CASE OF AXILLARY ANEURISM: WITH REMARKS.

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ON September 21st, 1866, two men were at work in this town near a pile of wood, when a sudden and violent gale of wind blew down the pile, and the men were buried under the falling timber. On being extricated, one was found to have sustained only slight injuries; the other was very much bruised, and was removed to the Infirmary.

On admission, I. R. laboured under great pain and considerable swelling of the left region of the thorax and of the left shoulder. Any motion of the shoulder-joint caused severe pain, and the arm hung powerless at the side. There was a dropping of the shoulder-joint, as if the head of the humerus had fallen from the acromion process; and, on passive motion of the joint, obscure crepitation was perceptible. There was no dislocation of the head of the humerus, and no rib was broken. As fracture of the neck of the scapula was indicated by the symptoms, the elbow was supported, a pad placed in the axilla, and the arm bandaged to the side.

Under this treatment, the pain diminished, the deformity was removed, and the man, fancying himself to be quite in the way of recovery, expressed a strong desire to go home on the 27th September. There was very great swelling and ecchymosis of the shoulder and side; and, as he seemed little impressed with the necessity of keeping the part still, he was recommended to remain a few days longer as an in-patient. Nevertheless, after the visit, he announced his determination to leave the hospital, and got up and dressed for the purpose. On putting on his jacket, he said he felt as if something gave way in the left shoulder, and great accession of pain took place. He said nothing about it to the house-surgeon, and persevered in his attempt to go home. As he walked along the streets, the pain in the arm and hand increased; and, feeling himself unable to complete the journey, he turned back, and arrived in the hospital about half an hour after he left it. On re-admission, he was almost in a state of collapse. His skin was covered with cold perspiration; his pulse was weak and rapid; his extremities cold; his arm, forearm, hand, and fingers swollen to twice the natural size, hard and tense. The pulse was scarcely perceptible at the wrist; and he described the left arm as being in an agony of pain throughout its whole extent; his breathing also was hurried. He was removed to bed; opiates and stimulants were administered internally; and soothing applications were made to the arm.

For some time he was in great pain; the arm and fingers were tense and swollen. The left radial pulse was rather weaker than the right. The system suffered from great constitutional irritation; and he continued much in this condition throughout the whole of the month of October. On October 30th, there is the following entry in the hospital-book. "Since the last note, he has suffered great pain, with little or no alteration in the appearance of the limb, which is much swollen, but rather less tense. There is much ecchymosis of the upper arm, and the swelling there is very hard. To-day, for the first time, a small, tense, fluctuating swelling was noticed in front of the shoulder-joint, near the coracoid process; the joint itself is not distended, but rather hollow below the acromion."

From this time, particular attention was paid to this swelling. On careful examination, obscure pulsation was detected in it, which gradually became more distinct. *Bruit* was heard with the stethoscope. The tumour gradually extended, especially towards the axilla; and there was no longer any doubt that rupture of a large artery had taken place; that the hard tense swelling of the limb had been caused by the effusion of arterial blood beneath the aponeurosis of the arm; and that, in the axilla and upper part of the limb, arterial effusion still continued to take place, not, however, extending to the lower part, where absorption seemed to be slowly going on.

I have been particular in detailing the history of this case, because it seems to me to present several points worthy of consideration. Had the patient kept his arm still, as he was recommended to do, it is quite possible that the case might have gone on to a favourable termination, without any injury to the artery having been even suspected. I presume that the rupture took place during the twisting motion used in drawing on his jacket. But the vessel must have been stretched at the time of the original injury, and diseased action set up in its coats; otherwise it would not have given way from so slight a cause. We thus see how, in severe accidents, tissues may sustain injuries which are never suspected, and which may never come under the notice of the surgeon.

When rupture did take place, the symptoms, both local and general, were certainly very severe. When the man returned to the hospital on

September 27th, he was almost in a state of collapse; and, though no pulsation could be detected anywhere in the swollen arm and the radial pulse was felt on the affected side, it was evident that some vascular lesion had taken place. Very curiously, it happened that I had seen shortly before, under the care of my friend and colleague Dr. Lunn, a case in which sudden, hard, tense, evidently vascular, swelling of the arm took place after injury; but time, rest, and appropriate treatment, brought about a favourable issue without further interference. It had become evident that this happy result was not to take place in my patient; and the pulsating tumour in the axilla set aside all doubts as to the nature of the case.

