

# Comparison of direct microscopy and culture in the diagnosis of trichomoniasis

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'The discovery of the growing spread of trichomoniasis is due to improved methods of research. Increased morbidity has accompanied inadequate treatment and is especially due to the confused view of the problem, which is a joint task for gynaecologists, venereologists, and urologists. It may be described as a venereal disease because it is transmitted in the great majority of cases by sexual intercourse. It is so widespread and causes so much ill-health among young women that it is becoming an important social problem. It is necessary to treat both men and women to eliminate the parasite from its innermost hiding places.'

So wrote Nicoletti (1961) shortly after the testing of metronidazole by the French workers Durel, Roiron, Siboulet, and Borel (1960). That metronidazole was to revolutionize the treatment of trichomoniasis was apparently not realized by these workers, but it was amply demonstrated within a short time by Rodin, King, Nicol, and Barrow (1960) and other venereologists in the United Kingdom and elsewhere. In spite of the widespread use (or misuse) of metronidazole (Flagyl) and the more recently introduced nimorazole (Naxogin), however, trichomoniasis continues to be not only a highly prevalent but often a distressing condition and Nicoletti's remarks are still relevant.

The elimination of trichomoniasis depends not only on the treatment of the obvious case in which the patient presents clinically complaining of an irritating greenish yellow discharge and an unpleasant odour, but also on the detection and successful treatment of the condition in the 'carrier' patient who has mild symptoms or none, or who accepts her vaginal discharge as 'normal' because 'every woman has a discharge anyway'.

For the successful detection of the condition, various techniques are available and the present paper reports an attempt to assess the value of some of these techniques in female patients.

## Identification of the trichomonad

Apart from clinical assessment, the methods of identifying *Trichomonas vaginalis* in women are threefold; I have used only the first two.

- (1) Examination of fresh preparations from the vagina or urethra by direct microscopy;
- (2) Culture in artificial media;
- (3) Microscopic examination of stained preparations.

## DIRECT MICROSCOPY

In this method a fresh specimen of the vaginal secretion is transferred by means of a sterile wire loop or by glass pipette or plastic spoon from the vaginal vault to a glass microscope slide and examined under a cover slip using either oil immersion high power, dark-field, or phase contrast microscopy. The parasite is readily recognized by its oval shape, its usually rapidly moving flagella, the rippling movement of the undulating membrane, and its jerky movements. Time and experience are essential for good results and the immediate examination of the specimen is important.

## CULTURAL METHODS

Various culture media have been used with varying success. In the United Kingdom the four most commonly used media appear to be:

- (i) Feinberg-Whittington (F-W) medium (1957).
- (ii) Squires-McFadzean (S-M) medium (1962).
- (iii) CPLM (cysteine-peptone-liver-maltose) medium (Johnson and Trussell, 1943).
- (iv) Lowe's semi-solid agar medium (Wilkinson, McSwiggan, Turner, Rycroft, and Lowe, 1972).
- (v) Stuart's carrier medium is also valuable as a transport medium for *Trichomonas vaginalis* (Whittington, 1957; Nielsen, 1969).

Various claims have been made regarding the efficacy of these media and their value has been compared to that of simple direct microscopy. Rayner (1968) found that CPLM medium was

more sensitive than either S-M or F-W, F-W medium being more sensitive than S-M. Her findings were at variance with those of Whittington (1957), particularly in the case of male patients. But if different results have been obtained by different workers with different culture media, an even greater divergence of opinion is evident as to the value of culture methods in comparison with the simpler and more straightforward method of direct microscopy. Thus Woodcock (1972) stated that cultural methods were not substantially more reliable or more sensitive than simple microscopy, an opinion shared by Morton (1972), Jones (1972), and Campbell (1972). Thin, Melcher, Tapp, Nicol, and Hill (1969) found that cultures and direct microscopy gave similar results. Hoffman, Kilczewski, and Malysko (1961), using a different culture medium from any of the above, found 17.6 per cent. of positive cases on direct microscopy and 18.9 per cent on culture in 410 subjects. Wilkinson and others (1972) state that the cultural technique is more sensitive than either direct microscopy or staining methods. This opinion was shared by Feinberg and Whittington (1957) who found that 23.5 per cent. of their female cases gave positive results on culture but negative results on direct microscopy, though a higher percentage of smears than cultures were positive in the case of urethral samples from males; they concluded, however, that a combination of the two methods gave a higher number of positive findings. Similarly, Seale (1972) states that cultures for *Trichomonas vaginalis* are less important than those for *N. gonorrhoeae* because in most patients with trichomoniasis the organism is easily found on direct microscopy. Seale notes, however, that cultures for the *Trichomonas* sometimes prove that a discharge is due to this organism when it might otherwise be missed.

The present investigation was carried out on patients attending the venereal diseases clinics at the Royal Victoria Hospital and Ulster Hospital in Belfast.

### Material and methods

At her first visit each patient has routine smears taken from the urethra, vaginal vault, cervix, and rectum for examination for gonococci. A specimen of secretion is

taken from the vaginal vault for direct microscopy for *Trichomonas vaginalis* and a swab for culture is taken at the same time and inserted immediately into the culture medium. A culture is also taken routinely for *Candida albicans*.

Immediate direct microscopy is carried out, employing either the high power or the dark-field technique. Various culture media have been used including CPLM and F-W media, both of which have given disappointing results. Lately Oxoid medium (Oxoid Laboratories) has been used with increasing success after disappointing earlier results. The inoculated medium is incubated at 34°C. for from 24 hrs to 5 days. A sample is taken from the bottom of the unshaken tube of medium as close as possible to the swab containing the discharge, and this is examined at 24 hrs, 3 days, and 5 days. If no growth is found at 5 days the specimen is discarded (Huckerby, 1973).

### Results

The results obtained using Oxoid medium are set out in the Table, which shows that there is little difference between the results obtained at the two clinics.

It is obvious, however, that better overall results are obtained by using both direct microscopy and culture than by either method alone, a point made by Feinberg and Whittington (1957) and by Seale (1972), amongst others. In the present investigation, 22.3 per cent. of cases would have been missed using culture only and 13.7 per cent. would have been missed had culture not been used. Among the 13.7 per cent., direct microscopy had been negative at the first visit but it was positive at the second visit (before the start of treatment) in 4.6 per cent., culture being positive on both occasions. This, however, still leaves 9.1 per cent. of cases which would have been missed if culture had been omitted.

### Summary

The results of direct microscopy and culture on Oxoid medium in 175 female patients from two Belfast clinics are compared. A higher percentage of positive results was found on direct microscopy alone but over 9 per cent. of cases would have been missed had culture been neglected.

TABLE Results at the Royal Victoria Hospital and Ulster Hospital and both combined

Result	Royal Victoria	Ulster	Both
Total positive by one or both methods	100 <sup>a</sup>	75	175
Microscopy and culture +	62	50 (66.7 per cent.)	112 (64 per cent.)
Microscopy + culture -	22	17 (22.7 per cent.)	39 (22.3 per cent.)
Culture - microscopy +	16	8 (10.6 per cent.)	24 (13.7 per cent.)

<sup>a</sup>This represented roughly 14 per cent. of all females seen during the time of the study

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### Comparison de la microscopie directe et de la culture dans le diagnostic de la trichomonase

#### SOMMAIRE

On a comparé les résultats de la microscopie directe et de la culture sur milieu Oxoid chez 175 malades femmes de deux cliniques de Belfast. Un pourcentage plus élevé de résultats positifs fut obtenu avec la seule microscopie directe mais on aurait laissé passer 9 pour cent des cas si l'on n'avait pas eu recours à la culture.