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WITH THE REPORT
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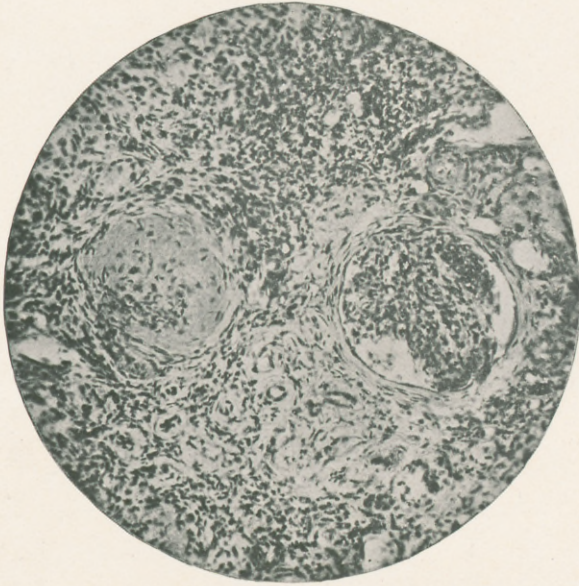


FIG. 1.—Two glomeruli in different stages of inflammation. The one on the right shows a thickening of Bowman's capsule, while the other shows almost complete degeneration of the structure. *Spencer* $\frac{1}{2}$ in. Projection ocular 4, *Zeiss*. $\times 150$.

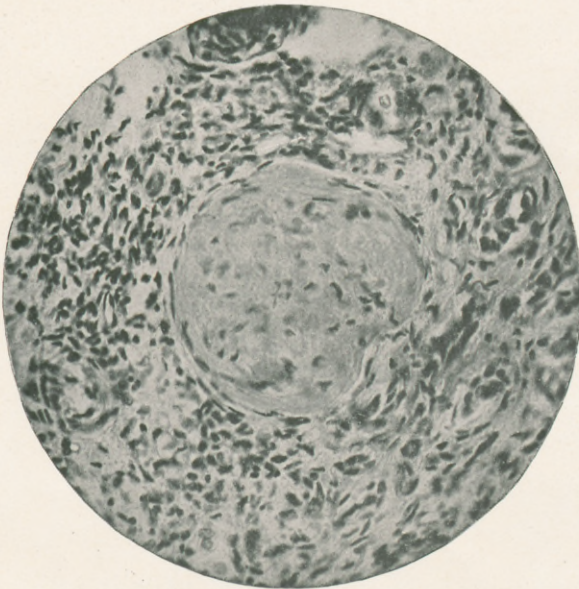


FIG. 2.—Showing hyaline degeneration of a glomerulus and surrounding cellular infiltration. *Spencer* $\frac{1}{4}$ in. Projection ocular 4, *Zeiss*. \times circa 400.

