

Spontaneous retro- and parapharyngeal haematoma caused by intrathyroid bleed

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Abstract

A case of spontaneous haemorrhage into the retropharyngeal and parapharyngeal space secondary to bleeding from a thyroid cyst is described. While many conditions are known to cause this entity, no previous papers have reported a thyroid cyst to cause such extensive haemorrhage. Haemorrhage in these spaces is of particular importance as it causes rapid airway compromise and can be life-threatening. Forty cases of non-traumatic retropharyngeal and parapharyngeal haematomas have been reported in the literature to date. Although the diagnosis can be easily established in most patients, no published review of this condition exists. This paper reviews all reports of non-traumatic retropharyngeal and parapharyngeal haematoma published in the literature to date and discusses management guidelines. We also present here for the first time the demographics and treatment results of this rare entity.

Key words: Haemorrhage; Thyroid Gland; Treatment Outcome

Introduction

Any collection in the retropharyngeal and parapharyngeal spaces can lead to obstruction of the upper aerodigestive tract by direct compression anteriorly and/or by extending down to the superior mediastinum and causing tracheal compression. Bleeding into these potential spaces can be rapid and therefore be potentially life-threatening. Haemorrhage in the retropharyngeal space is unusual as no major blood vessels or organs apart from lymph nodes are present. Cervical trauma is one cause, but the extent of the bleed and its outcome usually depends on the severity of the traumatic event. Various non-traumatic causes have been described for this entity, including anticoagulation, aneurysms, and straining. Conservative management is often appropriate except in the presence of airway compromise or compression symptoms when more radical treatment is required. Forty cases of non-traumatic pharyngeal space haematoma have been reported in the English literature so far. The case described here is the first recorded case of retropharyngeal haematoma occurring secondary to a bleed from a thyroid cyst. This paper reviews all cases of non-traumatic retropharyngeal and parapharyngeal haematomas published to date in the English literature, identifies common demographic factors and discusses management guidelines and prognosis.

Case report

A 56-year-old lady presented to the Accident and Emergency department with a three-day history of sore throat, pain on the left side of the neck, and progressively increasing submental swelling. She also complained of dysphagia to solids, a slight change in her voice and a swelling over the left side of the neck. There was no history of trauma, allergies, foreign body impaction, bleeding

diathesis, thyroid dysfunction or recent travel abroad. She did not keep any pets at home. Her past medical history was unremarkable.

On examination the patient was obese and short-necked. She was generally well with no fever, breathing difficulty or trismus. Her respiratory rate was 16 per minute and her other vital signs were within normal physiological limits. Examination revealed a large left tender submandibular and submental swelling with overlying ecchymosis. The oral cavity was unremarkable. Examination of the oropharynx revealed a bluish red discoloration of the mucosa with an underlying non-pulsatile swelling, extending from behind the left posterior tonsillar pillar to the midline of the posterior pharyngeal wall. There were small areas of ecchymoses on the uvula and the adjacent soft palate on the left side. The upper limit of the mucosal changes was the level of the soft palate and it extended down to the pyriform sinus on the left side. The lower extent of the swelling was not seen on flexible nasendoscopy and the bulge of the swelling hid the left hemilarynx from view. The right hemilarynx was normal and the right fold freely mobile. Neck palpation elicited mild tenderness in the left paratracheal region, but no neck masses could be felt.

The patient was treated with intravenous steroids and antibiotics. Full blood count, C reactive protein, clotting screen, C1-esterase inhibitor, thyroid profile, urea and electrolytes were normal. Sequential viral titre serology was negative. The chest X-ray was normal. A magnetic resonance scan performed two days later showed a large mass lesion of mixed signal intensity, with a bright rim on T2-weighted scans (Figure 1), in the retro and parapharyngeal space. This was displacing the laryngopharynx to the right, causing some lateral compression of the internal jugular vein (Figure 1) and extended down to the superior

