

CLINICAL RECORDS

RUPTURED ANEURYSMS OF THE ABDOMINAL AORTA DUE TO TUBERCULOSIS.

A REPORT OF TWO CASES.

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TUBERCULOSIS of the vascular system is not uncommon, and a considerable literature exists about the close association between miliary tuberculosis and tuberculosis of the blood vessels. But tuberculous aneurysms of the aorta are very rarely reported, and I have been able to find only eleven cases of aortic aneurysm due to tuberculosis. Amongst these, there were two in which the ruptured aneurysm was the immediate cause of death. To these I wish to add the report of two other fatal cases.

Tuberculosis of the blood vessels may originate in several ways. It may be a direct implantation on the intimal surface of the vessel wall which has already undergone slight injury or change. Schmorl, in his report on 123 autopsies of acute miliary tuberculosis, found 5 cases showing tuberculosis of the intima of blood vessels, localising on atheromatous ulcers. The bacilli may be carried to the adventitia or media by the vasavasorum in the same way that it is carried to the organs in general miliary tuberculosis. Lastly, the infection may be carried to the blood vessel wall by direct extension from a near-by tuberculous lymph gland, abscess, or bone. Once having gained the adventitia, media, or intima, according to whether the infection is from within or without, the condition proceeds in the usual manner with infiltration of lymphocytes and endothelial cells and the formation of giant cells, and later, caseation.

In the smaller arteries the advance of the tuberculous process is slow and the reaction to this process, by the intima, is by a proliferation of its fibrous tissue. This increase in fibrous tissue is not so marked in the larger blood vessels, and consequently the walls of the lumen are weakened and, the tendency to form aneurysms in these vessels is greater.

Haythorn, in 1914, reported a case of tuberculous aneurysm of the right common iliac artery which involved the media

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and adventitia but had not ruptured. The infection had spread from a neighbouring tuberculous lymph gland. He found large numbers of tubercle bacilli in the thrombotic material lining the aneurysmal sac. In reporting this case he has made a summary of the recorded cases previous to that time: Kamen (a dissecting aneurysm of the ascending aorta which was fatal), Hannau and Sigg, Ribbert (the process spread to the aorta in this case from a tuberculous area in the vertebræ), and lastly, Councilman and Mallory.

Kornitzer reports a tuberculous dissecting aneurysm of the ascending aorta in a young boy with miliary tuberculosis. He also summarises four cases: Schmorl two cases, Liefman one, and Zrunk one. The case reported by Zrunk was that in which a laparotomy was done on account of the abdominal symptoms. A profuse intraperitoneal hæmorrhage was found, but of unknown origin. The patient died four days after the operation, and the post-mortem showed, besides a subacute miliary tuberculosis, a ruptured aneurysm of the abdominal aorta which had arisen as a result of the encroachment of a tuberculous process in the proximal lymph glands.

The following cases were obtained from autopsies at the Toronto General Hospital:—

CASE I.—Mr M., aged 34, mail carrier. Admitted 23rd December 1922; died 27th December 1922.

Clinical Diagnosis.—(a) Perinephric abscess, (b) tuberculous kidneys.

History.—Both testicles removed three and a half years before on account of double tuberculous epididymitis. Admitted to hospital with a history of sudden pain in the small of the back and across the upper abdomen, with exacerbations for eight days. Also had a history of an attack of pain on the right side of the abdomen above the umbilicus three months previously. He was off work then for two days.

Examination.—Admitted in a condition of shock. Nothing abnormal found in the respiratory, cardio-vascular or gastro-intestinal systems. Patient had no cerebral symptoms. There was rigidity and dullness on the right side of the abdomen with a swelling in the right flank.

S.B.F. 100; D.B.P. 80 (one week before in the Out-patient Department S.B.P. was 180 and D.B.P. 130); W.B.C. 14,000.

Urine.—Sp. gr. 1016; acid; albumin present; large numbers of granular and hyaline casts. R.B.C. 3,500,000; Hgb. 65 per cent.

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Progress.—Remained much the same until 25th December when the blood pressure went down to S.B.P. 85; D.B.P. 65.

26th December.—An incision was made over the right kidney, posteriorly, but no pus found. A retroperitoneal hæmorrhage was suspected. 27th December—Condition of shock increased. The patient died that night.

