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VARICOSE ANEURISM OF THE AORTA ;
A REPORT OF A CASE OF
ANEURISM OF THE AORTA
COMMUNICATING WITH THE SUPERIOR VENA CAVA.

BY WM. C. GLASGOW, M. D., St. Louis.

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1. Aorta. 2. Trachea. 3. Vena Cava Superior. 4. Brachio-cephalic Orifice. 5. Arterio-venous Opening. 6. Spot of Inflammatory Puckering. 7. Right Auricle.



1. Descending Aorta. 2. Aortic Orifice. 3. Pulmonary Artery. 5. Arterio-venous Opening. 6. Calcareous Nodule.

VARICOSE ANEURISM OF THE AORTA; A REPORT
OF A CASE OF ANEURISM OF THE AORTA
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RIOR VENA CAVA.

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ANEURISMAL varix of the large arteries may be considered a rare form of disease. Hayden refers to forty-seven cases, noted by various authorities. Of this number eighteen arose from the lower portion of the ascending aorta, twelve from the upper portion of the ascending aorta; in two the arch was implicated. In the greater number of these cases communication was with the chambers of the heart or with the pulmonary artery. Mr. Syme reports one case opening into the vena cava ascendens. In four cases the aneurism had ruptured into the vena cava descendens. Of these, one case was reported by Peacock in 1832; one by Thurman in 1833, one by Mayne, fully reported by Stokes, in 1853; one by Hayden in 1865. The cases of Mayne and Hayden are reported in full, and are verified by post-mortem examinations.

A striking similarity of symptoms is seen in both these cases with the case upon which this report is made. The case reported by Hayden lived ten days after the rupture.

In this paper I report a case of aneurism of the ascending aorta communicating with the superior vena cava. I can find no record of a similar case in this country.

Dr. H. M. Pierce, living near Nashville, Ills., was referred to me by Dr. E. H. Gregory. He was fifty-seven years of age, had enjoyed good health up to the autumn of 1883, with the exception that ten years before his entire beard had fallen out, but had subsequently grown. He had also met with several accidents. About ten years previous, in a railroad collision he was thrown violently forward, striking his chest against the back of a seat. About 1881, he was thrown from his horse, injuring his shoulder and clavicle. In 1883 his chest was injured by being crowded by a horse in a stall, but from none of these accidents did he suffer any permanent inconvenience.

In the winter of 1884 a certain amount of dyspnea was evident on making violent or unusual exertion, without any impairment, however, of ability to pursue his usual routine of duties during the winter. April 1, 1884, on lifting a man who had fallen from a horse, he felt a sudden rush of blood to the upper portion of his body, he became faint but did not fall. As he expressed it, everything grew black to his eyes. In a moment these sensations disappeared, and he walked some distance feeling nothing unusual except extreme tightness of his collar; he experienced no special dyspnea or pain. Happening to glance at his hands he noticed that they were swollen and purplish. His friends remarked on the peculiar purple and swollen appearance of his neck and face.

An examination of his body later showed a general edema of all that portion above the diaphragm, with visible enlargement of the superficial veins.

Dr. Pierce consulted me April 14, 1884. He was then feeble, and suffered a certain amount of dyspnea on any exertion; for example, he had to walk very slowly and with care.

On examination I found his face and chest swollen and edematous, his eyes partially closed by the swollen lids. His hands and arms were greatly swollen, the skin tense and hard, pitting deeply on pressure, the pits remaining a considerable

time. His face, neck and ears were a deep purple color; the skin was marked with numerous spots of ecchymosis and the superficial veins visibly enlarged, showing numerous venous knots. The portion of the body below the diaphragm was entirely free from edema. The pulse had the jerking character usually associated with aortic regurgitation; there was swelling of the jugular veins and a noticeable impulse to the liver. On examining him, percussion showed dullness over the sternum, extending to the right and a little to the left, from the second to about the fourth cartilages, more to the right than to the left. A distinct circumscribed pulsation was felt over the dullness, accompanied by a well-marked, purring thrill, felt at the right edge of the sternum. On auscultation a loud, harsh systolic murmur was heard most distinctly over the pulsation: this could be heard with great distinctness also over the whole chest front and back and in the arteries, including the brachial. An exquisite purring thrill was heard above the third right costal cartilage. A harsh diastolic murmur, ending with a musical intonation, was also present, heard over the sternal region. This was not heard over the rest of the chest. The first sound over the aorta was obscured by the murmur, the second sound could be heard at the end of the diastolic murmur. The mitral and pulmonary valves appeared normal. The tricuspid first sound was obscured by a blowing sound.

The diagnosis of varicose aneurism with communication between the aorta and superior vena cava in this case was made, first, from the usual signs of aneurism, *i. e.*, a pulsating tumor distinct from the heart, a double murmur independent of heart sounds, heard over the aorta.

The communication with the vein was surmised from the thrill, the sudden occurrence of the edema, the ecchymosis and the venous enlargement confined to the portion of the body above the diaphragm, with the bullet pulse of the arteries, and absence of the signs of aortic regurgitation.

Dr. P. G. Robinson of this city was called in consultation in this case and fully agreed in the diagnosis.¹

1. The above report of the first examination and diagnosis was published in the May 1884 number of the ST. LOUIS COURIER OF MEDICINE.

