Aneurysm of the inferior thyroid artery

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Summary: A case of aneurysm of the inferior thyroid artery is presented. It is usually not possible to diagnose the exact site of origin clinically. Digital subtraction angiography can determine the precise site and type of aneurysm. In view of the high incidence of complications, early surgical treatment is recommended.

Introduction

Aneurysms of the subclavian artery and its branches are rare. Dent *et al.*¹ in a series of 1,488 atherosclerotic aneurysms detected only two cases of subclavian artery aneurysms. Aneurysms of the inferior thyroid artery are still rarer. One presented to us as a clinically interesting problem.

Case report

A 40 year old male patient was admitted with the complaint of swelling in the right supraclavicular region for 5 years. It was a painless swelling of insidious onset, gradually increasing in size. There was no tingling and numbness in the right arm or any symptoms of exercise intolerance. There was no history of diabetes, hypertension, trauma or similar swelling in any other part of the body.

Examination revealed a 8 × 6 cm soft compressible swelling in the right supraclavicular region with feeble pulsations (Figure 1). A palpable thrill and a systolic bruit on auscultation were present. His pulse rate was 78/minute and blood pressure was 120/78 mmHg. All peripheral pulses were normal; the radial pulses were equal and synchronous, and there was no difference in blood pressure in the arms. All the haematological investigations were in the reference range and serological tests for syphilis were negative. X-ray of the neck showed no cervical rib. A clinical diagnosis of aneurysm involving the right subclavian artery was made. Digital subtraction angiography showed aneurysm of the right inferior thyroid artery (Figure 2). The right subclavian artery was normal.

At operation, a 6 × 4 cm pulsatile mass was found arising from the right inferior thyroid artery.

The right transverse cervical and suprascapular arteries were arising proximal to the aneurysmal sac from the thyrocervical trunk. The trunks of the brachial plexus were lying behind the aneurysmal sac. The aneurysm was excised after proximal and distal ligation. There was no thrombus in the sac. The postoperative course was uneventful and the patient was discharged on the fifth postoperative

Figure 1 A clinical photograph showing a swelling in the right supraclavicular region.

Figure 2 Digital subtraction angiography showing the aneurysm (straight larger arrow) arising from the right inferior thyroid artery. The right subclavian artery (open arrow), vertebral artery (smaller arrow) and thyrocervical trunk (curved arrow) are normal.

day. Histopathological examination revealed degenerative changes of the elastic tissue of the media of the artery.

Discussion

Aneurysms involving small peripheral arteries are very rare. Only seven cases of aneurysm²⁻⁶ of the inferior thyroid artery and two cases of aneurysm of thyrocervical trunk^{6,7} have been previously reported. With the present case, there are a total of ten reported cases of aneurysm involving the thyrocervical trunk or its inferior thyroid branch and their salient features are analysed in Table I.

Four of these cases presented as asymptomatic swellings in the neck.^{6,7} Two patients had a cervical swelling which was discovered incidentally on physical examination.⁶ The remaining four patients presented with symptoms such as hoarseness of voice,^{2,3,5} respiratory distress^{3,4} or dysphagia.² Clinical examination may reveal a pulsatile or non-pulsatile swelling in the supraclavicular region^{6,7} (six cases). More medially located swellings are often considered to be of thyroid origin^{3,5}

and, preoperatively, an aneurysm is not suspected. In only six patients (including ours) was the diagnosis made preoperatively using arteriography^{6,7} and all six of these had swelling in the supraclavicular region. In two patients the diagnosis was made at surgery.^{2,5} In the remaining two, diagnosis was made during pathological examination of the excised specimen² in one and at post-mortem examination³ in the other.

Peripheral arterial aneurysms are usually atherosclerotic, traumatic, mycotic or due to angitis or syphilis. All the reported cases have been true aneurysms. In three cases there was evidence of atherosclerosis.^{6,7} In one case there was no abnormality in the wall except for thinning of the intima.⁵ In six cases²⁻⁶ (including the present case) degenerative changes, especially of the media have been noted and one of these was a primary dissecting aneurysm.⁴ Degenerative changes in the media have been noted in large vessels in Marfan's syndrome. No systemic features suggestive of this syndrome have been noted in any of these cases. Hypertension was recorded in two patients and may have been a contributory factor in the pathogenesis of the aneurysm.^{2,6}

Table I Salient features of all reported cases of aneurysm of the thyrocervical trunk and the inferior thyroid artery

Subject no.	Reference	Presentation	Preoperative diagnosis	Complication	Treatment	Outcome
1	Doumanian ²	Hoarseness of voice	Mass at the thoracic inlet	Rupture, vocal cord palsy	Excision	Successful
2	Habib ³	Respiratory distress and dysphagia	Thyroid swelling	Rupture, vocal cord palsy	No definite surgery	Died due to intratracheal rupture
3	Golby ⁴	Acute respiratory distress	None	Rupture	Emergency excision	Successful
4	Mashiah ⁵	Hoarseness	Thyroid swelling	Hoarseness of voice	Excision	Successful
5	Ketonen ⁶	Swelling in the neck	Aneurysm of inferior thyroid artery	None	Excision	Successful
6	Ketonen ⁶	Incidental discovery	Aneurysms of thyrocervical trunk	None	Excision	Successful
7	Ketonen ⁶	Swelling in the neck	Aneurysm of inferior thyroid artery	None	Excision	Successful
8	Ketonen ⁶	Incidental discovery	Aneurysm of inferior thyroid artery	None	Excision	Successful
9	Karangia ⁷	Loud bruit in the neck	Aneurysm of thyrocervical trunk	Compression of lower segments of brachial plexus causing pain and paraesthesia	Excision	Successful
10	Present case	Swelling in the neck	Aneurysm of inferior thyroid artery	None	Excision	Successful

The natural history of the untreated aneurysm is not available in any case. Six of the patients were operated on soon after the diagnosis was made. Complications were noticed at presentation in the remaining four and, in three of these, spontaneous rupture of the aneurysm had occurred. Rupture of the aneurysm is a serious complication with grave consequences which include vocal cord paralysis,^{2,3} respiratory distress⁴ necessitating tracheostomy and oesophageal compression.^{2,3} One patient died due to intratracheal rupture of the aneurysm.³ All

the patients who underwent excision of the aneurysm had excellent outcome with relief of symptoms. Mortality was reported in the only patient in whom surgery was not undertaken as the diagnosis was made only at postmortem.³

In view of the potentially dangerous complications as well as a relatively simple surgical procedure with no significant morbidity or mortality, we advocate a policy of operating on all these cases as soon as the diagnosis has been made.

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