

## DETECTION OF *T. vaginalis* IN WOMEN\* COMPARISON OF "WET SMEAR" RESULTS WITH THOSE OF TWO CERVICAL CYTOLOGICAL METHODS

BY

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Cytologists have recognized *Trichomonas vaginalis* in stained preparations of cervical and vaginal material for a number of years (Papanicolaou and Traut, 1943). However, clinicians have been slow to accept the cytological diagnosis of *T. vaginalis*, possibly because the organisms may be reported in women who are asymptomatic, and possibly because they may be seen in fixed smears when motile forms are not found in fresh wet preparations (Papanicolaou and Traut, 1943; Way, 1963). The object of this investigation was to assess the value of stained smears in the diagnosis of trichomoniasis by comparing the findings obtained by two differently stained cervical smears, fresh wet preparations and a culture method, in women under 25 years of age. We chose this age group to combine the study with an assessment of the value of cervical cancer screening in young women.

### Material and Methods

We studied 100 consecutive female patients aged 18 to 25 years attending a Venereal Diseases Clinic. At their first attendance a fresh wet specimen of vaginal secretion was examined by phase-contrast microscopy using a  $\times 40$  objective, and another vaginal specimen was inoculated into Oxoid's *Trichomonas* Culture Medium. At the same time two cervical smears were taken with an Ayre spatula (Ayre, 1951) and wet-fixed in alcohol. One cervical smear was stained by Papanicolaou's method and examined for trichomonads and neoplastic cells, while the other was stained with Unna-Pappenheim stain (Bancroft, 1967) and examined for trichomonads. Positive smears contained trichomonads recognized as distinct structures usually larger than neutrophil leucocytes and containing a definite eccentric granular nucleus. All patients whose secretions yielded positive cultures also had positive results to wet smears, and the culture results are therefore not included.

### Results

*T. vaginalis* was found by one or more of the three methods in thirty of the 100 cases. Seventeen cases were positive by three methods, eight by two, and five by one. All three methods were negative in seventy cases. Hence there was agreement between three methods in the cases of 87 patients and disagreement in thirteen. These results are shown in greater detail in Table I.

TABLE I  
POSITIVE AND NEGATIVE RESULTS FOR THE THREE METHODS

Method			Results	
Papanicolaou	Pappenheim	Wet Smear		
17	17	17	Positive	by 3 methods
5	7	4		by 2 methods
2	2	1		by 1 method
24	26	22	Total Positive by each method	
70	70	70	Negative	by 3 methods
3	3	4		by 2 methods
3	1	4		by 1 method
76	74	78	Total Negative by each method	

When the results of the three methods are arranged in pairs, Papanicolaou and Pappenheim show 91 per cent. agreement, Papanicolaou and wet smear 92 per cent. agreement, and Pappenheim and wet smear 91 per cent. agreement. McNemar's binomial test (Siegel, 1956) shows no significant difference between these results ( $P > 0.01$ ), and it can therefore be stated that all three methods were equally reliable under the conditions of this study.

Atypical squamous cells were seen in one Papanicolaou-stained smear and cone biopsy of this patient's cervix showed carcinoma *in situ*.

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### Discussion and Conclusions

Hughes, Gordon, and Barr (1966), studying women attending a Gynaecology Clinic, reported finding trichomonads much more often in stained smears than in wet smears (Table II). On the other hand Kean and Day (1954), studying 300 women attending a Cancer Prevention Clinic, found trichomonads in 10 per cent. of fresh wet smears and in 12·3 per cent. of stained smears. These results are similar to ours, and the agreement between the methods we used indicates that the organism was correctly identified by each method. In Papanicolaou-stained smears changes in squamous cells associated with trichomonal infestation have been confused with malignancy, but no such difficulty was encountered in this series. We consider that a cytologist experienced in identifying *T. vaginalis* in stained smears can detect this organism as reliably by this as by the wet smear method.

TABLE II  
COMPARISON OF WET AND STAINED SMEAR RESULTS  
IN THREE SERIES OF PATIENTS\*

Authors	Date	No. of Patients	Positive Results (per cent.)	
			Wet Smears	Stained Smears
Hughes and others	1966	305	18·9	55·1
Kean and Day	1964	300	10·0	12·3
Present Study	1969	100	22·2	24·0 and 26·0

\*The findings refer to one examination of each patient.

As already mentioned the Papanicolaou-stained cervical smear showed suspicious cells in the case of one 22-year-old patient and further investigation by cone biopsy revealed carcinoma *in situ*. In 100 patients the finding of one such case was probably fortuitous, but Oller (1965), screening 136 women aged 16 years and over attending a Venereal Disease Clinic, found five with cervical cancer, three of them invasive; the youngest was aged 25 and she was one of those with invasive disease. Lucas, Glover, and Attwood (1968) found 22 patients under the age of 26 years with dysplasia or cervical cancer in a series of 214 women with abnormal cervical cone biopsies. Our finding indicates that it is advisable to take cervical smears from all "high risk" patients, such as those attending Venereal Diseases Clinics, irrespective of age.

### Summary

A group of 100 young women attending a venereal diseases clinic was studied to assess the value of

stained smears in the diagnosis of trichomoniasis. There was no significant difference between the results of two differently stained cervical smears and fresh wet vaginal smears, and it is therefore concluded that an experienced cytologist can give a reliable diagnosis of trichomonal infestation. Papanicolaou-stained smears provide simultaneous cancer screening and in one 22-year-old woman atypical cells in the smear were found to be due to carcinoma *in situ*. It is suggested that, irrespective of age, all women in "high risk" groups should be screened for cervical cancer.

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### Détection de la trichomonase chez la femme

#### SOMMAIRE

Un groupe de 100 jeunes femmes consultant dans une clinique de maladies vénériennes fut étudié pour apprécier la valeur des préparations colorées dans le diagnostic de la trichomonase. Il n'y eut pas de différence significative entre des étalements cervicaux colorés par deux techniques différentes et les prélèvements vaginaux examinés à l'état frais; on en conclut qu'un cytologiste expérimenté peut fournir un diagnostic de valeur de l'infestation à trichomonas. L'examen des prélèvements après coloration de Papanicolaou assure en même temps le dépistage du cancer et, chez une jeune femme de 22 ans, la présence de cellules atypiques dans l'étalement se trouva due à l'existence d'un cancer *in situ*. Il est proposé que, quelque soit l'âge, toutes les femmes représentant des groupes de "haut risque" soient examinées systématiquement pour la recherche du cancer du col.