With Compliments of the Author

Retinitis Albuminuria.

....BY....

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The relationship of diseases of the eye to general diseases was established long before the introduction of the use of the ophthalmoscope, but by the introduction of this valuable instrument certain diseases which were only mooted have long since been made a certainty. it is very interesting to read, in the light of our present knowledge of intraocular diseases, what the first Mackenzie said about this instrument. When the ophthalmoscope was first shown him and he made an examination of the eyes of several patients he said: "The ophthalmoscope of Helmholtz, Coccius and Follin, are likely to assist in the detection of the effects of inflammation both in

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the crystaline and in the vitreous body."

A fact well known to the general practitioner is that the outside of the eye presents certain symptoms as characteristic to him as the characteristic fan-shaped white spots of the retina are to the ophthalmologist.

Oedema of the lower eye-lid is a very characteristic symptom of Bright's disease; the subcutaneous tissue being much relaxed affords a favorable ground for the development of oedema. The upper eyelid does not present this puffiness so frequently, on account of the histological formation of the lid. Associated with this puffiness of the eyelids we find the muscle of accommodation also giving way, and, in reading, dimness of vision, a rapid recovery of the word, then again fading; at times want of converging power as if a row of double sentences appeared, one word over the other. This condition shows more with hyperopes, suffering with Bright's disease, than myopes. As regards the pupils, they are dilated, owing to want of

controlling power of the sphincter of the iris. As regards a change in the iris itself, Leber has recognized a number of cases. In fact this writer lays so much stress on this condition that, in all doubtful cases of inflammation of the iris, he suggests that the urine be examined for albumen. Ewetsky has seen posterior synchia in iritis, in a patient with albuminuria. Whether an albuminuria causes cataract there is still some doubt, but one is struck with the frequent coincidence of albuminuria in cataract patients. In order to explain this fact, in cases of senile cataract, Michel says that it is essential to consider that cataract and albuminuria are the results of alterations produced simultaneously in the eyes and in the kidneys from the same general cause, arterio-sclerosis. This theory recalls, to a certain point, that of Sutton, who considered that interstitial nephritis and hypertrophy of the left ventricle are both caused by an alteration of the vascular walls (arterio-fibrosis.) Berger, Becker and the great-

er number of those who have made a special study of this question do not believe in the relation claimed by Deutschmann between cataract and nephritis. Ewetsky, who examined 200 patients with cataract, only found 19 per cent. of these individuals afflicted with albuminuria; on the other hand, he examined the eyes of 97 nephritics, of which 70 had not attained the age of 50 years, and only met with cataract in 8 per cent. of these patients, and in this number there was but one who was less than 50. From these facts this author concludes that cataract does not show itself in young persons attacked by nephritis, and it is no more frequent in nephritics before they attain the age of 50 than in those whose kidneys are normal.

The most important tunic of the eye, which reflects the condition of the general economy, is the retina. From observations which I have made, but have not been quite able to confirm, I feel that in certain forms of retinal hemorrhage, especially of the striated variety,

we have the forerunner of non-albuminuric Bright's disease. The blood vessels show a sclerosis of their coats, that is, the external coats are whitened in such conditions. We find that the capillaries also are involved in a similar manner, or, in other words, there is an arterio-capillary fibroid change, which has been described by Gull and Sutton. With patients suffering from what Dr. Mohomed would call the first, or functional stage of Bright's disease, we observe with the ophthalmoscope a fullness of the arteries and a slight pulsation of the central artery, not unlike that which is observed in glaucoma. This is pathognomonic of high arterial tension, and when this condition exists for a longer or shorter period we have the retinal hemorrhages as described above, and yet, if the urine be examined, we find that it is absolutely free from albumin. I believe that this sclerosis may be recognized earlier than in the condition described in a very able and exhaustive article on non-albuminuric Bright's disease by Dr. D. D. Stewart

in the "American Journal of the Medical Sciences" for December, 1893.

