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ANEURYSMS OF THE THORACIC AORTA INVOLVING THE LUNG.

BY

JAMES FANNING, M.B., B.S. LOND.,

HOUSE-PHYSICIAN, HAMPTSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

THE two cases of aneurysm of the thoracic aorta described below present several features of considerable clinical and pathological interest. Both aneurysms ruptured within a fortnight of each other while under observation in hospital, and in each case the aneurysmal sac produced extensive changes in the lung. The second case was particularly interesting in its close simulation of chronic pulmonary tuberculosis.

CASE I.

W. H., widower, aged 53, a commercial traveller, was admitted to Hampstead General Hospital on January 31st, 1922, with a history of four years' gradually increasing dyspnoea on exertion. There were also attacks of more acute dyspnoea, coming on chiefly at night, and lasting from half an hour to an hour. Pain was felt at the back of the shoulders and down the right arm, with a general feeling of tightness in the chest. This was also worse after exertion. He had a chronic slight cough, and at times suffered from palpitation. There had been no dysphagia, no oedema, and no haemoptysis. He did not think he had been losing weight.

Two days before admission he suddenly collapsed after getting up in the morning, and lost consciousness for three-quarters of an hour. On recovering he felt very weak, and complained of pain all over the chest; later he developed a troublesome cough with haemoptysis. He had always been healthy previously.

Condition on Admission.—The patient was a rather thin and anaemic man in a very weak condition. There was very little dyspnoea while at rest. There was a pulsating swelling immediately to the right of the sternum, having an area of about 2½ square inches, and considerable diminution of movement of the right chest. The percussion note was dull all over, back and front, while the breath sounds were very weak and bronchial. Vocal fremitus and resonance were increased. There were no adventitious sounds. The pulse rate was 70, and the rhythm equal and regular. The volume was moderate and tension poorly sustained. There was no inequality of the radial pulses. The cardiac apex was in the fifth space, 1 inch outside the nipple line, and was heaving in character. The heart sounds were normal, and were heard clearly over the swelling. The systolic pressure was 145 mm. and the diastolic 110. The left pupil was slightly larger than the right.

Progress.—The patient remained fairly comfortable in bed for over a month. The cough and haemoptysis continued. There were occasional slight attacks of dyspnoea. The only fresh sign that developed was a slight oedema of both forearms. The temperature varied from 98° to 101° F. On March 7th, at 5 a.m., free haemorrhage took place suddenly from the mouth, and the patient died in five minutes.

Post-mortem Examination.—A small mass of blood clot about the size of a large walnut was found immediately beneath the chest

wall in the region of the swelling noted before death. The left lung was large and emphysematous, and covered the left border of the heart and pericardium. About 12 oz. of dark yellow fluid were present in the right pleural cavity. The right lung appeared shrunken, was dark in colour, and felt solid. It was not possible to distinguish the lobes. The heart was small and appeared normal. The aorta about one and a half inches above its origin opened into an aneurysm about the size of a foetal head. It occupied what appeared to be the right lung, the remnant of which was stretched over the sac as a thin shell. The cavity of the aneurysm was full of laminated clot, which dropped out through the anterior wall of the sac, and was directly continuous with the walnut-like mass above mentioned. The aorta was atheromatous, and showed marked syphilitic arteritis.

CASE II.

Mrs. E. S., a widow, aged 50, employed as a cook, was admitted to hospital on March 12th, 1922, with a history of six months' illness of gradual onset. Her chief complaint was pain round the lower part of the chest, "crushing" in character, coming on directly after food. There was no vomiting, but considerable flatulence. The appetite was poor, and she did not sleep well. She had been getting much thinner recently. There had been no night sweats. There was slight dyspnoea on exertion. For the past month she had been bringing up blood by the mouth; she said she coughed up a little every day mixed with frothy sputum, the blood being sometimes bright in colour and sometimes dark, while at intervals of about a week she brought up larger quantities (about half a pint) in clots. These large quantities she thought she vomited, although solid food was never noted in the vomit.

Condition on Admission.—The patient was a wasted, anaemic woman. There was moderate enlargement of the terminal phalanges of the fingers. The temperature was 100° F., pulse rate 100, and respirations 24. On inspection of the chest there was definite flattening at the left apex with diminished expansion. On palpation there was slight pulsation below the left clavicle. The percussion note over the left apex and subclavicular region in front and over the left apex behind was dull. Towards the outer part of the dull area the breath sounds were diminished, and vocal fremitus and vocal resonance were less than normal, but internal to this loud cavernous breathing was heard. A few fine crepitations were present. The pulse was equal and regular, of small volume and moderate tension. The apex beat was in the fifth space within the nipple line, and there was no enlargement or displacement of the heart. The sounds were normal.