Dr. Pierce called on me again May 27. I then found a great change in the symptoms and physical signs. The edema of the upper portion of the body had in a great measure disappeared; the tense infiltrated condition of the arms had become soft and natural except in spots of two by three inches in size on the under surface of the arms: these still pitted deeply and the pits remained when pressure was removed. The ecchymosis had largely disappeared as also most of the swollen veins. A slight swelling of the feet had commenced. On examination the extent of the dullness had increased; the thrill had almost entirely disappeared, and the diastolic murmur was very faintly heard immediately over the dullness; it had lost its metallic ring. The systolic murmur was still heard over the chest, the aortic second sound was clear and distinct, the mitral sounds were clear and normal. The tricuspid first sound was covered by a blowing sound, the apex of the heart could be felt in the seventh interspace within the mammary line. An impulse could be detected on the under surface of the liver. The pulse had lost its peculiar bullet character.

In my notes of the case recorded at this time I attributed these changes to the fact that the aneurism probably had enlarged greatly and that the communicating orifice of the vein had thus been brought outside of the direct current of the arterial blood and that the flow of arterial blood into the vein had thus been lessened.

Dr. Pierce reported that at times his legs had become so much swollen that it was necessary to bandage them; this swelling however was transient.

I saw the patient again about the first of October; he reported that soon after his second visit he began to experience an increased shortness of breath and great dyspnea on making exertion. He was then examined by Dr. Hughes, of Nashville, who found hydro-thorax to be present. For this Dr. Hughes aspirated, drawing off a considerable amount of fluid. From this time until the latter part of the summer he was aspirated about twenty times, each tapping giving from forty to fifty fluid ounces.

He came to St. Louis to reside about the first of October.

His general health and digestion were fair; when quiet he was comfortable, but any attempt to walk brought on dyspnea. There was considerable edema over the whole body, the abdomen being swollen and superficial veins large and prominent. Examination showed a large increase in the extent of dullness extending over the front of the chest; the impulse over its former site could not be felt but was perceptible to the left of the sternum at the third interspace. The systolic bruit was still heard over the chest, but very faintly; a very short and faint diastolic murmur was also heard about the second cartilage; a third short murmur was heard at the same point, seeming to cross the other murmurs. The heart beat was very feeble, at times imperceptible. The pulse had entirely lost its peculiar jerking characteristic.

The respiration was feeble, more so on the left than the right, the bronchial mucous râles were heard behind. The patient grew weaker from this time on, the dyspnea became more and more marked on any exertion, and the edema of the lower portion of the thorax became very marked. In the last few days the left side of the chest with the neck and face became excessively edematous, in marked contrast to the right. October 27, edema of the fauces and larynx was noticed; a marked cyanosis with dyspnea began and increased until his death October 31.

During his residence in St. Louis he was seen at different times by Drs. P. G. Robinson, J. B. Johnson, G. Baumgarten, E. H. Gregory, G. A. Moses, N. B. Carson and several other physicians.

Post-mortem was made November 1, by Dr. N. B. Carson in the presence of Drs. Robinson, Moses, Tupper, Boisliniere, jr., and Dr. Frank A. Glasgow.

The lungs were found engorged with blood, both lungs attached to the chest walls in front by extensive and strong adhesions; about a gallon of fluid was found in the pleural cavities; there was no fluid in the pericardial sac; the left ventricle was hypertrophied without dilatation, the right ventricle was slightly hypertrophied and dilated, the right auricle was enormously dilated, the superficial vessels of the heart were enlarged. The valves were healthy with the exception of a slight

roughness at the edge of the tricuspid, which was insufficient.

A true aneurism of an irregular globular form was found in the first portion of the aorta, measuring four and three quarter inches in diameter; this extended to commencement of the arch immediately below the entrance of the innominate artery. A pouch of the aneurism extended upward alongside and partly behind the arch. The walls of the aneurism were highly atheromatous, studded with numerous masses of calcification, some as large as a pea. The upper right side of the sac and a portion of the pouch contained a thick shell of laminated fibrine; on removing this there was found a rounded opening into the vena cava superior, of the size of a goose quill. The vena cava superior was greatly dilated, being about seven-eighths of an inch in diameter; the opening into the aorta was immediately below the brachio-cephalic orifice. The inner coat of the vena cava showed signs of inflammatory change. Just above the entrance into the auricle, a spot of cicatricial puckering of the size of a silver half dime was found, evidently of inflammatory origin. Beneath this a nodule of calcareous matter could be felt.

The vena azygos was greatly enlarged. The intermediate wall between the vein and the artery was very much thinned, and the tissues consolidated by inflammation. A little above its entrance into the cava, the left innominate vein was found compressed by the pouch of the aneurism and greatly dilated above. The pulmonary artery was also compressed. The entire arch showed signs of atheroma. The inferior cava was greatly distended.

The post-mortem thus verified the diagnosis made in the spring and explains the remarkable change of symptoms.

I think the communication was probably due to an ulceration and softening about one of the calcareous masses. A portion of the detritus was caught in the vein and was the cause of the extraordinary inflammatory puckering seen in the lower part of the vena cava.

The site of the opening in the earlier stages lay directly in the line of the arterial blood current receiving the full force of the ventricular contraction. By the growth of the aneurism it was

removed to the outside of the direct force of the current, and the afflux of arterial blood into the vein was thus lessened, and at last entirely prevented by the shell of fibrine.

The unusual third murmur I believe to be due to an eddy formed by the pouch of the aneurism; the pressure on the left innominate vein in the last days by the pouch would explain the excessive edema of the left side of the neck and face, whilst the cyanosis was evidently due to the intense congestion of the lungs caused by pressure on the pulmonary artery and the veins.

We find in this case a confirmation of the view of Walsh, which has been largely disputed, that a pure hypertrophy of the left ventricle may be the result of aneurism of the aorta without any disease or change of the aortic valves.

In this case seven months elapsed between the time of the rupture of the aneurism and death. This is in marked contrast to the cases reported by Mayne and Hayden.

The accompanying plates, taken from photographs by Guerin, show the arterio-venous opening and the other points of interest in the specimen.