Retinitis observed in nephritis is of very great importance; it is met with in six or seven per cent. of cases of inflammation of the kidneys. It is most frequently found in interstitial nephritis, in infectious nephritis (scarlatina), in the albuminuria of pregnancy, complicated or not by eclampsy. Albuminuric retinitis is not often seen in parenchymatous nephritis or amyloid degeneration of the kidneys. (Berger.)

Heymann was the first to call attention to the retinal changes, which he regarded as characteristic in interstitial nephritis. Every opthalmologist can readily call to mind cases in which the ophthalmoscope first revealed the existence of albuminuric retinitis, the diagnosis being subsequently confirmed by a urinary analysis. Within the last week a patient presented himself at the eye clinic for relief of failing vision. As is usually the case with these patients, she had first consulted the itinerant

spectacle-vendor for glasses, and, finding no betterment of her vision, she applied to us for relief. The ophthalmoscope revealed an extensive retinitis with extensive retinal hemorrhage. Examination of the urine showed about 40 per cent. albumin by quantity. This woman, according to her history, did not complain of untoward symptoms of any kind, merely a failing of her vision.

The chief signs of albuminuric retinitis are the following: The optic nerve seems swollen and fluffy, is of a reddish color and hazy, the vascular walls surrounding the blood columns form white lines more or less pronounced; these constitute the retinal white spots which were formerly regarded as the product of a fatty degeneration. The yellow spot gives star or fan-shaped alterations, which at first were considered as characteristic of albuminuric retinitis, but they are now known to exist in other kidney diseases. These star-like changes consist of brilliant white spots which radiate around the macula, the spots are

edged by brownish pigment and here and there show small retinal hemorrhages, disseminated through the spots or beyond in the otherwise normal retina.

It is a singular fact that in the more advanced stage the white spots, excepting those of the macula, disappear little by little; the edge of the optic nerve, indistinct in the beginning of the disease, again becomes apparent. Hyperæmia of the papilla disappears, the vessels, chiefly the veins are at this stage very tortuous, the thickening of the walls of the blood vessels much more pronounced than at first, and the white spots become more apparent. In certain cases of albuminuric retinitis, the star-shaped lesions are absent from the macula, while in the retina are seen curiously shaped spots of extensive area. According to Berger, one meets with (optic neuritis) papillitis, with and without the star-shaped spots.

Magnus first described a special form of albuminuric retinitis, in which the inflammatory symptoms are but little

marked or entirely absent.

Authorities differ as to the prognosis in retinal hemorrhages associated with Bright's disease. Hirschberg gives a case where his patient died three and a half years after the retinal hemorrhages. We must not forget that, in albuminuric retinitis, hemorrhages may coincide with an acute inflammation of the retina. My own experience has been, where retinal hemorrhages and the colloid degenerations are coincident, that death is close at hand. The more extensive the hemorrhages, the shorter the expectation of life. The typical deposit, as seen with the ophthalmoscope, may also give us a guide as to the fatality of the disease. I may mention here that the left eye is more frequently attacked than the right. According to Liebreich, albuminuric retinitis may be complicated by diffused choroiditis, and cases are known of albuminuria with change in the choroid only, the retina undergoing no change at all. There are other cases where the little flecks in the vitreous

body were the first intimation of choroidal lesion. These cases may be exceedingly rare, as, in an extensive search I have not yet been able to locate a single one. In detachment of the retina due to albuminuric choroiditis no apparent visual change takes place, although Anderson thought he observed it in a little girl of 9 years of age. This child, after measles, was attacked by nephritis, which caused this chorio-retinitis albuminurica. This bi-lateral detachment of the retina caused blindness. Ewetsky holds that this detachment of the retina may be observed in albuminuria, without there being albuminuric retinitis. The same author proved that the condition known as scintillating synchysis, floating opacities in the anterior part of the vitreous, is due to the same relative condition. The visual acuity is lessened in proportion to the pathological change which has taken place in the retina. If the lesion has extended around the macula, and the fovia centralis escapes, normal vision may exist,

but if the surrounding field is infiltrated this good vision soon falls off to one-third, or may even end in blindness for direct vision, peripheral vision remaining. The clouded vision may be so marked that only movements of the hands can be seen. Even if the morbid process of the kidneys is modified the prognosis of vision is very unfavorable, as secondary glaucoma may follow.

