

VAGINAL CYTOLOGY IN LOWER GENITAL TRACT INFECTION

by

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Extensive research work has been done during the past two decades on the role of chronic infections of lower genital tract—especially those caused by trichomonas in development of dysplasias of cervix. Koss and Durfee (1959) described cytological changes in acute and subacute trichomonas infections and showed that some of the nuclear changes caused by trichomonas might be mistaken for dysplastic changes. He also proved the existence of symptomless trichomonas infection. Smolka and Soost (1965) described cytological features of acute and chronic candidal infections. Schroeder (quoted by Smolka and Soost 1965) classified mixed bacterial infections and Reid (1959) described the pure coccal variety of infection.

Material and Method

In about 20% of smears submitted for cyto-hormonal study, hormonal evaluation could not be done due to the presence of infection. Instead of discarding these smears with the report, "inflammatory smear cyto-hormonal evaluation not possible", an attempt was made to find

out the causative organisms. Clinical picture, wet smear studies and bacteriological culture reports were correlated with cytological data to assess the accuracy of cytology in detecting the causative organism.

Observations

One thousand eight hundred and seventy-one smears were studied. Trichomonas infection was the commonest followed by mixed bacterial group. Candidal infection was the least common (Table I). In all acute trichomonal infections the patients had acute vaginitis. Other coexistent inflammatory lesions are given in Table II. Trichomonas exerted such a profound and characteristic influence on the general smear pattern that the presence of the protozoan could be suspected long before the organism was actually seen and identified. Smears often had a peculiar orange shade when stained by Papanicolaou stain. Vacuolated superficial, intermediate and parabasal cells were seen in various proportions. Inflammatory exudate was predominantly histocytic. Often vaginal cells were parasitised by histiocytes. Cell nuclei looked active. Multinucleation, anisocytosis and hyperchromasia were seen frequently. Margination of the nucleus by chromatin so that the nucleus appeared empty was common. Degenerative nuclear changes

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TABLE I
Type of Infection

Type of infection	Organisms		Mixed bacterial infection
	Trichomonas	Candida	
Acute infections	257	146	218
Sub-acute infections	614	219	417

TABLE II
Clinical Lesions Seen in Trichomonas Infection

	Acute infection	No. of patients Sub-acute infection
Cervicitis	257	396
Vaginitis	257	292
Erosion cervix	74	106
Endocervicitis	53	92
Nabothian follicles	58	204

like karyorrhexis and pyknosis were often seen. Characteristic "Perinuclear halo" occurred in majority of cases. This vacuolation was seen in superficial and intermediate cells. Nucleus was round and often somewhat pyknotic and was surrounded by a clear, smooth concentric vacuole (Fig. 1). Association of perinuclear halo with trichomonas infection was so constant that Koss, Wachtel and others think that it is a specific effect of trichomonas on the cell. Smolka and Soost, however, opine that the perinuclear halo only indicates a favourable cellular environment in which trichomonas thrive. Whatever may be the reason the association is common enough to enable one to suspect trichomonas infection and search for the organism.

Identification of the parasite is not as easy as in the wet film. They appeared as small shapeless cells—usually pale gray in colour, scattered between cells with a small indistinct oval nuclei. They often occurred in clusters (Fig. 2).

Cytological changes in subacute infection were similar to those in acute trichomonal infection except that exudation

was less and lesser number of parabasal cells were exfoliated. Nuclear changes were not so marked but 'perinuclear halo' was very prominent. Occasionally, in an otherwise normal smear numerous trichomonas were seen—a state of infestation described by Koss and Durfee (1959).

Candidal infection also existed in acute and subacute forms. Various lesion seen with candidal vaginitis is shown in Table III. Smears from these

TABLE III
Lesions in Candidal Infection

	Acute	Sub-acute
Vaginitis	40	192
Vulvovaginitis	105	32
Erosion cervix	6	15

patients showed shed epithelial cells in varying stages of degeneration, with remarkable quantity of amorphous debris. Inflammatory cellular exudation was minimal. Doderliens bacilli were abundant and bacterial cytolysis was very prominent. Candida in its budding form

was easily recognised (Fig. 3). The co-existence of bacterial cytolysh and candidal infection seems to imply that the fungus relishes the acidic glycogen rich medium.

In about a third of acute and sub-acute infections vaginal cytology failed to reveal either trichomonas or candida. Type of clinical lesions seen in the cases are given in Table IV. Smears mainly

TABLE IV*
Lesion in 'Mixed' Bacterial Infection

	Acute	Sub-acute
Vaginitis	218	317
Cervicitis	98	358
Erosion cervix	42	129
Nabothian follicles	16	107

consisted of sheets of polymorphous degenerating vaginal cells and bacterial clusters; wet smears confirmation the absence of trichomonas and candida. Bacteriological culture when done often revealed mixed flora. It was presumed that at least in majority of these cases mixed bacterial flora were responsible for the infection.

Summary and Conclusion

A search for the etiological agent was

made in 1871 cytological smears from patients having inflammatory lesions of lower genital tract. Clinical picture, wet smear studies and bacteriological culture reports were correlated with the cytological data to assess the accuracy of cytology in detecting the causative organism. Trichomonas infection was the commonest and most easily identified. Candidal lesions were least common and the organism could be identified if meticulous search were made. Etiological agents could not be identified cytologically, in mixed bacterial infection.

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See Figs. on Art Paper VI