TRICHOMONAS VAGINALIS.

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Dr. Geo. Dock has so ably reviewed the brief literature pertinent to this parasite, in the June number of the American Journal of Medical Sciences, that I do not intend to duplicate his work, but because of our imperfect knowledge of the conditions under which it invades the human organism, I place on record the observations which I have made.

A single case of infection by trichomonas has come under my observation. The patient upon whom I found this parasite was suffering from nephritis with mild uremia and glycosuria. It is probable that the infection by trichomonas had no relation to these maladies.

In August, 1894, Mrs. —— of Portage City, Wisconsin, came to my office and I recorded the following history and symptoms: She had had no severe illness since childhood. During the last two years she was much depressed and worried for good reasons. She lost forty pounds of flesh in the past year, but is still rather obese and of a ruddy complexion. Last summer she suffered much from thirst and drank copiously to satisfy it. She was also much tormented for a time by pruritus of the genitalia. In the fall she noticed some edema about her ankles. At Christmas time frequent attacks of asthma kept her awake at night, and occasionally by day shortness of breath and palpitation troubled her. Sugar was found in her urine a month or two later.

She was not, when she visited me, making an abnormal quantity of urine and gave no history of having done so. She suffered moderately from flatulent indigestion. Her bowels were regular. She was extremely nervous and her sleep was much disturbed. She felt no pain, but complained of weakness, especially in the lower part of her legs, of lack of energy and endurance. Her pulse was regular, about 80; it was accelerated in part by the excitement of an examination, and tense. A satisfactory physical examination of her heart could not be made because of the thickness of the walls of the chest. The cardiac sounds were normal except the second sound over the aorta, which was accentuated. There was nothing abnormal in her breathing, her respiratory sounds were quite natural and resonance was uniform and good over her chest. The liver was not enlarged. She did not urinate

with undue frequency, nor was there any pain while micturating. Her feet were moderately edematous, as were her legs half-way to the knees. She said the edema disappeared entirely during the night.

A sample of urine made at my office was not quite clear, of a normal amber hue, acid in reaction, had a specific gravity of 1,030, contained two-tenths of 1 per cent of albumen, considerable sediment, and four grains of sugar to the ounce. In the sediment there was an abundance of pus cells, vaginal epithelium, large, round or oval, granular and brownish cells, and living, moving ameboid bodies, mostly of oval shape. A very few hyaline casts were also found in it.

A week later she reported not much change in her feelings. Sometimes slight involuntary twitching occurred in her legs and arms. She also felt at times mentally confused. She then told me that for six weeks her sight had not been as good as usual, either for near or distant objects, and that the right eye was the most impaired. She had failed to estimate the quantity of urine made in 24 hours. The sample which she brought looked like the last, but the amount of sugar was more than one-half less, the amount of albumen was the same. The sediment contained a few granular and hyaline casts, a moderate number of leucocytes, a few red blood cells and large, round cells, which contained some dark pigment granules. A few similar granules were observable in some of the leucocytes. The same ameboid bodies were present. The edema of her feet and legs had not changed much. The asthmatic attacks occurred a little less frequently.

During the next three weeks she was seen often. Her condition, with some fluctuations, gradually improved. The urine constantly contained squamous epithelium and flagellate bodies in varying numbers.

The middle of September she reported herself stronger; she slept well, ate better, was less frequently nauseated and experienced no dyspnea. Her bowels had been loose and she had had constant burning in the small of the back for ten days. There had been no edema for some time. She made three pints of urine daily. Its specific gravity was 1,020. It contained a trace of sugar and a slightly increased amount of albumen.

The last of September I received a letter from her saying that the nausea had again increased, the diarrhea continued; she was more flatulent and felt much depressed mentally. Her eyesight

seemed less acute. While in the city she had been unable to consult an oculist; I cannot therefore describe the nature of her eye trouble, but suspected it resulted from the albuminuria. She sent a sample of urine, but had not measured the amount made in twenty-four hours. Its specific gravity was 1,022. It contained no sugar and about one-tenth of 1 per cent of albumen. In its sediment there were a few small broken granular casts, numerous tailed epithelial cells, a few leucocytes and dead protozoa.

In October she wrote that she felt much better, stronger, no edema or asthma. She made approximately three pints of urine daily. The specific gravity of that sent to me was 1,020. It contained no sugar, a little less albumen, but the same sediment.

