INFECTIONS WITH TRICHOMONAS VAGINALIS

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DISCUSSION

The President, Dr. S. M. Laird (Manchester), said that infestation with Trichomonas vaginalis in both male and female was of great importance to the venereologist. It was necessary to know much more about diagnostic methods and the epidemiology of this infection, and progress in treatment was also essential. For some years, venereologists had felt strongly that research on these problems was much needed and Miss Whittington's excellent paper indicated that a promising start had already been made.

Dr. J. A. Burgess (Wakefield) thanked Miss Whittington for her most instructive and interesting paper.

Miss Whittington had stressed that, in the diagnosis of trichomoniasis, superior results were obtained by the use of cultural methods in addition to wet films. He asked the lecturer if she would give details of the culture and transport medium which she used.

In the vast majority of cases, examination of films of vaginal secretion from patients with trichomonas vaginitis showed numerous pus cells; but, in rare cases, wet films showed living flagellates and large numbers of epithelial cells, but no leucocytes. Was there a non-pathogenic strain of T. vaginalis?

Dr. R. R. Willox (London), having congratulated Miss Whittington on her painstaking and most useful work, expressed interest in the incidence of trichomonads in Skene's tubules. In all of the three cases in which they were found in the bladder, they were found in Skene's tubules also, and the possibility that bladder infestation was secondary to infection of these tubules was not unlikely.

It was interesting to note that the lavatory habits of the women with trichomoniasis were approximately divided by half into those who sat and those who did not. Both groups were equally apt to deposit the parasite on the seat. If the disease was commonly acquired in the lavatory, it would be expected that female patients with trichomoniasis would show a higher percentage of sitters than nonsitters and some control figures of the female population at large would be helpful.

Finally Dr. Wilcox, in noting the failure of local therapy in cases of urinary trichomoniasis, inquired whether the newly flaunted 2-acetylamino-5-nitrothiazole preparations had been tried. This drug he understood was of great importance in preventing blackhead disease in turkeys and in the saving of millions of birds each year. Blackhead disease was caused by a flagellated protozoon. Two preparations (Tritheon and Trichorad) of 2-acetylamino-5-nitrothiazole were on the British market, advertised as potent orally against trichomoniasis. His own experience of the drug in vaginal trichomoniasis had been most disappointing, and he would be glad to hear of the experience of others of its effects in other sites. Of twelve cases of vaginal trichomoniasis treated with oral Tritheon, ten had been followed, and T. vaginalis had been found in all of them without any difficulty after one week. He felt that the drug might have been prematurely applied to human medicine by analogy from veterinary experience but, this time, the wrong kind of turkey has been chosen!

Dr. R. D. Catterall (London) described a series of fourteen patients treated with Trichorad, and stated that there had been no therapeutic effect after using one tablet three times a day for 10 days in any of the cases. Furthermore, samples of urine at the completion of treatment showed no anti-trichomonal effect.

He had also treated 23 patients with local Trichomycin pessaries, and a control series with S.V.C. The relapse rate with Trichomycin at the end of one month's observation was twice as high as with S.V.C. A group of patients had been treated with oral Trichomycin in high doses, but no therapeutic effect whatever had been seen after 14 days' treatment in any of the patients, nor did the urine show any anti-trichomonal effect.

Dr. E. Dunlop (London) stated that he had had a little experience with oral trichomonicidal agents.
At Oldchurch Hospital, there was a small study in progress in which volunteer patients received the recommended oral dose of "Triheon" for trichomonal vaginitis, or, in alternate control cases, the same number of matching tablets of calcium lactate. So far, five patients in each group had completed their 10-day course of treatment, during which they had been tested every second day. Trichomonads had persisted in all cases and "Triheon" appeared to be ineffective. It had become difficult to extend this series as it was obvious to the patients that those who received pessaries experienced prompt relief from their symptoms while those who received "tablets" did not. He thought that such oral preparations should not be advertised and should be used for trials only.

Dr. W. Neville Mascal (London) asked Miss Whittington if she had found it essential to subculture the cultures daily in order to preserve the strain. He, and others he knew, had experienced difficulty owing to a strain dying out suddenly for no apparent reason. One day the trichomonads would be quite healthy and the next day they would all be dead.

He also asked whether Miss Whittington had found any evidence of spore formation. He was convinced that this was the only explanation for some of their difficulties, such, for instance, as the frequent relapses or re-infections. He was still unable to prove that there was a resting stage.

He agreed with Dr. Catterall regarding the oral therapy of *T. vaginalis* infestations. At the Endell Street Clinic, they had clinically tried several of these preparations and had found them most unsatisfactory, in fact, practically useless. Three male cases of urethritis that were treated with a 10-day course showed probably more trichomonads at the end than at the beginning.

He thought it a pity that these preparations had been advertised in Great Britain apparently without having been given a proper clinical trial, and that such exaggerated claims had been made for them. It must have been most misleading for the general practitioner.

Dr. R. Lees (Edinburgh) also congratulated Miss Whittington. He stated that his experience since 1940 had convinced him that staining methods for *T. vaginalis* were not satisfactory and could not be relied on for diagnosis. He emphasized that *T. vaginalis* could also be found in the sub-preputial sac and particularly near the frenum. He asked whether the speaker had carried out investigations of the Bartholin glands as a source of persistent infection in the female.