Progress.—For the first two days after admission the patient was continually bringing up clotted blood in small quantities. The blood appeared in the pharynx without effort, and was unmixed with sputum or food. There was a slight cough, but the blood did not seem to appear with the cough. No sputum was obtained. On the second day after admission she had a sudden and severe haemorrhage; she became blanched and almost pulseless at the wrist. However, she made a fair recovery from this attack, but the bleeding continued, and at times the blood was undoubtedly mixed with fluid stomach contents. Melaena was a marked feature in the case during this time. Pain in the upper left chest was also complained of. The temperature varied from 99° to 100° F. The patient gradually became weaker and more anaemic, and died quite suddenly, but without external haemorrhage, on March 19th, seven days after admission.

Post-mortem Examination.—An ulcer about 1½ inches by 1 inch in diameter was found in the oesophagus at the level of the bifurcation of the trachea. Through the base of this ulcer a mass of blood clot presented. The trachea was normal. The upper half of the upper lobe of the left lung was heavy, deep red in colour, felt solid, and was adherent to the thoracic wall. An incision showed a mass of dense laminated blood clot of a pale buff colour, around the periphery of which was stretched a thin layer of lung tissue. The mass was about the size of a large orange, and contained a cavity no larger than a walnut, which communicated with the arch of the aorta. The lumen of the aorta itself was scarcely altered. There was slight atheroma and syphilitic arteritis. The heart was small, and the valves were normal. The right lung was quite healthy. The intestines contained a considerable quantity of altered blood.

The way in which, in the first instance, a whole lung, and in the second instance a localized part of the lung, were converted into aneurysmal sacs is one of the most interesting features of these cases. The strength of the sac in each instance seemed to be in its dense lining of laminated clot. As regards the origin of the bleeding, in the first case it probably came from the remains of the bronchioles in communication with the sac, while in the second case it is possible that there was a double source of haemorrhage—from the lung and from the oesophagus. Another observation which is well exemplified is the remarkable pathological changes that can take place in the thoracic aorta without producing any change in the cardiac musculature. In the first case the heart was certainly displaced, and, clinically, appeared to be hypertrophied; but the *post-mortem* examination showed that in neither case was there any hypertrophy or dilatation.

Clinically, Case II presented an interesting problem in diagnosis. The history of progressive wasting, cough, and haemoptysis, together with the localization of the physical signs to the left apex, pointed to an apparently advanced case of chronic pulmonary tuberculosis with cavitation. The

slight pulsation present suggested the possibility of aneurysm, but this diagnosis appeared so unlikely that it was dismissed; it was supposed that the pulsation was conducted from the base of the heart uncovered by retracted lung. There was also some difficulty in determining the source of the haemorrhage, but this seemed explicable by ascribing the haematemesis and melaena to blood swallowed from the lung. Indeed, the symptoms of pain after food and haematemesis had resulted in the case being sent in as carcinoma of the stomach.

I am indebted to Dr. G. A. Sutherland, under whose care both these cases were, for permission to publish these notes.

THE RADICAL CURE OF HAEMORRHOIDS: MODIFIED WHITEHEAD OPERATION.

BY

SIR JOHN O'CONOR, K.B.E., M.A., M.D.,

SENIOR MEDICAL OFFICER, BRITISH HOSPITAL, BUENOS AIRES.

I WISH to invite again¹ the attention of surgeons to a very simple method of performing the only operation for the cure of haemorrhoids which, in my opinion, is worthy of the term "radical." And it affords me intense gratification to be able to state that in 1904 the distinguished originator of the procedure honoured me with his approval of my humble modification²—namely, that primary dilatation of the external sphincter entailed an unnecessary magnification of perspective which might readily induce anatomical obfuscation with disastrous operative results.

Method.

1. Limit primary dilatation to the insertion of the right index finger in quest of concomitant polypi, ulcer, stricture, etc.

2. Apply a pressure forceps at junction of skin and mucous membrane to each of the four cardinal points of the anal circle.

3. With adjoining pairs of forceps held in opposing traction make a rapid discission with a large straight blunt-pointed scissors from "point" to "point" until the skin is completely detached from mucous layer.

4. Apply another pressure forceps to the cut edge of the latter between each of the four forceps originally placed. This makes the operator master of the situation.

5. Grasp the eight forceps in the palm of the left hand, insert the left index finger into the rectum, and then cut lightly all around with scissors until the external sphincter appears well in view.

It is absolutely essential at this juncture to define this muscle and keep it constantly in sight and pushed upwards, always remembering that all cutting must be done below and external to it.

