AN ACCOUNT OF SOME UNUSUAL OCCURRENCES

DURING THE CURE OF A

POPLITEAL ANEURISM.

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THE recent employment of the iodide of potassium in the treatment of aneurism induces me to make known the following case, in which I employed it for a short time. I am further led to offer the case to the attention of the Fellows, because of some unusual occurrences in the progress of it, which I happened to possess peculiarly favorable opportunities of studying.

The aneurism was in the calf, under cover of the highest part of the gastrocnemius. Four weeks after it had been first observed it occupied the entire breadth of the limb, and was as large as the fist. It approached the surface in three places—on either side of the gastrocnemius, and between the heads of that muscle in the lower part of the popliteal space. Its outer projection was much the largest, and the most strongly pulsating, and it extended six inches vertically behind the fibula. The beat was forcible and expanding, so as to be visible through the trousers, and the bruit was distinct and characteristic. About one third of the blood left the sac when the circulation in the limb was arrested. There was venous conges-

tion, with œdema and neuralgic pain in the lower part of the limb. The anterior tibial beat feebly, the posterior not at all. Pulse 100.

The patient was a well-nourished, athletic man, of very active habits, and fond of field sports. Though only forty years of age, he had a wide gray circle around either cornea; and my friend, Dr. Greenhow, who had recommended him to my care, detected a rough systolic bruit in the ascending aorta. The aneurism was spontaneous in its origin, and first attracted notice by the intense pain produced in it on crossing the legs, when it struck against the patella of the opposite limb.

From the form of the aneurism, and the greater force of the beat on its outer side, it appeared probable that the artery had given way at its external and posterior part. The extent of the expansion and recoil showed the opening in the artery to be a large one.

August 25th, 1863.—The treatment by genuflexion was first employed, and was continued for eight days. The pulse came down to about 80, and the force of the beat of the aneurism diminished. Though at first tolerable, the bending of the knee brought on a pain along the posterior tibial nerve, which increased until it could not be endured. The angle of flexion was enlarged from time to time, but it was found that any position of the knee which influenced the beat of the aneurism eventually produced insufferable torture in the sole of the foot. This method of treatment was accordingly abandoned.

September 1st.—I employed two tourniquets to make pressure on the femoral artery alternately in the groin and thigh. These instruments were taken off at night and twice during the day; but effective pressure, such as materially to lessen the pulsation of the aneurism, was made with them through ten or fourteen hours of each day. It was maintained until the 25th, with the exception of a few days, during which some soreness of the skin made it necessary to interrupt the compression in the groin. Between the 4th and the 21st the patient also took in-

ternally an ounce and a half of the iodide of potassium. During this period of twenty-five days considerable changes took place, which may be thus summarily recounted :

1. The pulse increased in frequency, sometimes reaching 120 in the minute, and never being less than 90.

2. The aneurism enlarged on the outer side, and also towards the popliteal space. These enlargements followed the temporary shortening of the daily compression, which was required by the tenderness of the skin, and they were accompanied by decided local pain in the parts of the aneurism which yielded to the distending force.

3. The aneurism felt much firmer ; but this was to some extent a deceptive feeling. It was, indeed, firmer, inasmuch as it contained more coagulum, but it was also permanently tense ; and this tension could not, by once feeling the tumour, be distinguished from hardness. Observing the changes, however, which took place from day to day, and from one part of a day to another, I was able to satisfy myself that the permanent tension was due to frequency of the pulse. At the rate of 120 in the minute the interval between the beats was too short to allow of more than a slight reflux of blood into the artery ; the aneurism being full, beat little, and its wall was constantly distended and hard ; with the pulse at 90 the aneurism expanded and contracted again, and some of the softness of fluid could be distinguished in its swell and its recoil. This distinction could be confirmed by arresting the circulation through the artery at the groin, when some estimate could be formed of the actual amount of solid matter in the sac. Moreover, even with the pulse at 120, the instrumental compression softened the beat of the aneurism, and lessened the deceptive firmness of its wall.

