A C A S E
OF
POPLITEAL ANEURISM
CURED BY
DIGITAL COMPRESSION.

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THOMAS S—, æt. 33, iron-moulder, Oldham, was admitted an in-patient of the Manchester Royal Infirmary, December 29th, 1862, with a large popliteal aneurism in the right leg.

He is of light complexion, pale-looking, and has evidently suffered much from struma, though his general health, as he states, has been good for several years past. Nine weeks ago, he began to feel a dull aching pain of the right knee, extending round the joint, but more especially at the back part. The pain was intermittent, and varied in its severity. Attributing it to rheumatism, he obtained a liniment from a druggist. Does not recollect when the swelling and pulsation first appeared in the popliteal space, but a few days

before his admission the parts had become so painful, that he applied to Mr. A. Leach of Oldham, who, recognising the serious nature of the case, advised his immediate removal to the hospital.

On his admission, there was general swelling of the leg. The popliteal space was distended with a pulsating tumour, the form of which could not be distinctly defined, owing to the œdematous state of the surrounding parts. The pulsation was very perceptible, but feeble, and the skin covering the tumour slightly discoloured. His countenance bore indications of acute suffering; pulse small and quick, 120; appetite poor, having taken but a small quantity of tea and gruel for several days.

The case appeared so urgent, that two tourniquets were immediately applied over the femoral artery; the limb was enveloped in flannel bandages and elevated on pillows. Hot-water bottles were applied near the foot and leg, to raise their temperature to the natural standard.

On visiting him the following day, I found he had been able to bear the instruments tolerably well, though they had caused redness of the skin and slight vesication under one of them, in spite of the usual care and precaution to prevent undue pressure.

The tourniquets were removed, as the integuments were evidently not in a fit state to bear that form of compression.

Iodide of potassium was now prescribed in five-grain doses, three times a day, and a pill containing half a grain of morphine and three of extract of henbane at night, to relieve the general restlessness and pain.

On the 3rd of January, the dose of the iodide of potassium was increased to ten grains, and was regularly taken until the 20th of January. This plan of treatment was not followed by any improvement, for the tumour had increased in size, though the œdema of the limb had partially subsided. Its form, however, could be more accurately defined. In shape, oblong, its longest diameter was about six inches, extending upwards, and the measurement of the limb over the tumour itself was twice the natural size. The skin was still red

and the pulsation in no respect improved. The man's general health was evidently giving way, his tongue being furred and dry, the bowels disordered, accompanied by great nervous irritability.

Digital compression now appeared to me the most desirable course to adopt; and several students having volunteered their services, the treatment was commenced on the 20th of January at 4 p.m. During the first twenty hours this system of pressure was frequently interrupted from some misunderstanding in the arrangements, therefore, the following morning, the pulsation in the tumour had apparently undergone no change. Two students were consequently directed to be constantly with the patient—one to compress the artery, the other to apply his hand over the aneurism to detect any insufficiency of the pressure. This plan was pursued for twenty-four hours. A very slight pulsation could then only be felt in the tumour; which in six hours later had entirely subsided. Moderate pressure was, however, kept up for another day and then discontinued, as there were no signs of any return of the pulsation.

From the feebleness of the circulation, some time elapsed before the limb was restored to its natural temperature, and though its position was frequently changed to prevent sloughing, two small ulcers formed near the ankle, which prevented the patient walking for a month.

At the end of this time he began to take regular exercise, his general health improved, and the tumour continued to diminish in size.

He left the hospital on the 4th of April, feeling himself sufficiently well to return to his usual occupation, a slight thickening of the parts in the popliteal space being the only remaining trace of the disease.

Remarks.—The reasons which induced me to prefer compression to ligature of the femoral artery in the treatment of this case, are sufficiently obvious, as few enlightened surgeons would in the present day resort to the latter, except under peculiar circumstances, in aneurisms involving the principal vessel of the extremities. But though compres-

sion may be regarded as the best plan to adopt, yet the manner of its application is still a subject for discussion.

Success in several previous cases induced me first to try instrumental pressure. It soon became evident, however, that the vitality of the limb was too much impaired to admit of this treatment. Indeed, the unusual size of the tumour, the unsatisfactory condition of the surrounding parts, as well as of the patient's general health, formed in themselves serious obstacles to any kind of operative interference.

