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ALBUMINURIC RETINITIS WITH VASCULAR CHANGES: ANEURYSMS ON RETINAL ARTERIES.

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ALBUMINURIC RETINITIS WITH VASCULAR CHANGES: ANEURYSMS ON RETINAL ARTERIES.[1]

By A. J. BALLANTYNE, M.D.

William M'L., aged 36. This man is a patient in the Glasgow Royal Infirmary, under the care of Dr. John Cowan, suffering from chronic nephritis (contracted white kidney).

Symptoms began in May, 1906, with a sudden attack of excruciating frontal headache. Vomiting followed in a few hours, and he noticed that his sight was dim. He felt sick and unwell for two days, and then the symptoms, including the dimness of vision, gradually passed off. A second attack occurred two months later, and then others at more frequent intervals, being about once a week for two or three months before his admission in May, 1907. Some shortness of breath and frequency of micturition were the only other symptoms complained of.

On admission the urine was found to be pale, of specific gravity of 1015; quantity rather deficient; albumen and casts plentiful. Patient seemed a healthy, well-nourished man. The heart was not enlarged, and there were no murmurs, but the aortic second sound was loud and intoned. The radial, brachial, and temporal arteries were all rigid and tortuous. The radial pulse showed very high tension, and blood-pressure, as given by the sphygmomanometer, was markedly elevated; systolic, 220 mm. Hg.; diastolic, 155 mm. Hg.

Visual acuity was only moderately reduced ($\frac{3}{4}$). The dimness, which was said to accompany the attacks of headache, may have been a uræmic amblyopia.

Ophthalmoscopic examination.—Fig. 1 shows the appearances found in the right eye a few days after admission. The disc margins are slightly hazy. The retinal arteries are

[1] Read at a meeting of the Glasgow Medico-Chirurgical Society held on 1st November, 1907.

in places unduly tortuous, and the following evidences of arteriosclerosis are present:—

1. Irregularities of calibre.
2. "Silver wire," or "copper wire," appearance.
3. Constriction of the underlying veins.
4. The first branch of the lower temporal artery, in its course towards the temporal side, shows at one point a sudden loss of its normal double contour, and a little further on changes into a bright white band of equal width, which is rendered more visible by contrast with a large hæmorrhage across which it passes. Again, for a short distance the blood-column becomes visible, and, finally, its terminal branches may be traced as a number of fine white lines.
5. The main trunk of the lower temporal artery, at a point almost vertically below the macula, presents on one curve four separate aneurysms. These take the form of small globular dilatations of the whole lumen of the vessel. One of them is partly surrounded by a small retinal hæmorrhage. The same vessel, far out to the temporal side, gives off a branch in the form of a narrow glistening white line.

The veins are for the most part unduly wide and dark, with a well-defined central streak. As already stated, they are constricted where crossed by the arteries.

The other changes present are round and flame-shaped hæmorrhages of various sizes, irregular white soft-edged patches of exudate, and minute glistening spots scattered over the posterior part of the fundus.

The changes in the left eye were of the same kind, but the glistening degenerative spots were more numerous, and no aneurysms were found.

The patient's general condition improved steadily, and he was dismissed in July feeling well, with still a trace of albumen in the urine. The little aneurysms were already becoming less prominent, while the other evidences of vascular disease were increasing.

He was next seen on 26th September. He had taken a long holiday, and had been back to work for five weeks, and was feeling very well. The urine was practically as before, and the blood-pressure still high. (Systolic, 230 mm.; diastolic, 190 mm.)

Ophthalmoscopic examination.—The hæmorrhages and exudative patches had almost entirely disappeared, even the glistening degenerative spots were fewer. Two of the four aneurysms had disappeared. At the same time there were evidences that the vascular disease was advancing. The branch

FIG. 1.

Condition of right fundus oculi on admission.