After this I did not hear directly from her. A year later a neighbor reported her in good health, but thinner than formerly. Recently, two years after the first examination, I heard again in an indirect way that she was living, cheerful and able to do considerable work, although somewhat feeble.

My attention was attracted to the protozoa at my first examination because of their movements and similarity to forms that I had often watched in stagnant pond and ditch water. The dead ones seen in later specimens of urine might readily have been overlooked, for the cilia attached to them could only be seen by very careful focusing. Their bodies might easily have been mistaken for unusually clear, oval or round epithelial cells. They were clear and homogenous in appearance. When dead they were mostly round, occasionally oval. When alive they were usually oval, especially if in motion. If they were attached, as often they were, to epithelial cells, they assumed various shapes. When in motion the forward end was generally narrowest and from it projected several rapidly moving cilia. Just back of these cilia on one side there appeared to be a line of short, moving cilia. But Kunstler has demonstrated that what appear to be short cilia in motion is an undulating membrane. Often at the other end of the protozoan a threadlike tail was visible, by which at times it was attached to epithelial or other cells. Several times I saw some of them with round bodies connected by a narrow neck, three or four times longer than most of the protozoa, with a smaller head, which bore the cilia and undulating membrane.

These micro-organisms interested me much, as I had never before seen anything like them in urine. The literature at my hand was so meager that I could get little help in studying them. As far

as I could learn, no pathological importance attached to them. I found that they died quickly in the urine, even if it was kept at body temperature. I was therefore led to believe that they were washed from the external genitalia, rather than from the bladder or kidneys. At my patient's second visit I examined carefully the genitalia. They were moist, not reddened, or in any way unnatural; perfectly clean. I found the ameboid bodies in large numbers in scrapings from the vagina, from the labia minores and from the meatus urinarius. They were so numerous that they could be studied well in their varying forms. They retained life much longer in these scrapings from the genitalia than in urine. They were also more readily stained by analine dyes, although the majority did not stain well by the methods I employed. The most satisfactory results I obtained with methyl blue. When colored by it a medium sized oval nucleus could be seen in many, but not in all. The protozoans averaged in length about two-thirds of a squamous epithelial cell from the external genitalia, but they were not so broad; many were decidedly shorter. The cilia were from one to one and a half times longer than the ameboid body. The tails or pseudopodia were oftener absent than present and very variable in length.

No symptoms were observed in this case which could be ascribed to the trichomonas, unless the presence of epithelial cells from the meatus urinaris and its neighborhood in unusual numbers can be considered abnormal. Their presence was probably due to the trichomonas. This form of protozoan has been found by other observers in the intestine, vagina, urethra and bladder, and possibly in one case may have come from the pelvis of the kidney. In December last Schmidt, in the Muenchener Medicinishe Wochenschrift, reported from the clinic at Bonn the finding of flagellate protozoa in the sputa of three patients. They were always found in Dietrich plugs. In all three cases there was dilatation of bronchi. Schmidt called them trichomonas pulmonalis, but admitted their identity with trichomonas vaginalis.

These micro-organisms have been called by different observers trichomonas vaginalis, trichomonas hominis, trichomonas intestinalis, trichomonas pulmonalis, cercomonas hominis, cercomonas vaginalis, etc.

Most writers upon trichomonas believe it nonpathogenic. In the case described by Dock it seems probable that it provoked a chronic cystitis. Hematuria occurred occasionally in this individual during the period of infection. Dock points out the coincidence

of attacks of hematuria and infection by trichomonas in several of the cases reported by other observers, and suggests that some cases of supposed malarial hematuria may have been due instead to trichomonas infection. It is quite possible that in the bladder it may cause inflammation and even hemorrhage, although innocuous in the vagina and rectum.

Urine is examined so frequently and so carefully and these flagellate protozoa are so rarely seen in it by clinicians, or even mentioned in text-books as occurring in it, that infection of the urinary channels by them must be considered uncommon. The literature of the subject as collected by Dock is small. A few articles have appeared since his. The infrequent description of trichomonas in the secretions of the mucous membranes oftenest infected by them, I believe, is proof of its rare occurrence in man in spite of R. Blanchard's (1) assertion that it can be found commonly if sought for.

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