The iodide of potassium having been recently reported by M. Bouillaud¹ to have cured an aneurism of the carotid, this remedy was administered to the patient for upwards of three weeks; but the sac continuing to increase in size, the pulsation becoming more distinct over its entire surface, and the constitutional symptoms more aggravated, it was thought desirable to discontinue it. Digital pressure was now determined on, which caused consolidation of the swelling in fifty hours, though during the first twenty it was only partially applied.

The satisfactory result of this simple plan of dealing with such a formidable disease was doubtless due to the care with which the compression was kept up by the students, all of whom took a deep interest in the case. And in other instances of this disease, where similar assistance can be obtained, I feel persuaded the issue will be equally successful, for all who had seen my patient considered his case very unfavorable for any kind of treatment.

Many are the advantages of digital over instrumental compression. Not only does it seem to effect a cure in a short space of time, but with much less pain; and is less likely to lead to sloughing of the structures under pressure, which with the greatest precaution is liable to occur in some cases. The flow of blood through the aneurismal sac may probably not be so effectually prevented by this means, and indeed this is not to be desired, as fibrillation of the blood

¹ 'L'Union Med.,' tome i, p. 436, 1859. For a *résumé* of all the facts relating to the iodide of potassium in the treatment of aneurism, see a paper by Dr. Roberts, 'Brit. Med. Journal,' 1863, vol. i, p. 83.

is more likely to occur and to be more permanent, if allowed to pass through the swelling in small quantity, and in a slow continuous stream. For digital pressure is not liable to the sudden alternations in force and volume which under instrumental pressure is apt to take place, in consequence of the tendency of the artery to escape from under the tourniquets on any slight movement of the limb.

When a sufficient relay of assistants cannot be obtained to complete the cure by finger pressure alone, there need be no objection to the occasional use of instruments, or even, when practicable, to the flexion treatment recommended by Mr. E. Hart.

The pressure itself may be discontinued for a short time, when it causes severe pain or interferes much with the functions of the surrounding parts; and this I consider a point of considerable importance, showing, as it does, that digital compression is applicable to aneurisms where instrumental is not feasible.

Already there are on record two cases of aneurism of the ophthalmic artery successfully treated by intermittent digital pressure of the carotid, by Drs. Gioppi and Vanzetti, of Padua. In one, the carotid was compressed for periods of one or two minutes at frequent intervals, and at the end of four days all pulsation in the tumour had ceased. In the other, pressure was applied for five minutes at a time, and the cure was completed in eighteen days.¹

It is, therefore, to be expected that iliac and axillary aneurisms will, in some instances, yield to this method of treatment; at least it should be tried in such cases before the patient is exposed to the dangerous operation of ligature.

These brilliant results of modern surgery must not, however, induce us to trust entirely to the system of pressure in the treatment of aneurism. For, as success depends on the consolidation and subsequent absorption of the blood in the tumour, other agents must be sought for to combine with it, possessing similar properties.

Hitherto the information derived from physiology and

¹ Holmes' 'System of Surgery,' vol. iii, pp. 422, 423, 1862.

chemistry in reference to this subject has been of an unsatisfactory character; some parties asserting that nutritious food is the best regimen for the purpose, whilst others are advocates for low diet and starvation.

Nor has any medicine been discovered capable of effecting the object, for those usually prescribed lessen the force and frequency of the circulation rather than alter the state of the blood itself. This difficulty in arriving at correct views of the medical treatment of aneurism, is perhaps in a great measure owing to our imperfect knowledge of the changes which contribute to the solidification of the aneurismal contents. The process is usually regarded as similar to the coagulation of the blood out of the body; but it is questionable if this be exactly so where the solidified material is afterwards partially absorbed or converted into structure.

Ordinary coagulation of the blood is one consequence of its diminished vitality, and therefore its removal from the body is more likely to be effected by ulceration and suppuration than by absorption.

It seems, therefore, highly probable that the solidification of the blood within the body previously to its absorption or conversion into tissue, differs somewhat at least from that of ordinary coagulation. And this may explain how low diet, which, by depressing the vital properties of the blood, should promote its coagulation, has not been followed by those salutary results expected by its advocates in the treatment of aneurism.