(*Reduced from the original drawing by about one-third.*)

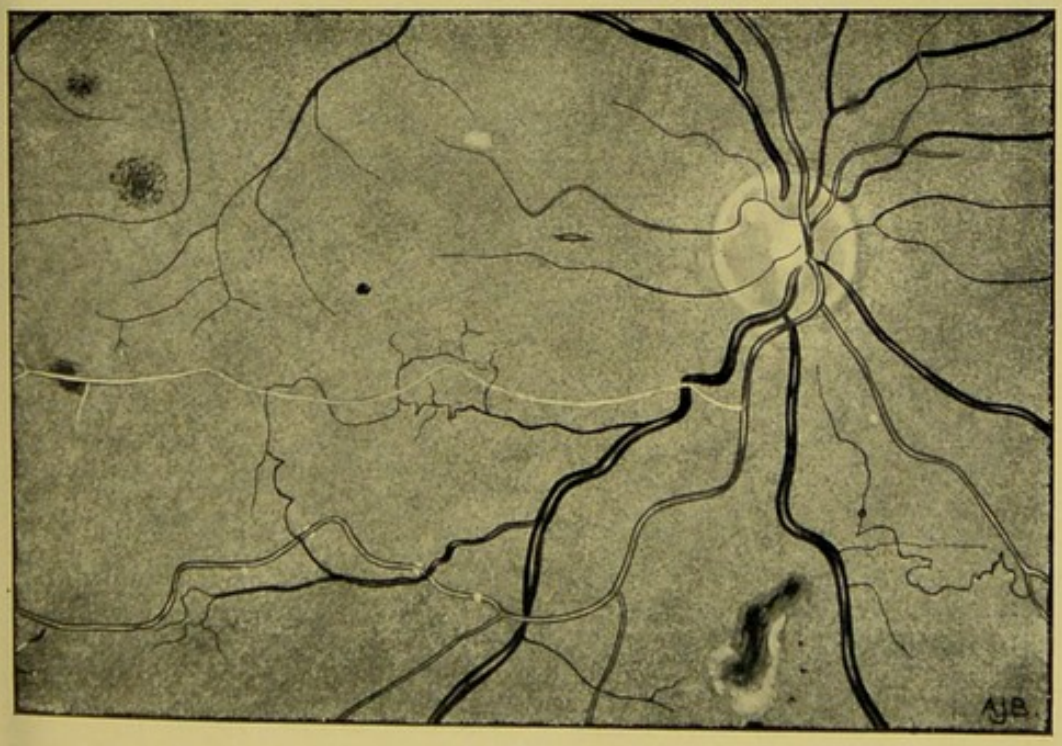

FIG. 2.

Condition of right fundus oculi on 28th October, 1907.

(*Reduced from the original drawing by about one-third.*)

passing downwards from the lower temporal artery, just before the curve on which the aneurysms were found, showed at a point not far from its source a sudden diminution of calibre, and immediately proximal to this two small globular dilatations, similar to the other aneurysms in appearance, but smaller. The other branch, already referred to as presenting the appearance of a white line at its distal end, now showed a similar appearance along a good part of its extent from its origin outwards. Other smaller arteries were beginning to show abrupt constrictions of their calibre. There was also a tendency to multiplication of the finer venous branches.

Patient returned on the 18th October, saying that there had been a return of the severe headache and vomiting a week earlier, which had compelled him to give up work. The albumen in the urine was very abundant, and granular and fatty casts in the deposit were numerous. He was re-admitted, and is still (1st November) under treatment. The blood-pressure has fallen slightly, but is still high. The other symptoms have greatly improved.

Ophthalmoscopic examination.—Fig. 2 illustrates in a general way the present condition of the right fundus. (28th October, 1907.)