Autopsy Findings.—The body showed marked pallor. The general appearance otherwise was negative except for a recent operation wound over the right kidney area and the absence of both testicles. On opening the abdomen there was seen a large retroperitoneal hæmorrhage extending from the midline around the right kidney area, downwards into the pelvis and upwards beneath the diaphragm.

Just one inch below the opening of the abdominal aorta through the diaphragm, and above the coeliac axis, there was a rupture of the aorta, longitudinal in nature and situated to the right of the midline and slightly anterior. This rupture was 1.2 cm. in length and 6 mm. in width at its widest portion, with a V-shaped tear of the intima at the left. The rupture opened into a small pouch, which was lined with a caseous thrombotic material, having what appeared to be the fibrous capsule of a lymph gland as part of its wall. This small pouch showed at its lower end a tear which communicated with a larger sac surrounding the right side of the aorta. This larger sac was 8 cm. in width and was lined with a recent thrombus. This second sac had also ruptured and the hæmorrhage had infiltrated as already described. The lungs, kidneys, vas deferens showed a moderate number of small tubercles. The gastro-intestinal tract was clear. There were no tuberculous areas in the vertebræ. The meninges were not seen as only a partial autopsy was permitted.

Microscopic Findings.—There was found a general miliary tuberculosis. Tubercles were seen in the lungs, spleen, liver, kidneys, prostate, and heart. There were tubercles found in both groups of iliac lymph glands and in those along the abdominal aorta, including the glands around and above the coeliac axis. The lower lymph glands showed more fibrous tissue than those near the rupture. The wall of the second or false aneurysm was composed of a blood clot with a thin, partially organised thrombus as its inner lining. In the wall of the other or true aneurysm, fibrous tissue was found but it was mostly composed of caseous material. The adventitia showed, extending in both directions from the tear, definite tubercles with lymphocytic collections but with very little caseation. In the media the most marked changes were found. The first pathological change noticed farthest from the rupture was a small collection of lymphocytes between the elastic fibres. This infiltration increased in amount towards the rupture and just at the edge of the break there were

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definite tubercles found with small amounts of caseation, numerous giant cells, endothelial cells, and surrounding lymphocytes. The elastic fibres in this area were seen to be thinned and frayed, and here and there were small groups of elastic tissue which had been separated by the caseation. The edge of the tear from the intima to the adventitia showed a thin layer of caseous thrombotic material. The caseation was more noticeable in the media than in the adventitia. The intima showed only a slight increase in fibrous tissue with a moderate infiltration of lymphocytes beneath the endothelial layer.

Tubercle bacilli were found in the media at the edge of the tear and in the thrombotic material lining the inner side of the aneurysm.

CASE II.—A Chinaman, aged 25. No history obtained—patient died in the admitting room of the hospital. *Diagnosis*—Miliary tuberculosis; broncho-pneumonia.

Autopsy Findings.—Nothing remarkable found on general inspection. On opening the peritoneal cavity a mass $2\frac{1}{2}$ inches in diameter was found behind the pancreas and stomach, situated retroperitoneally and internal to the spleen. This proved to be a large blood clot. Extending from this there was considerable hæmorrhage which had diffused downwards and outwards on the left side. The abdominal aorta showed about $1\frac{1}{4}$ inches above the celiac axis, on the left side and slightly anterior, a jagged rupture 2.1 cm. in length and 8 mm. in width at its widest portion. This rupture opened into a cavity whose outer walls were made up of a blood clot with its inner surface showing a greyish, caseous material. On section the wall was laminated in appearance. This sac showed a small tear in its lower portion. Extending from this tear was a large retroperitoneal hæmorrhage infiltrating upwards as well as down and outwards but practically all confined to the left side. Cheesy thrombotic material could be seen at the edge of the tear and there were numerous macroscopic tubercles seen in the fibrous tissue along the aorta on both sides of the tear. Tubercles were also seen in the lungs, kidney, liver, large and small gut, mesenteric lymph glands, and the lymph glands along the abdominal aorta, but most numerous in those near the celiac axis.