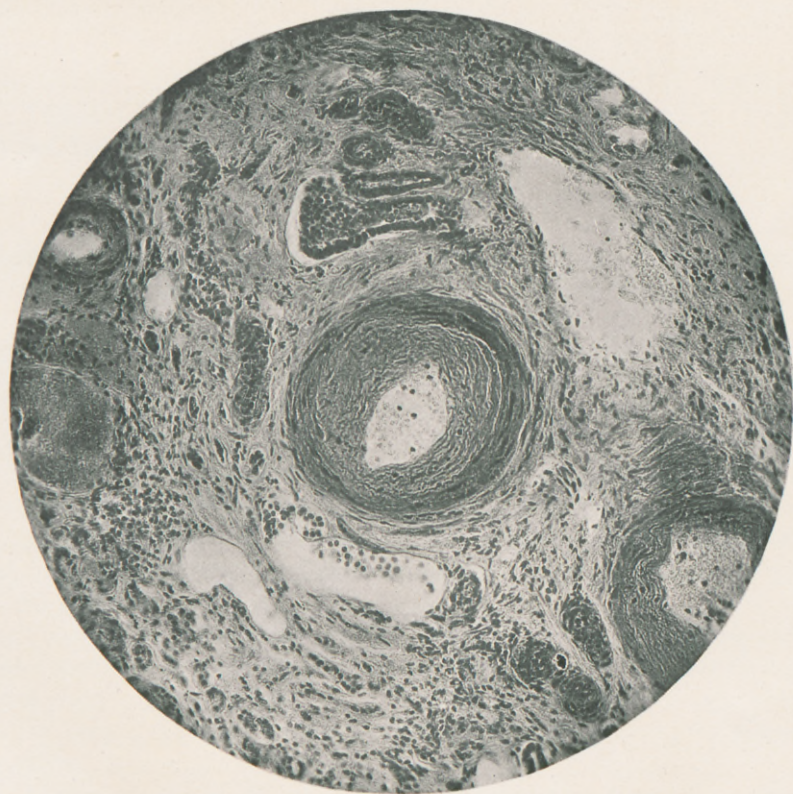


FIG. 3.—Endarteritis from a syphilitic kidney, showing thickening of all the coats of the vessel; the most pronounced change is seen in the intima. *Spencer* $\frac{1}{2}$ in. Compensation ocular 4, *Zeiss*. $\times 150$.

ON THE OCCURRENCE OF NEPHRITIS IN EARLY
SYPHILIS; WITH THE REPORT OF A CASE TER-
MINATING FATALLY.¹

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DURING the past few years clinical observers and pathologists have directed their attention more frequently to the relationship of the kidneys to constitutional syphilis than was formerly the case.

While amyloid degeneration of the kidneys resulting from syphilis had been described in 1840 by Rayer ("Traité des maladies des reins," Paris, 1840), it was not until a number of years later that the more characteristic gummatous tumors and interstitial changes in the kidneys were described by the pathologists.

Transient albuminuria, with or without edema, has occasionally been observed during the early outbreak of syphilitic manifestations.

A number of such cases have fallen under my observation which began before the use of mercury and disappeared during its administration.

This early syphilitic albuminuria has been attributed to a congestion of the kidneys analogous to that which takes place on the skin and mucous membrane; to alterations in the structure of the blood-vessels in the Malpighian tufts; to the irritation of the organs by the elimination of the products resulting from the destruction of the red blood-corpuscles which syphilis is known to occasion. It

¹ Read before the American Association of Genito-Urinary Surgeons.

has also been regarded along with the fever, icterus, anemia, etc., as the result of the action of a ptomain rather than of the specific micro-organism which we must assume to be present in the disease.

These early cases of albuminuria are usually of short duration, seldom giving rise to a persistent deposit of albumin in the urine or passing into a well-defined nephritis.

During the vigorous use of the inunction treatment both albumin and casts have been found in the urine, which disappeared when the inunctions were stopped and reappeared when they were resumed. We have good reason, therefore, to assume that mercury is at times responsible for the occurrence of albuminuria.

Aside from these cases of transient albuminuria in early syphilis, and the more carefully studied forms of amyloid, gummatous, and interstitial nephritis in the later stages of the disease, a number of observers as E. Wagner, Tommasoli, Jaccoud, Mauriac, Vulpian, Boukkeieff, and others, have noted the occurrence of an acute parenchymatous nephritis ushered in with fever, albuminuria, anasarca, etc., pursuing a course not unlike the nephritis of scarlatina, terminating at times in recovery, and again passing into a chronic interstitial inflammation with symptoms not to be distinguished from the non-syphilitic forms of the disease.

The following case, which was under my observation for nearly three years, affords an excellent illustration of this form of kidney inflammation in syphilis.

History.—The patient, an intelligent and robust laboring man of thirty-five years, stated that his previous health had always been good. He was not addicted to the use of alcohol.

He is married and the father of several healthy children. In December, 1888, without any assignable cause, a small pimple appeared on the ring finger of the right hand, which subsequently became larger and harder.

Early in February, 1889, the patient was seen by me and showed the remains of an indurated sore on the finger, together with a well-defined erythematous syphilide and generalized involvement of the lymphatic nodes. The genital organs were free from any specific lesion.

The use of mercury in moderate doses by the stomach was begun, and continued until April, when he presented a marked edema of the face and lower extremities, together with pronounced anemia.

He complained of intense headache and cardiac palpation. His urine was examined and found to have a specific gravity of 1030.

It contained one-third, by bulk, of albumin, and numerous epithelial and blood casts. The mercurial treatment, combined with the liberal use of milk, was continued until June, when the symptoms were found to be further aggravated. The lower extremities and scrotum were distended with fluid, which was also present in the abdominal cavity. The urine at this time contained nearly one-half its bulk of albumin, numerous casts, and some blood-corpuscles.

He stated that the vision of the left eye was impaired. At this time the administration of mercury was discontinued and the iodides given for a period of several weeks without obtaining any alleviation of the disease.