The next question was that of treatment. I need not go over the arguments in favour of ligatures at the seat of the injury in cases of traumatic aneurism. I presume that question is settled. But it will be observed that this aneurism was not precisely the result of a wound, nor even the primary effect of an injury. Six days elapsed between the accident and the arterial rupture. The latter, therefore, was caused by a diseased condition of the artery, following upon ascertained injury to the neighbouring parts. But the man was of sound constitution. The heart and, as far as could be diagnosed, the arterial system, were perfectly healthy, except that point at which injury had been sustained. The probability, therefore, was, that the coats would be found in a healthy condition; and, accordingly, I resolved to apply ligatures at the seat of the injury, in place of selecting any point on the proximal side, where the artery might have been more readily secured, but where there would have been more chance of secondary hæmorrhage.

On October 8th, with the sanction and assistance of my colleagues, Dr. Lunn and Mr. Craven, I performed the following operation. Chloroform having been administered, and the patient laid on his back, with the left arm at right angles to the trunk, the hand in a state of supination, an incision about two or three inches in length was made along the lower edge of the great pectoral muscle. The aneurismal sac was thus brought into view, and an opening rather more than sufficient to admit the finger made into it. A great quantity of very dark firmly coagulated blood was turned out, and then from the top of the sac came a great gush of red arterial blood. This was commanded by extending the incisions, pushing the forefinger high up in the sac, and grasping the skin and pectoral muscle with the thumb. The sac was then laid open with a probe-pointed bistoury through its whole extent; the pectoral muscle was pulled out of the way with a bent spatula, the bleeding being still commanded by the fingers of the left hand. While endeavouring to ascertain the precise seat of the injury, I found that the aneurismal wall was very thin, and easily torn; and, feeling the pulsation of the axillary artery just above my left forefinger, I dissected very carefully down with the probe-pointed knife until the trunk of the artery came into view. A ligature was passed round it; and, the hæmorrhage being thoroughly commanded, the opening into the axillary artery was clearly seen. It was found to be not larger than a very small split pea, and of an oval form. Another ligature was then passed round on the distal side of this opening, and the operation might have been completed; but, on looking at the ligatures, I thought the distance between them (about an inch) rather great; and, intending to divide the trunk between them, seized the artery at the aperture. Finding that the closure of the blades of the forceps completely closed the wound in the artery, I changed my mind, and placed a third ligature round its circumference; the sensation imparted being that of perfectly healthy tissue. These three ligatures were allowed to hang out of the wound, which was brought together. The limb was wrapped in cotton-wool; and, as the patient seemed faint from the loss of no great quantity of blood from a large artery near the heart, he was left quiet for about a quarter of an hour, and then removed to bed. During the rest of the day, the night, and the following day up to 9 P.M., he was comfortable, slept well, had a fair pulse, suffered little or no pain; and the limb had a natural temperature, though no pulse was perceptible at the left wrist. But about 9 P.M., while in the act of coughing, he said he felt wet; and the attendant, on looking, found his clothes, etc., bathed in blood. The house-surgeon was immediately summoned, and applied pressure to the part, and to the sub-clavian artery in the neck. From that time no blood was lost. I saw him in a quarter of an hour, laid open the wound, and noticed that the middle ligature was lying loose in it. Though all pressure was now removed, no more blood flowed. But he had already lost a very great quantity, the bed being completely saturated with blood, and a small stream was running down the floor. His pulse was hardly perceptible; his face was ghastly pale, and convulsed; and he had all the appearance of a dying man. After a little time, he began to rally. Relays of students sat constantly by his bedside for many days, never losing sight of the wound. During this period, he showed the utmost patience, and seemed determined to make up, by strict observance of rules, for former remissness. No return of hæmorrhage took place.