It will be noticed that while the hæmorrhages and exudates seen in the first drawing have all disappeared, fresh ones have made their appearance during the present relapse. None of these were present when he was seen on 26th September. The veins are now larger and more tortuous, and their terminal twigs are much more complex in their branching. One of these twigs shows a globular swelling which looks like an aneurysm. The arterial aneurysms are all gone, and their place is partly occupied by brilliant white spots of tissue in the arterial walls. The two small aneurysms noted as new at the examination on the 26th September have also disappeared, and the small vessel on which they were found has regained its former calibre. The vessel in question is, on the whole, narrower and more definitely "silver wire" in appearance. The first branch of the lower temporal artery is represented by a white band practically from its origin to its termination, but the whiteness of it is not equal at all points. Changes in the other arteries, chiefly in the form of irregular constrictions of the lumen, are also present.

The case is of interest—

1. Because it shows practically all the evidences of arterial sclerosis found in the retina. These changes are probably toxic in origin.

2. Because it shows how much the hæmorrhages and other retinal changes depend on the state of the general disease, and how entirely they may disappear under appropriate treatment.

3. Because of the presence of the arterial aneurysms which are very rarely seen.

4. Because these aneurysms are seen to have disappeared, even while the high blood-pressure, which probably contributed to their formation, was maintained.

5. It will be noted further that, with the exception of the disappearance of the aneurysms, there has been no improvement in the vascular changes, which have rather progressed.

The first record of a retinal aneurysm observed ophthalmoscopically was made by Sous [1] in 1865. In his case there was a single large aneurysm occupying the lower half of the disc. Since then a number of other cases have been reported, among others, by Poncet,[2] Litten,[3] Story and Benson,[4] Schmall,[5] Gowers,[6] and Oeller.[7] Of these, only the case described and illustrated by Gowers closely resembles the one here referred to. The patient was a woman, aged 36, suffering from chronic renal disease. Ophthalmoscopically, there were optic neuritis, hæmorrhages, white spots, and arterial changes, and a reference to Gowers' plate will show that one of the arteries presented several small globular dilatations very similar to those in our case.

Poncet's case was one of glaucoma with "miliary retinal aneurysms." Litten's was a man of 56, with simultaneous hæmorrhages in the retinæ and brain. *Post-mortem* small aneurysms were found on the cerebral arteries visible to the naked eye, but those on the retinal vessels were only seen microscopically. In the other four cases the aneurysms were observed ophthalmoscopically. In the cases described by Story and Benson, and by Oeller, there were both globular and fusiform dilatations of the arteries, with fusiform dilatations and varicosities of the veins, and these vascular changes were associated with "retinitis proliferans." There does not appear to have been any renal disease in either case.

[1] Sous, *Annal. d'Oculist*, 1865, quoted by Warlomont and Testelin (French edition of Mackenzie, vol. iii., p. 555).

[2] Poncet, *Gazette des Hôpitaux*, 1876, p. 261.

[3] Litten, *Berlin. klin. Woch.*, 1881, p. 25.

[4] J. B. Story and A. H. Benson, *Trans. Oph. Soc. of United Kingdom*, 1883 and 1886.

[5] B. Schmall, *Archiv für Ophthalm.*, vol. xxxiv, p. 37.

[6] Gowers, *Medical Ophthalmoscopy*, plate x, fig. 1.

[7] Oeller, *Atlas of Ophthalmoscopy.*

Schmall's case was a man of 67, suffering from great dilatation and hypertrophy of the left ventricle, due to aortic stenosis and regurgitation. The superficial vessels were tortuous and rigid, and there were symptoms suggesting a similar state of the cerebral vessels. There was no renal disease. One branch of the central retinal artery presented a marked fusiform aneurysm just beyond the disc margin as well as white lines along its borders.

In our case the disappearance of the aneurysms was rather remarkable, but the same change is described as having occurred in the cases of Story and Oeller, although in other respects the cases were not comparable.

It is unfortunate that in most of the cases hitherto reported, the general state of the patient has been omitted or incompletely recorded, and it would be interesting in future cases of the kind to have these records as complete as possible, including measurements of the blood-pressure.

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