6. Continue snipping round with scissors until the "White-head's slit"³ (submucosa) is exposed; then bear Cunningham's *Anatomy* in mind: "The submucous coat is composed of loose areolar tissue, which allows of free movement of the mucous layer on the muscular coat, and which also admits, under certain abnormal conditions, of a prolapse of the mucous membrane through the anal orifice. . . . The haemorrhoidal plexus of veins is contained in this layer."

7. With the left index finger still retained in the rectum as guide, and the eight forceps in the left palm making traction, continue severance of the attachments to the muscular coat until the haemorrhoidal cylinder can be peeled out of its bed by a few strokes of the back of scissors or other blunt dissector.

8. Then make a vertical slit in the protruded cuff up to the level of the "supra-Morgagnian"⁴ circle; commence a continuous Triollet catgut suture at the apex of the slit, drawing the "red" mucous membrane into accurate apposition with the skin; then proceed, cutting transversely, half-inch by half-inch, at the level just mentioned; carry on, *pari passu*, the continuous suture; stop and forceps every spurting vessel and ligate same at once, so that at the last snip of the scissors nothing remains to be done except to complete the few final loops of the suture.

Abjure the employment of what is fatuously styled by claspers "a continuous haemostatic suture,"⁵ and of what is called by tinkers a soldering iron, in any part of the intestinal tract.

9. Having introduced a morphine suppository and a slender roll of dry gauze into the rectum, apply a dry gauze dressing and change same daily.

10. On the fifth morning give the patient one ounce of castor oil, sponge the part after each evacuation with warm permanganate lotion, add a warm permanganate sitz bath daily, and reapply a dry dressing.

11. On the seventh morning instruct the nurse to insert the right index finger (anointed) into the canal, and to educate the patient to do the same daily for two months. Do not forget, before he departs, to prescribe a pot of zinc and boracic ointment for this purpose. If any tags are in evidence on the ninth day apply a little eucaine and snip them off with scissors.

I have nothing further to state beyond the fact that not once in every fifty operations do I hear of any contraction or any other complication following this method. All the patients are discharged cured by the fourteenth day, and the time⁴ occupied in the actual operation varies from five to ten minutes.⁵

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Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

AN AORTIC MURMUR.

As early as 1910 I noticed an aortic systolic murmur in apparently healthy persons. I observed it first in my own case, and after that in many infirm patients, and later in many recruits and serving soldiers.

I was encouraged by Dr. James of Edinburgh to investigate the murmur, and, as mentioned by me in a letter to the *JOURNAL* recently, I had satisfied myself as to its cause and written an account of it before the war. It is heard over the aortic area, is systolic, and has generally the characteristics of an aortic stenotic bruit. The probable explanation was arrived at by a study of the flow of water in a rubber tube with a Higginson's syringe for the propelling force. If the tube be auscultated, the flow of water being kept up by the pressure of the foot on the ball of the syringe, a bruit can be produced by applying pressure to the tube. It is produced either by proximal or distal pressure, but is more audible in the former—that is to say, the sound is propagated against as well as with the flow of the water.

From this experiment I conclude that pressure on an artery such as the carotid produces a bruit which will be propagated both with and against the blood flow.

If the aortic area be auscultated and pressure be made with the finger so as partially to occlude the subclavian artery above the clavicle, a distinct systolic bruit is heard. In the actual patients it was sometimes present and at other times absent. It was found that the drawing aside by the patient of his clothing to permit of auscultation brought the sound into existence, and that with the arms by the side it could not be heard.

The subclavian artery passes over the first rib and under the clavicle, but is separated from the latter by the subclavius muscle, the action of which is to approximate the rib to the clavicle. Other muscles perform the same action—namely, the scalenus anticus, the deltoid, the pectoralis major, and also the pectoralis minor.

It would therefore appear that the artery can be, and is, very easily compressed by muscular action, and that when so compressed a bruit can be heard. Many persons by contracting their muscles can obliterate the radial pulse. The bruit can be obtained in almost any person. I have heard it in children, young adults, and elderly persons, and think it would be obtained in anyone provided the artery wall was compressible and the compressing machine in working order. The bruit would not be heard in a patient who was stripped to the waist and had his arms by his side.

While I do not think the bruit is of clinical importance, as it often occurs in medical examination for life assurance, I think it warrants an explanation.

My conclusions are: (1) That an aortic systolic bruit is very frequently heard over the aortic cartilage in the absence of any diseased condition. (2) That a large proportion of such bruits are due to the position of the arms at the time of examination, or rather the state of contraction of the muscles