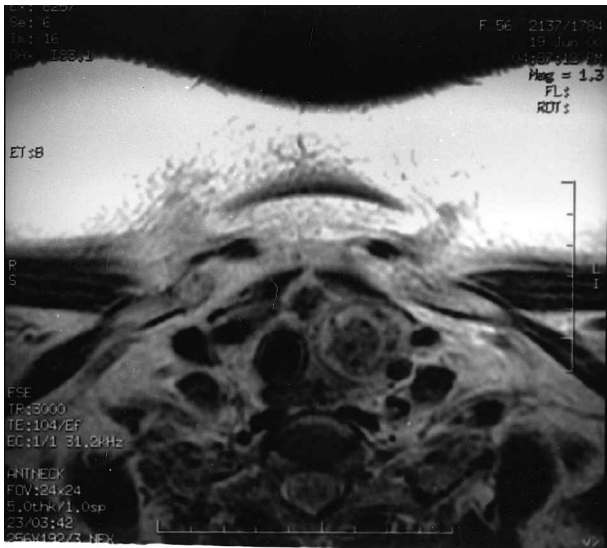


FIG. 1

T2-weighted sequence scan showing the haematoma displacing the trachea to the right.

mediastinum. T1-weighted images showed the presence of a 3 cm sized intra-thyroidal mass with mixed signal intensity and a bright rim (Figure 2), exhibiting similar changes in T2-weighted images as seen in Figure 1. These findings were suggestive of an acute bleed into the thyroid gland, which had extended into the retro- and parapharyngeal space.

As the neck tenderness improved over the next few days, neck palpation confirmed a swelling in the left thyroid lobe 3 cm in size. The swelling was smooth, tensely cystic to firm, non-pulsatile and moved on swallowing. No bruit could be heard over the swelling. The extent of the haematoma, as seen through the mouth, had spread across to the right side. She progressively improved and her voice and swallowing returned to normal. She was discharged five days after admission. On review one month later the swelling had entirely resolved.



FIG. 2

T1-weighted sequence showing the mixed intensity contents with a bright rim in the left lobe of the thyroid gland, contiguous with the bleed in the retro- and parapharyngeal spaces.

Literature search

Medline was searched from 1966 to 1999 using the following key words: pharyngeal/retropharyngeal/parapharyngeal/cervical, with haemorrhage/haematoma/bleed in the title and abstract fields. The relevant papers were studied but excluded if the aetiology was traumatic other than iatrogenic. The references of each article were also scrutinised. Papers prior to 1966 were obtained by hand searching and from the reference lists in later publications.

Data extracted included age and sex of the patient, aetiology of haemorrhage, presence of airway compromise, if any, and its management and the number of patients who needed surgical evacuation of the haematoma. Information regarding duration of hospital stay was also obtained when available.

Discussion

This is the first case of retropharyngeal haemorrhage arising from an intrathyroidal bleed to be reported in the literature where magnetic resonance image (MRI) scanning has demonstrated a causal link. The imaging characteristics of the intrathyroidal lesion support this hypothesis with a reasonable degree of certainty with the caveat that absolute proof cannot be provided in such a clinical scenario. The thyroid gland has been mistaken as the source of retropharyngeal and mediastinal haemorrhage in the past. Sandor and Cooke¹ reported a case where bleeding was initially thought to be from a retro-sternal goitre, but were subsequently convinced that it originated from an aberrant artery off the aorta. Benedetti-Valentini *et al.*² reported a case where thyroidectomy was performed for a suspected bleed but this was histologically proven to be normal thyroid gland.

Bleeding into the left thyroid cyst and its subsequent expansion was responsible for the original symptom of severe left-sided neck pain. This subsided as the cyst ruptured allowing blood to track into the parapharyngeal and retropharyngeal spaces. Further spread to the submandibular and submental spaces lead to bruising of the overlying skin in these areas.

Such extensive bruising originated from the thyroid gland can best be understood by a brief review of the anatomy of the deep neck spaces and their relationships.

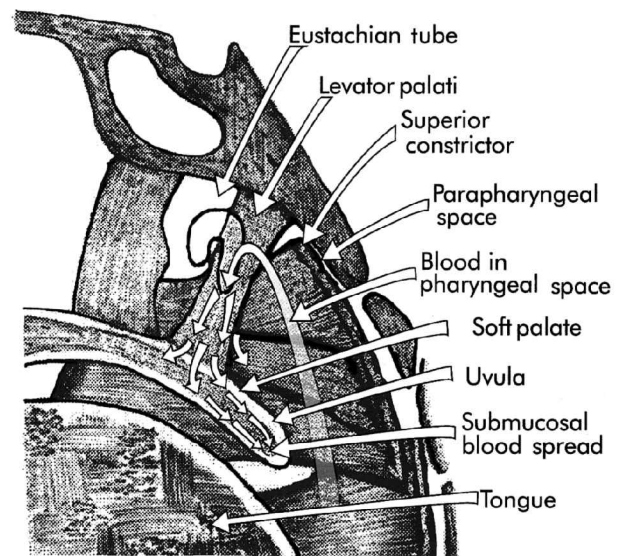


FIG. 3

Shows the route for the spread of blood in the parapharyngeal space to the soft palate.

