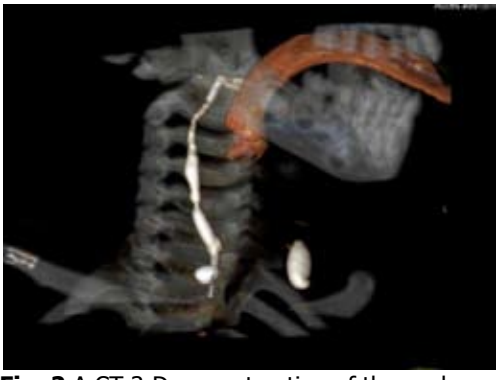

Fig. 2 A CT 3-D reconstruction of the neck shows contrast within a sinus on the left and a fistula on the right (extending from skin punctum to tonsillar fossa).

Imaging: Ultrasound is the appropriate initial study with subsequent CT requests usually coming after specialist involvement. Appearances are variable and non-specific. Position is the clue to the correct diagnosis. A cyst behind the submandibular gland and lateral to the carotid sheath, or along the anterior border of sternocleidomastoid suggests a 2nd branchial cleft cyst. A cyst in or around the parotid, or close to the pinna or EAC is usually a first branchial cleft lesion.

Differential: The most important , albeit low probability, differential is that of a necrotic lymph node involved with squamous cell carcinoma in the older age group.

Management: Once the possibility of a branchial apparatus lesion has been raised specialist referral is indicated. Subsequent investigations may include CT and cyst aspiration for cytology/microbiology. Ongoing surgical management is governed by the anatomy of individual lesions and the technical challenges associated with resection.

LYMPATIC MALFORMATIONS (CYSTIC HYGROMA)

Pathology: Lymphatic malformations are multiloculated cystic mass lesions arising from lymphatic channels. A cystic lesion in the posterior aspect of the neck is most commonly a lymphatic malformation. When a lymphatic malformation is anteriorly placed the differential can include other cystic neck lesions. Most present in early childhood, often after an upper respiratory tract infection. The lymphatic elements of the lesion will secrete fluid in response to the URTI with consequent enlargement. They can also become infected or haemorrhage as a result of minor trauma, leading to acute enlargement.

Imaging: Ultrasound is the appropriate first investigation, but MRI is often necessary to define the deep extent of these lesions. Not infrequently the MR demonstrates fuid levels within the mass. The key to the correct diagnosis is that lymphatic malformations are multiloculated cysts which do not respect normal fascial planes. When in the anterior neck, these lesions will commonly involve the subcutaneous tissues, deep tissues and parotid gland.

Differential: The multiple loculations and extension across fascial planes is very helpful distinguishing lymphangioma from other cystic neck masses. Venous vascular malformations can enter the differential but the locules tend to small and they often appear more solid.

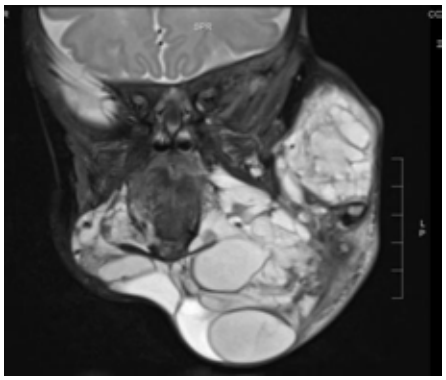

Fig. 3 T2 weighted coronal MR image shows a multiloculated bilateral lymphatic malformation, complicated by internal haemorrhage

SUMMARY

Ultrasound is typically the initial imaging choice for neck masses, particularly for general practitioners, and usually enables the distinction between cystic and solid lesions. More detailed characterisation is often possible with ultrasound if precise anatomic localisation can be achieved. Nonspecific morphologic features, especially when complicated by infection, hemorrhage or tumour, may necessitate CT (branchial cleft lesions), MR (lymphangioma) and specialist referral including a tissue diagnosis.

Dr Glen Thomson

References:

Koeller et al, Congenital Cystic Masses of the Neck: Radiologic-Pathologic Correlation. Radiographics 1999;19:121-146.

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