Mr. A. J. King (Whitechapel Clinic, London) said that Miss Whittington had given evidence for her claim that cultures in a good medium were superior to smears in the diagnosis of trichomonial infection. The difference between smears and cultures was greater than her figures indicated, because she, as a research worker and a very diligent person, was able to spend from 20 to 30 minutes in examining each smear before excluding the presence of the trichomonal parasite. This was much more time than the ordinary clinician in a busy clinic could possibly give to this task, and it was therefore certain that cases would be missed if a good cultural technique was not employed as a routine.

Miss Whittington's results were interesting and carried knowledge of the infection a stage further. However, it was clear that they had a great deal to learn. The lack of correspondence between the findings in male and female contacts was very striking, and suggested, not that the infection was acquired without sexual intercourse, but that the tests had not yet reached a degree of reliability which would enable the organism to be found in all or nearly all cases in which it was present. It was to be hoped that the example that Miss Whittington had set would be a stimulus to the improvement of diagnostic methods, which were the key to further advances.

Miss J. Whittington, in reply to Dr. Burgess, said that the formula of the culture medium for *T. vaginalis* which she had used was given in a paper by Dr. J. G. Feinberg and herself to be published in the *Journal of Clinical Pathology*. Stuart's transport medium was described by Moffett, Young, and Stuart (1948).

She went on to say that they must all be familiar with, and puzzled by, cases of vaginal trichomoniasis like those described by Dr. Burgess, in which the flagellates were found in what appeared to be healthy vaginas. The reason for this condition was not known. The existence of different strains of *T. vaginalis*, some with pathogenic properties and others of a purely saprophytic nature, had not so far been proved. In those cases in which trichomonads were found in women with no subjective symptoms, and whose vaginal secretions contained Döderlein's bacilli and few or no leucocytes, the parasites had apparently established a symbiotic relationship with their hosts at whose expense they lived, but to whom they caused no inconvenience. If that balance were upset, the parasites would either die, or, by their efforts to re-establish themselves, evoke counter measures in the host with the appearance of symptoms. The different clinical pictures (acute and
chronic infections, and carrier states) might be due rather to the different reactions of the hosts than to specific "strains" of the flagellate.

In reply to Dr. Mascall, she made it clear that, when using the term "strain", she was referring to trichomonads from a particular patient. The word was used simply for the sake of convenience and for want of a better one, and had not the same connotation as when it was used for a strain of Entamoeba histolytica for instance.

Strains of T. vaginalis freshly isolated from patients grew more slowly in culture than those which had been maintained in vitro for some time. The latter might have to be transferred to fresh tubes of medium every other day, or even daily, to prevent the strain from dying out, whereas freshly isolated strains might live for 4 or more days in the same tube.

The size of the inoculum and the temperature at which the tubes were incubated also affected the growth of the cultures, and consequently the necessity for subculturing. A tube containing 10 ml. culture medium inoculated with 50,000 trichomonads would take longer to reach its maximum population than one receiving 500,000 flagellates. If strains of T. vaginalis are kept at +32°C. instead of at +37°C., the parasites would grow more slowly, and the strains could be left for 3 or 4 days without subculturing.

There was, at present, no reliable evidence of a spore stage comparable with the thick-walled, drought-resistant cysts of Giardia (Lamblia) or Entamoeba, in the life history of any species of Trichomonas. The "cysts" and "pseudocysts" of T. vaginalis described by Lydon (1945) and others were probably rounded-up and non-motile trophic trichomonads. The well-known susceptibility of T. vaginalis to drying (her own experiments with trichomonads in vaginal material exposed on laboratory seats showed that positive cultures were never obtained from dried material) strongly suggested that no spore stage existed.

She further said that it was worth recording, in this connexion, that peculiar "giant" forms of T. vaginalis were sometimes seen in culture. These forms, which were large, roughly spherical, and relatively inactive, had many nuclei, each of which was accompanied by a set of flagella and an undulating membrane. Such forms often attained considerable size (about 100 μ or more in diameter) and were reminiscent of the schizont forms of Eimeria and Plasmodium. They were prominent in young subcultures and could be seen most frequently on the day following inoculation. They disappeared as the subculture grew older. In a Giemsa-stained smear of a culture containing such forms, 65 nuclei were counted in one of them.

Similar phenomena were described by Wirtschafter (1954) in his cultures of T. vaginalis.

It would be interesting to discover the origin and fate of those peculiar forms. What were the conditions for their formation? Did they break up into a large number of uninucleate flagellates? Were they an essential stage in the life history of this protozoon?

In answer to Dr. Lees she said she was interested to hear that his experience of the inadequacy of stained preparations in the diagnosis of T. vaginalis infections agreed with her own.

Not having made a detailed study of the contents of Bartholin's glands, she could not provide any first-hand evidence as to whether those were foci of infection with T. vaginalis. In the cases of two women with abscesses of Bartholin's gland who attended the Whitechapel Clinic of the London Hospital, no trichomonads could be found in fresh smears or cultures of the aspirated pus. One of the two women had recurrent trichomonal vaginitis, although no trichomonads were detected in fresh smears of the vaginal secretion at the time at which the material from her Bartholin's gland was examined.

REFERENCES