TABLE I
REPORTED CASES WITH NECK SPACE HAEMORRHAGE

Author	Date	Age	Sex	Cause	Site	Airway management	Management of haematoma	Hospital stay (days)
Ku <i>et al.</i> ⁷	1997	80	F	Parathyroid adenoma	R	ETT	Evaluation	–
Chin <i>et al.</i> ⁸	1997	37	M	Straining	R, P	NTT	Evacuation	4
Jones <i>et al.</i> ⁹	1996	30	M	Epstein-Barr virus	R	Observation	Conservative	–
Stewart <i>et al.</i> ¹⁰	1995	68	F	IJV cannulation	R	Observation	Evacuation	Died
Sinert and Scalea ¹¹	1993	29	F	Anticoagulant	R	Observation	Conservative	10
Handa and Colwell ¹²	1993	74	F	Haemodialysis	R	–	Conservative	–
Dingle <i>et al.</i> ¹³	1992	45	M	Coughing	R	–	Conservative	–
		51	M	Straining	O	–	Conservative	–
Thomas <i>et al.</i> ¹⁴	1991	28	M	Carotid sinus massage	C	Observation	Evacuation	–
Ophir and Bartal ¹⁵	1988	65	F	Fish bone	R	Tracheotomy	Evacuation	10
Thatcher and George ¹⁶	1987	56	F	Anticoagulant	R	ETT	Evacuation	–
Mackenzie and Jellicoe ⁵	1986	72	F	Polycythaemia vera	R	ETT	Evacuation	Died
Bray and Nugent ¹⁷	1986	3	M	Haemophilia B	R	–	Conservative	1
Carmody and Wergowske ¹⁸	1983	79	F	Anticoagulants	R	–	Evacuation	–
Brooks and Neclin ¹⁹	1981	65	F	Anticoagulants	R	–	Conservative	5
Markowitz and Mendel ²⁰	1981	20	M	Haemophilia A	R	–	Conservative	–
Lee and Berger ²¹	1980	68	F	IJV cannulation	R	Observation	Conservative	6
Rosenbaum <i>et al.</i> ²²	1979	53	M	Anticoagulants	S	Tracheotomy	Conservative	Died
		52	M	Anticoagulant	S	Observation	Conservative	–
		72	M	Anticoagulant	R	Observation	Conservative	7
Schroeder and Mair ²³	1978	64	F	Spontaneous	R	Observation	Conservative	17
Genovesi and Simmons ¹⁴	1974	60	M	Polycythaemia vera	C	Tracheotomy	Evacuation	28
Owens <i>et al.</i> ²⁵	1975	61	M	Anticoagulants	R	Tracheotomy	Evacuation	–
Eshaghy <i>et al.</i> ²⁶	1973	67	M	Cardiac cath.	C	ETT	Conservative	–
		37	F	Cardiac cath.	C	ETT	Conservative	13
Hennessy and Martine ²⁷	1970	54		Spontaneous	C	Observation	Conservative	–
Miller ²⁸	1970	85	M	Aneurysm	R	Tracheotomy	Conservative	Died
Clark and Monks ²⁹	1969	4	M	Foreign body	R	Observation	Conservative	–
Reussi <i>et al.</i> ³⁰	1969	62		Anticoagulant	R	Observation	Conservative	–
Giroux <i>et al.</i> ³¹	1967	64	F	Anticoagulant	R	Observation	Conservative	–
Field and DeSaussure ³²	1965	53	F	Arteriography	R	Tracheotomy	Conservative	Died
Hays ³³	1964	2.5	F	Retropharyngeal abscess	R	–	Evacuation	Died
Sandor and Cooke ¹	1964	53	M	Aberrant artery	R	Observation	Conservative	7
		73	M	False aneurysm	R	–	–	Died
Weaver and Young ⁶	1964	38	M	Mycotic aneurysm	R	–	Evacuation	55
Epstein and Klassen ³⁴	1958	66	F	Coughing	R	Observation	Conservative	6
	1958	76	M	Vomiting	R	Observation	Conservative	10
Benedetti-Valentini <i>et al.</i> ²	1958	33	F	Exercise	R	–	Thyroidectomy	–
Masulli and Della Beffa ³⁵	1953	64	F	Haemorrhagic diathesis	R	–	Conservative	–
Capps ⁴	1934	50	M	Parathyroid adenoma	R	Observation	Conservative	Died

ETT = endotracheal tube; NTT = nasotracheal tube; IJV = internal jugular vein; cardiac cath = cardiac catheterization; R = retropharyngeal; P = parapharyngeal; O = oropharyngeal; S = submaxillary; C = cervical.