In September he was admitted to Bellevue Hospital, on the medical side, where, under the use of iron, alkalies, rest in bed, and a milk diet, his general condition improved.

At the end of six weeks he was discharged, with only a slight pitting on pressure about the ankles.

On December 15th he developed a right lobar pneumonia, followed by a persistent diarrhea.

His urine upon recovery was found to be smoky in color; to contain blood-corpuscles in abundance, with blood, epithelial, and granular casts. Its specific gravity had declined to 1015, and the amount in twenty-four hours was only eight ounces.

Uremic symptoms, headache, vertigo, dyspnea, and cardiac palpitation appeared and continued with varying severity until about the middle of February, 1890, when a marked improvement took place, permitting him to leave his bed and go about.

During the preceding six months very little mercury or iodide of potassium had been given. The skin eruption passed away and no other manifestation of the specific disease was present. From this time the daily quantity of urine increased. The specific gravity declined to about 1010, where it remained pretty constantly. Blood-corpuscles and casts continued in varying quantities. The tension in the peripheral arteries increased very perceptibly; physical examination revealed a hypertrophied heart.

An ophthalmoscopic examination showed several spots of hemorrhagic retinitis of the left eye; the right eye was found to be normal.

In April the patient presented a decided improvement in his subjective symptoms and general appearance.

Little edema was present. His urine passed in large quantities, was light in color, and contained a considerable quantity of albumin.

He passed from my observation at this time for over a year,

having obtained some light employment which prevented his attendance at the dispensary. The patient died three and a half years after the date of infection from uremic coma.

Autopsy.—An examination made twelve hours after death revealed the following conditions:

A generalized edema of the subcutaneous tissue was present. Only the abdominal organs and the heart were examined.

The kidneys were below the average size, the right weighing three ounces, the left about four.

The capsules were somewhat adherent, though not markedly so, coming away without tearing the cortical substance. A small cyst, holding about a dram, was found beneath the capsule of the right kidney. The surface of the organs was granular, and on section the tissue was firm.

During life the patient complained constantly of pain in the back over the region of the right kidney. It was interesting to find at the autopsy that the more marked changes were present in this organ.

A mass of bluish-gray tissue made up about half the bulk of the right kidney, which cut with difficulty and seemed to be composed almost entirely of connective tissue. The heart was hypertrophied, especially its left ventricular walls; no valvular lesions were found. Small pieces from both kidneys, hardened in Müller's fluid and alcohol, were cut and stained in the usual manner with hematoxylin and eosin, and borax carmine.

A section of normal kidney stained with these reagents and examined under the microscope shows almost exclusively tubules and Malpighian bodies; little connective tissue is present and the blood-vessels are not well demonstrated without special injection methods.

In sections from the case under consideration, few normal Malpighian bodies are found. The morbid changes are seen in all stages, from a slight proliferation of the endothelial cells lining Bowman's capsule, a marked fibroid thickening and compression of the vascular tufts, to a complete hyaline degeneration of these bodies. (Figs. 1 and 2, plate.)

Tests made with iodine and gentian violet failed to produce the characteristic amyloid reaction, a form of degeneration which suggested itself to me.

Throughout the kidney, especially in the cortex, sections of the vessels show marked implication of all their coats, more marked in the intima.

The caliber of the vessel is lessened by the new growth in this

membrane, which is made up of fine, wavy bundles of fibers, in which a few migrating leucocytes are seen. (Fig. 3, plate.) The hyaline change, which is most pronounced in the Malpighian bodies, is apparently taking place in the newly-formed tissue within the vessels, the cells of which stain faintly and are not well differentiated. The media and adventitia are also involved, the latter coat showing pronounced fibroid change.

This form of endarteritis, while found with especial frequency in syphilitic products, is not pathognomonic of that disease, as a similar or identical process is found in the ordinary or cirrhotic kidney. The new growth of connective tissue, which has compressed or obliterated many of the tubules, forms a prominent feature of the microscopic picture.

In places the connective-tissue growth, from the absence of nucleation, would seem to be of the same age; the greater part, however, is of comparatively recent formation, and scattered throughout the sections are numerous foci of small-celled infiltrations about the vessels, showing that the interstitial process was in active development.

A few tubules contain normal epithelium, in others the nuclei do not stain; the epithelium is granular and disintegrating, and in still others, hyaline and fatty casts are to be found.

An examination at so late a period after the onset of the nephritis could hardly reveal the starting point of the trouble.