The distal ligature came away on the 15th, the proximal on the 17th, of October, the eighth and tenth day respectively. His recovery was somewhat tedious, and he long complained of great pain about the region of the shoulder joint. There was a remarkable paralysis for some time of the intercostal muscles of the left side, arising, probably, from injury to the intercosto-humeral nerves. The limb remained œdematous. Pulsation never returned in the radial or brachial artery. The deltoid muscle became much emaciated, and the shoulder-joint drooped considerably. He had little use of the left arm, from these causes and from stiffness of the fingers; but, the axillary wound having been cicatrised for some time, he left the hospital on January 17th, 1867, and has since enjoyed good health, but with a wasted limb.

There seem to me to be several points of interest in connexion with this case: first of all, the cause of the rupture. Many cases are recorded in which slight causes, such as stretching of the axillary artery during the reduction of a dislocation of the shoulder-joint, have been followed by this accident. Thirty-one such cases are referred to by Mr. George W. Callender in the second volume of *St. Bartholomew's Hospital Reports*, and in two of them there was also fracture of the glenoid cavity. Mr. Callender thinks that, in these two cases, "some sharp edges or points were present, against which the vessel might have been torn." I am sure that in this case no such tearing took place. The small oval aperture was found on the anterior and upper surface of the artery, just after it emerged from beneath the lesser pectoral muscle. The whole of the axilla was stuffed with firm black coagulum; so that, when the clots were all turned out, it appeared as if dissected out by the scalpel of the anatomist. The boundaries were all distinctly visible, and the course of the vessels and nerves was distinctly perceptible. There was no spiculum of bone to be felt, and none could have come in contact with the artery. The position occupied by the wounded vessel was remarkable. Although the aperture was on its anterior and upper surface, the aneurism extended below and behind it; and, in place of the vessel resting on the subscapular muscle, it was pressed forward against the pectoralis major, and separated from the former muscle by the great chasm of the aneurism. It was owing to this that the principal hæmorrhage occurred, which took place during the operation; for, expecting, from the position of the pulsating tumour, that the artery would be pushed backwards, I searched in that direction for it with my finger, and so lost a little time in securing the vessel above the wound. I may mention, that the patient was a thick-set muscular man; and that pressure above the clavicle failed to command, or indeed to produce any effect on, the arterial flow.

With respect to the mode of conducting the operation: I commenced by making a small incision, and turning out the coagula with my finger. The quantity thus extruded was surprising. I expected to feel the fresh flow of arterial blood, and thus to command it readily with the finger. In this I was disappointed, owing to the high position of the rupture; and I was obliged to extend the wound along the whole inferior border of the pectoralis major, before I could get the sac thoroughly emptied and the bleeding orifice brought into view. In a case operated upon by myself, and in another under the care of Mr. Paget, Mr. Callender, in the paper before alluded to, mentions that, in addition to such an incision as I practised, a perpendicular incision was made, dividing the lower part of the substance of the pectoralis major. Had it been necessary, I was prepared to make this second incision; but, considering it of importance to divide as little muscular substance as possible, I preferred to endeavour to complete the operation without having recourse to this step. Though, perhaps, under the peculiar circumstances of this case, the vessel being displaced forwards, such a step might have rendered it rather easier to lay bare the bleeding point, I think it is better to plan the operation so as to avoid, if possible, cutting through the thick muscular substance of the pectoralis major.

With regard to ligatures, I may mention that, having on two former occasions applied metal ligatures—one to the external iliac, and one to the femoral artery—and not having been satisfied with the results, I used on this occasion the ordinary strong silk ligature. The application of the middle ligature was of no use. The complete closure of the aperture when caught by the artery-forceps, and the apparent healthiness of the coats, tempted me to apply it; but, though I do not think it could have done any harm, it is a proceeding which I would not repeat.