The thyroid gland is invested in a fascial envelope referred to as the surgical capsule, which is a part of the pretracheal fascia. The capsule is deficient on the posterior aspect of the isthmus and most of the posteromedial surface of each lobe. The capsule extends laterally to blend with the carotid sheath and posteriorly with the prevertebral fascia.³ The pretracheal space is thus intimately related to the retropharyngeal and parapharyngeal spaces.

The parapharyngeal space is a potential space which contains muscles, the carotid sheath, lower cranial nerves, areolar tissue and fat. It lies lateral to the pharynx and extends from the sphenoid bone at the skull base to the hyoid bone. It is continuous posteromedially with the retropharyngeal space. This space is bounded anteriorly by the constrictor muscles and their investing fascia and

posteriorly by the alar layer of prevertebral fascia. It extends from the skull base at the pharyngeal tubercle to the level of C7/T1, where the two layers of fascia fuse within the posterosuperior mediastinum. In the adult, the average width of the retropharyngeal soft tissue at the level of C2 is 3.5 mm and at C6 is 14 mm. Any increase in the width of the soft tissue shadow is suggestive of pathology in the retropharyngeal space.

Collection of blood in the retropharyngeal space may cause pressure on the pharynx, larynx and oesophagus. Patients may present with dysphagia, odynophagia, trismus, dyspnoea, hoarse voice, or stridor. In severe cases they may present with impending airway obstruction. The trachea, although supported by its cartilaginous framework, may be compromised in extreme cases. Capps⁴

described a triad of clinical signs, tracheal and oesophageal compression, ventral displacement of trachea on the lateral neck X-ray and the appearance of subcutaneous bruising over the neck, which is diagnostic of retropharyngeal haemorrhage. The amount of fluid collecting in this space will be related directly to the severity of the signs and symptoms.

The submucosal ecchymoses, which involved the whole of the uvula and the posterior part of the soft palate and were distinct from the submucosal collection of blood in the retropharyngeal space, have not been described before. It was most probably due to the blood in the parapharyngeal space tracking through the natural gap in the lateral pharyngeal wall above the left superior constrictor, through which the levator palati muscle emerges (Figure 3). In our opinion, the temporal sequence of the clinical signs supports this suggestion.

On review of other published reports on neck space haematomas, the mean age for all the patients was 53.1 years, with no sex bias. Table I sets out the various causes of this entity. It is interesting that almost half of the cases (41 per cent) were iatrogenic in origin; 23 per cent from complicating anticoagulant medication and 18 per cent following an invasive procedure. Only five per cent were due to infection while 15 per cent were attributed to either coughing, straining, vomiting or exercise. Bleeding disorders accounted for 13 per cent but only two cases were spontaneous.

The main emphasis in the management of retropharyngeal haematoma is on airway maintenance. Eighty per cent of patients reviewed here developed airway compromise. More than half (57 per cent) of these cases responded well to conservative management. Of all patients needing active management, half were intubated and half required tracheostomy. This review also shows that surgical evacuation of the bleed was required in a high proportion (37 per cent) of these patients. However, only in two patients who underwent surgical evacuation of the haematoma was a specific bleeding site noted (inferior thyroid artery⁵ and external carotid artery⁶). External evacuation has been preferred to an intraoral approach as there is no microbial contamination of the neck spaces in the former procedure. The bleed proved to be fatal in 22 per cent of patients.

Conclusion

Close airway monitoring is essential. Active intervention in the form of intubation or a tracheostomy may be needed. The majority of patients are likely to have underlying medical or surgical problems, that have directly or indirectly caused the bleed. The majority of haematomas usually do not require surgical evacuation. Spontaneous resolution usually occurs in two or three weeks, but the condition can be fatal in one-fifth of patients.

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