4. New solid substance appeared to be formed in the cavity of the aneurism.

5. Much soreness of the aneurism was felt, which the patient compared to that of a boil. It was very tender, so as not to bear pressure against a pillow, and was occasionally hot to the touch.

6. While the aneurism enlarged towards the ham, the pain in the foot diminished. At the same time a numbness of that part and inability to flex the toes coming on, showed that the posterior tibial nerve was not yet released from pressure. A new pain arose in the outside of the foot and little toe, as the aneurismal wall yielded externally towards the peroneal nerve.

Notwithstanding the enlargement, and other adverse symptoms thus detailed, the aneurism seemed, towards the end of September, to be approaching its cure. On the 25th there was great swelling of the saphena and cutaneous veins, and the blood could scarcely be pressed along them with the finger. The integuments were dark and congested, and there was increasing œdema. The anterior tibial was no longer to be felt on the instep, and the limb soon chilled on exposure. The beat of the aneurism was less than it had ever been. By the next day, the 26th, some collateral arteries had perceptibly enlarged, and the patient had a very distinct and obtrusive feeling of trickling about the limb. The skin of the leg had changed from a dusky to a bright pink hue, and its temperature was high, though still easily reduced. Half, at least, of the contents of the aneurism, when examined with the femoral artery compressed, appeared to be solid. There was thus a prospect of a speedy cure of the aneurism.

On the 27th this hope was disappointed. As the patient was seated at dinner, with his knee raised and bent, and without the tourniquets, a very severe, sharp pain suddenly struck him in the aneurism. It appeared to shoot to the middle of the calf, and was over in two or three minutes. He at once felt relieved of his former pain in the flexure of the knee. In a couple of minutes more he perceived that the sensibility had returned in the sole of the foot, and that in the same abrupt way the power of flexing the toes was regained. The feeling was still not quite perfect, and a tingling came on in all the parts of the foot which had just previously been benumbed. I examined the aneurism immediately, and observed that it had fallen in at its uppermost

part, the top of the calf no longer bulging, as it had done in the morning and during the previous days, into the femoral hollow of the ham. The pulsation also was lessened. The patient himself was conscious that some sudden change in the aneurism at the moment of pain had produced the alteration in his feelings, and had freed the back of his knee; and he continued throughout the evening intensely alive to the aneurism, and to what might be going on in it. He could hardly cease from examining the limb, and the occupation of his mind about it was peculiar and obvious. I concluded that a large piece of lymph had been detached from the uppermost part of the aneurism, and had released the popliteal nerve from pressure; that it was probably moving about in the currents of blood; and that, if fortunately carried into the arterial opening, it might finally plug it, and cure the aneurism.

No such event, however, took place, and on the next day the venous congestion had almost subsided, the œdema had lessened, and the trickling feeling of collateral circulation was scarcely perceptible. At a later period the anterior tibial artery was again felt beating feebly on the instep. The aneurismal impulse also became more soft and expansive; and it was clear that the remarkable change which had taken place in the disposition of the clots had released the popliteal artery and vein from compression, equally with the nerve. The circulation in the limb being thus restored to the natural channels, the newly enlarged collateral vessels had ceased to be necessary, and had again subsided.

In the night and the two days following the sudden change just described he occasionally suffered severe pain. Sometimes this was plainly in the aneurism itself, but on two occasions it was in the soleus muscle. An uneasiness came on at the inner part of that muscle, which in half a minute extended all over it, and speedily became a severe and unmistakeable cramp, causing him great distress for nearly an hour. The pains in the aneurism were relieved by compression of the femoral artery, but the cramp was relaxed only by stretching the muscle, by friction, and by

the application of heat. On the day following the last of these attacks of pain, September 30th, the aneurism was first distinctly felt as a limited sac, over which the loose and wasted muscles of the calf could be easily moved. From that time he had no more pain in the aneurism.