A consideration of the clinical course of the malady, in connection with the anatomical changes in the organ, would lead one to the view that the primary change took place in the vessels of the glomeruli while attempting to rid the blood of the bacterial or toxic agent contained therein.

The researches of Klein on the anatomical changes in the kidneys from scarlatinal nephritis showed that the primary lesions take place in the glomeruli, resulting in a hyaline degeneration which renders many of them impervious.

The symptoms presented by my patient corresponded very closely with those met with in scarlatinal or those forms of kidney inflammation which follow the acute infectious diseases. It would be reasonable to suppose, therefore, that the anatomical seat of the trouble in the beginning of the disease was the same. The impression made by a study of the sections from the case in question is that the older lesions are in the Malpighian bodies, and the more recent in the connective tissue.

This sequence of involvement would explain the early occurrence of generalized edema, the partial suppression of urine, the large

amount of albumin, and the uremic symptoms. The secondary involvement of the connective tissue undoubtedly resulted from the long duration of the inflammatory process and the recurring attacks of subacute inflammation.

An effort was made to discover the presence of micro-organisms in the recent foci of round-celled infiltration, on the supposition that some infectious agent might be present; no success was, however, attained.

The case reported is, of course, open to the criticism that the nephritis was a coincidence and not a direct result of the specific virus, as it is readily admitted that syphilitic patients, like other individuals, may contract nephritis or other affections which are in no way related to the original disease. In the absence of other adequate causes, as diphtheria, scarlatina, other infectious diseases, or alcoholism, the probability is strong that it was directly related to the syphilis it so quickly followed.

The failure of the disease to respond to the medication employed would not invalidate this view of the case, as the prognosis in syphilis of the kidney, though less grave when occurring soon after infection than the more insidious forms of the later periods, is not so favorable as early syphilis of other organs. Prendergast (*Thèse de Paris*, 1892) has reported in full the case of a young woman who developed an acute nephritis four months after an initial lesion, and during the early eruption. In spite of the vigorous employment of the inunction treatment death took place within four months.

Mauriac (*syphilis tertiare*) has made a similar observation. A number of clinical observers have reported similar cases, and also examples of the termination of an acute parenchymatous nephritis (presumably of specific origin) into a chronic form of the disease, which persisted for years.

The observations thus far recorded would scarcely permit any conclusions to be reached as to the relative frequency of recovery of this form of early syphilitic kidney inflammation as compared with that following the other infectious diseases for which no specific remedy exists.

Since the foregoing case was observed a young man in the active stage of syphilis, with a generalized eruption and the induration of a recent chancre on the penis, was admitted to my service at the City Hospital. He was in a semi-comatose condition and presented a generalized edema of the subcutaneous tissue. A small quantity of highly colored urine was obtained by the use of the catheter. It was found to contain a large amount of albumin, with blood-

corpuscles, blood and epithelial casts. In spite of the vigorous employment of measures to relieve his uremic state he died on the following day.

An autopsy could not be obtained, and no satisfactory information was elicited regarding his previous health or habits.

I have, since my attention has been attracted to the connection of kidney inflammation with syphilis, noted the occurrence of syphilis in three patients with previous disease of these organs.

In one of them—a case lately observed—the eruption was of the large papular type and left deep brown, in places almost black, pigmentations after its disappearance. The pigmented spots were present on the face and trunk, and were more pronounced than in any case of syphilis I have ever seen.

It is more than probable that the nephritis, with which she had been affected for more than two years previous to her syphilitic trouble, increased the tendency to hemorrhages into the specific lesions.

It was noted also that the patient was unable to take mercury for any length of time without having protracted and troublesome ptyalism. At the same time the amount of albumin increased in the urine, its quantity diminished, and she complained of severe pain in the lumbar region.

When we consider that the kidneys, as well as the bowels and salivary glands, are concerned in the elimination of the mercurials, it is not surprising that a nephritis is a serious impediment in the successful administration of the drug.

From the investigations that have been made up to this time, it would appear that aside from the presence of gummata and localized interstitial changes in the kidneys, there is as little characteristic in lesions of these organs produced by the disease as in the symptoms presented during the lifetime of the patient.

It is not my intention, in recording this case, to exaggerate the rôle of syphilis in giving rise to an acute parenchymatous nephritis, for the experience of clinicians in general, together with the carefully prepared statistics of Bamberger, Fürbringer, Weland, and other writers, have shown how seldom even a passing albuminuria is met with in the early stage of the disease, and that a well-marked nephritis at this time is of extreme rarity.

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