The most singular point in the case is unquestionably the occurrence, twenty hours after the operation, of nearly fatal secondary hæmorrhage; and the fact that never again was there the slightest tendency to its repetition. Whence came that still, slow, but excessive hæmorrhage, is a question which I have often asked myself. Clearly, it did not come from the proximal ligature. Had the artery been diseased at this spot, and the ligature cut through the coats, there must have been a recurrence of the hæmorrhage; and the bleeding at the time would have been marked by greater activity, and must, considering the quantity,

have at once proved fatal. It is more probable that this accident might have occurred at the distal ligature, but even that is very unlikely. The shortness of time from the application, and the fact of there being no return afterwards, militate against that view. I am, therefore, inclined to suspect that a branch must have been given off between the ligatures from the back part of the artery, which was not brought into view; that it was probably of no great size; but, on the collateral circulation being restored, it bled long and freely. The state of collapse into which the patient fell, and the direct pressure at once applied by the house-surgeon, may have caused, in a small vessel, coagulation sufficient to prevent any recurrence of hæmorrhage; and, in the absence of precise proof, I believe this to be the explanation of this very remarkable occurrence.

There is just one other point to which I would beg leave to allude: the period at which separation of the ligatures took place. I have been concerned in the ligature of many large arteries; but neither within my own observation, nor, as far as I can recollect, in my reading, have I ever found a ligature separate from a first-class artery like the axillary in the space of only eight days.

Lastly, in these days when patients are supposed to be killed by "hospitalism", I have to express my belief that this patient owed his life to the constant and assiduous attention of my friend Mr. Evans, who was at that time the house-surgeon of the Hull Infirmary, and that such promptness and constant supervision as he brought to bear on this case, could hardly have been procured except in an hospital.

IPECACUANHA IN EMETIC DOSES:

AS A STIMULANT, RESTORATIVE, ELIMINATIVE, AND ADJUVANT, IN VARIOUS CASES OF DISORDER AND DISEASE.

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THE interests and advancement of the medical profession cannot fail to be greatly promoted by a long, careful, and practical investigation of the properties and effects of a single therapeutic agent. In the ordinary course of practice, a medical man may for a specific purpose and for many years be administering a medicine, as ipecacuanha (for its emetic, expectorant and diaphoretic properties) without noticing the other valuable qualities it may possess, and which would render it helpful in the treatment of functional derangement and disease; for instance, the specific properties of the nitrate of silver were not known, although it had been used in surgery for many years, until I called the attention of the profession to it upwards of forty years ago.

I have been led to think that at the present day emetics are less used than formerly, and that many practitioners seldom, if ever, prescribe them, either from a change in practice, or from a fear of the effects of the operation; and, perhaps, from another cause, the natural dislike of patients to take them. On that account, a most valuable and effective remedy is often avoided or neglected, and an ineffectual palliative is substituted for it.

During the last fifty years, it has been my usual practice with almost every patient labouring under either acute or chronic disease, first to examine the state of the *prima via*, and, if these be not in a satisfactory condition, to prescribe an ipecacuanha emetic to procure full vomiting; being well assured that no disorder or disease can be treated satisfactorily unless the assimilating organs be in a condition to receive either medicine or food. Without ipecacuanha, I should be constantly at a loss for a remedy.

The action of an ipecacuanha emetic excites the whole nervous, vascular, and respiratory systems, consequently the heart, the lungs, and the skin; and increases the action of the stomach, intestines, and liver; it acts also as a tonic stimulant to the general capillary organisation, so as to restore and produce a more normal state of the secreting and assimilating organs. The operation of the emetic produces a general reaction of the whole system, the torpid and congestive state of the various organs is roused and relieved, and the sanitary effects of the emetic are evident in bringing the system generally into a more active and healthy state, without producing any debility; on the contrary, I have often seen the effects in raising quickly the sinking powers of the system in extreme cases of syncope, hæmorrhage, etc.

Except in those cases in which I have wished to eject the contents of the stomach immediately, I have used the following method of administering the emetic. First, the patient to drink about a pint of weak tea, or thin gruel, and, half an hour afterwards, to take half a drachm of the powder of ipecacuanha, with ten grains of the bicarbonate of potass, in a little cold water, and, in a quarter of an hour after, to drink freely of weak tea or gruel. This usually acts as a safe, quick, and