Microscopical Findings.—At the site of the rupture, the intima was abruptly broken and there were only a few lymphocytes seen beneath the endothelial layer. The media and adventitia showed marked changes. In the media there were small areas of caseation more marked towards the edge of the tear. Other areas in the media showed definite giant cells surrounded by endothelial cells, and further out collections of lymphocytes. The elastic fibres were broken and thinned and the ends rounded off. The adventitia showed numerous giant cells, endothelial cells, and an infiltration with lymphocytes. Tubercle bacilli were found in the media of the aorta. There were

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found tubercles in the lungs, liver, spleen, kidneys, large and small intestines.

Summary.—In Case I., the rupture of the aorta was due to the spread of the tuberculous process to its adventitia and media from the attached tuberculous lymph gland. The changes produced in the aorta, which were especially marked in the medial layer, led to the formation of the aneurysm. At the same time as the true aneurysm was produced, numerous bacilli were probably precipitated into the blood stream and carried to the different organs. From the appearance of the tubercles seen in the lungs, liver, heart, and spleen, one would surmise their duration to be about four to five weeks.

About twelve days before death, at the time the patient complained of the sudden attack of acute pain in the upper right abdomen, the true aneurysm had probably ruptured and formed the false aneurysm. Finally death was caused by the rupture of the false aneurysm and the subsequent hæmorrhage.

A point of unusual interest in this case is, that the patient probably lived twelve days after the rupture of the true aneurysm. The solution of continuity of the aortic wall almost always leads to immediate death. Kornitzer, however, gives an instance of a case reported by Joffe, of a traumatic false aneurysm of the abdominal aorta, caused by a gun-shot wound, where the patient lived twenty-four days after the accident.

The lymph glands situated along the abdominal aorta below the cœlic axis which drained the genital organs showed tuberculous processes which were fairly old as evidenced by the increased amount of fibrous tissue. The glands above the cœlic axis which drained the kidneys showed more recent tuberculous processes. One is perhaps justified, therefore, in believing that the lymph glands from which the tuberculous infection of the aorta arose were secondarily infected from the kidneys.

In Case II. there was no history to help, but the tubercles in the organs were of fairly recent origin. In the origin and course of production of the aneurysm the second case was similar to the first one.

In both of these cases, and also in the one reported by Councilman and Mallory, the site of the rupture, *i.e.*, above the cœliac axis and below the diaphragm is of great importance in my opinion, because of the fact that as the aorta emerges

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through the tendinous arches of the diaphragm, it is given a certain measure of support. Further down the direction of part of the blood flow is suddenly changed by the presence of the large blood vessels, *i.e.*, inferior phrenics: cœliac axis, superior mesenteric and renal arteries; and still further down the calibre of the abdominal aorta becomes much smaller. The preceding facts, which are also confirmed by Woolsey, who reports that in this area ruptures frequently occur on injection of the blood vessels in cadavers, are probably the cause of an increased blood pressure in this area and therefore of an increased tendency to aneurysm if by any chance the wall is weakened.

REFERENCES.—Haythorn, *Journ. Amer. Med. Assoc.*, 10th May 1913. Kornitzer, *Med. Klin.*, Berlin, 1920, pp. 361-363. Agnew, *Woolsey-Piersol's Anatomy*, p. 796. Delamere Poirer Cuneo, *The Lymphatics*. Osler, *Albutt's System of Medicine*, 1909, pp. 6/620. M'Crae, *Journ. of Path. and Bact.* 1905, pp. 10/373.

CYST OF THE VOMERONASAL ORGAN.

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CASE. — "Fifteen," a Shangaan, aged 25, was admitted to the Johannesburg General Hospital on 13th February 1923, suffering from "cyst of the nose."

The history elicited was that the lump was present when he was a small boy but used to diminish or disappear until eight years ago when it became permanent. It was always mesial in position, but gradually extended laterally thence. To begin with, thick, dirty discharge used to come from his nostrils on occasions, but this stopped when the tumour ceased to vary in size. The condition had never caused any pain.

A large fluctuating swelling about the size of a tangerine orange filled the anterior nares reaching from the maxillæ to the nasal bones and extending laterally well on to the cheeks (Figs. 1 and 2). The upper lip was pushed forwards from the maxillæ a distance of two inches. The finger could be insinuated into the nostrils as far as the nasal bones. The frontal processes of the maxillæ were deviated laterally. Posterior rhinoscopy showed the mucous membrane congested and a good deal of pus above and below the middle conchæ. The roof of the mouth seemed broadened.