For the three following weeks the pressure by means of tourniquets was steadily kept up every day. At the advice of Dr. Greenhow, the patient took steel and hydrochloric acid in place of the iodide of potassium, and at dinner a little claret or port wine. His pulse declined to 86, and sometimes to 78, and his comfort was much increased under this treatment. The aneurism became more nearly globular in form, its lower and outer part falling in. The entire diminution of its size, however, was but slight, and the beat, though not widely expansive, was again soft.

Under these circumstances I thought the treatment by instrumental compression likely to be much prolonged, and on the 21st, in preparation for continuous digital compression, I left off all use of the tourniquets, and allowed the skin to recover itself. During this short interruption of the pressure on the artery the aneurism distinctly enlarged, and the foot became again uneasy.

October 22nd.—Digital compression was made for periods of two hours, alternately with pressure with a tourniquet for half an hour. This pressure was borne with little interruption for thirty-five hours, and was generally well maintained. Some of the great irksomeness attending it, and the pain it produced in the groin and back, were relieved by morphia; but at the end of the second day the patient was too exhausted and in too much pain to continue it, and it was interrupted for fourteen hours. It was noticed that the pressure required to control the artery was at first very moderate, but that after a few hours the vessel appeared to regain so powerful a beat that those assistants who came unfatigued to the work could only arrest its pulsations by exerting a considerable force. So simple a remedy as a cup of tea reduced the arterial impulse, and lessened by some pounds the pressure needful to arrest it.

On the following day, the 24th, the digital compression was renewed, and was well maintained for twelve hours. The artery sometimes, indeed, slipped from under the fingers; but on several occasions through the day no motion was felt in the aneurism for fifteen or twenty minutes, and it was rarely allowed to pulsate with its full force. The beat, when it did occur, was still soft. The exact moment of its cessation could not be ascertained; it was indicated by no pain or other feeling; and I was only able to observe that, during about twenty minutes of steady pressure, the tumour was firm and motionless. In a short time a collateral artery, on the inner side of the aneurism, began to beat with much force, and the feeling of trickling in the limb or of feathers being drawn along it returned. In three hours after the cessation of the beat in the aneurism the temperature of the leg had risen 5° of Fahrenheit above that of the healthy limb. A tourniquet was kept on the thigh, and moderate pressure made on the femoral artery throughout the night. The patient did not move from his position.

25th, 10 a.m.—At about this time, twelve hours and a half after the stoppage of the beat, a slight pulsation recommenced in the aneurism. It was deep, and not soft; but in half an hour it had increased, and became a little expansive. A feeble but unmistakeable systolic bruit had also returned.

Digital compression was accordingly renewed, and was thoroughly maintained for an hour and a half. By that time the pulsation and bruit had again ceased. At 12.35 p.m., half an hour after this event, the temperature of the leg had fallen to 84° ; by 12.55 p.m. it was at 88° ; at 1.30 p.m. it was 91° ; at 3.20 it was 94° . The temperature of the right limb throughout this time did not vary much from 88° . In the evening the descending external circumflex was distinctly felt in the thigh, and the pulsation of the collateral arteries deceived most persons, on first feeling it, into the belief that the aneurism itself was still beating.

On the morning of the 26th the temperature of the aneurismal limb was 95° , and after this it varied, being on

the 27th 90°, and on the 28th 98°. By the 31st it was about equal to that of the healthy limb.

On the 6th of November the aneurism had diminished a little in size, and was everywhere rather soft; the leg and foot had lost much of their œdematous swelling. The anterior tibial was again perceived distinctly pulsating on the instep. There was no trace of the beat of the posterior tibial.

Postscript, April 26th, 1864.—The patient was seen this day, and found to be in good health. No definite tumour could be distinguished in the site of the aneurism; but the top of the left calf felt bulky and firm in contrast with the suppleness of the opposite limb. There was still a little œdema of the lower part of the leg, and slight numbness in parts of the foot. The anterior tibial beat well, and the foot had not felt cold throughout the winter. The limb had not been freely used in walking, in consequence of the relation of the tumour to the gastrocnemius. When the knee was extended the heel rose, and when the foot was laid flat on the ground the knee bent. This hindrance had, however, so much lessened, that the patient could stand and walk with the knee not far from straight.