Cause—As to the cause of albuminuric retinitis, Franke attributes it to the increased arterial tension of interstitial nephitis, but according to Cohnheim and Albutt, this disease exists without hypertrophy of the left ventricle and without increase of vescular pressure.. Forster thinks that the disease is produced by alterations of the blood which cause degeneration of the blood vessel walls. Charles Theodore, Duke of Bavaria, who made a special study of this disease of the eye, found hyaline degeneration and endarteritis in the vessels of the retina; at certain places the small vessels were dilated, resembling aneu-

risms. The hyaline degeneration attacked the internal and middle coats of the arteries, which caused considerable diminution of their calibre. The veins, on the contrary, are dilated; at times he found small, fatty granulations filling the cavities of the small arteries. Microscopic examination shows that small hemorrhages existing in the retina may break through this coat and extend into the vitreous body. The limiting internal membrane of the retina is generally thickened. The layers of the nerve fibres are distended and varicose, an interstitial œdema separates, more or less, one layer from the other; on the other hand the layer of the rods and cones is almost normal.

In a more advanced stage of albuminuric retinitis a new formation of vessels and capillaries may be seen in the retina. Cavities hollow out between the fibres of Muller, and these are filled by a homogenous, albuminoid liquid, or by clots of fibrin. The fibres of Muller themselves are thickened and seem

sclerosed. Later they show traces of fatty degeneration and are full of granulations or of small drops of fat. The detachment of the retina which complicates some cases of albuminuric retinitis is probably due to transudation through the walls of the vessels.

The same vascular lesions, which in the retina bring such serious consequences, provoke almost no nutritive trouble in other parts of the eye. This difference is doubtless due to the retinal arteries being the terminal arteries, while those of the iris and choroid assure the circulation of the blood, even when partial occlusions exist in these vessels. Usually the prognosis of albuminuric retinitis is grave enough and the life of the patient is seriously threatened. Nevertheless, there are exceptions: In pregnant women there are many cases of complete cure, the sight becoming normal and the general health re-established. It may be, moreover, that, in spite of a greatly improved condition, the albuminuric retinitis of preg-

nancy does not disappear, the optic nerve is atrophied and some of the retinal vessels are transformed into fibrous fasciae. (Berger).

The patient survives, but the visual acuity is diminished, and, when pregnancy occurs again, albuminuria reappears at the same time with the disease of the retina and the patient dies. (Fuerst). Following scarlatina, the cure of renal and retinal lesions has often been seen. In a certain number of cases of albuminuric retinitis, due to interstitial weakness, the sight is more or less weakened and finally convulsions and amaurosis ensue. The greater number of patients attacked by albuminuric retinitis succumb to kidney disease or its complications (cerebral hemorrhage or pulmonary oedema).

Miley, in order to emphasize the gravity of the prognosis, examined 164 patients attacked by kidney disease and (nephritis). The back of the eye was normal in 105 of these patients; in eight others were lesions noticeable by the

ophthalmoscope, but without connection with the kidney disease; 51 presented symptoms of albuminuric retinitis. In the two following years of the 105 cases which had no eye complications, 28 died; of the 51 attacked by albuminuric retinitis, 27 died. Consequently, morality is twice as great in those attacked by nephritis without ocular complications. The majority of the patients lived but twelve months after the day when the retinal disease was diagnosed; one alone lived eighteen months. (Berger).

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I am indebted to Professor Anders, Drs. Stewart Daland and Boardman Reed, and to Dr. Berger's magnificent work "On the Relation of the Eyes to General Disease," for the information and statistics on this subject in the above paper.