



COMPARISON OF CONVENTIONAL CYTOLOGY SMEARS AND LIQUID BASED (SYNERMED GLUCYTE®) SMEARS IN BREAST ASPIRATES – MORPHOLOGY AND IMMUNOCYTOCHEMISTRY

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Background

Liquid-based cytology (LBC) is well established in exfoliative cytology, but only recently applied to Fine Needle Aspiration Biopsy (FNAB) specimens. These LBC studies of breast aspirates showed good correlation with conventional smear cytology (CSC) with the added advantages of ease and speed of screening and the availability of cells for adjunctive investigations. Synermed® is offering a LBC preparation that is non-automated and relatively inexpensive, making it more applicable to third world markets.

Objective

To determine if the Synermed® LBC fixative and technique when applied to breast FNAB specimens would provide adequate diagnostic material, and to determine its suitability for immunocytochemistry.

Method

38 consecutive patients referred to the FNAB Clinic at Tygerberg Hospital for breast masses underwent routine FNAB according to standard protocol. Conventional smears were prepared first, the residual in the needle was subsequently rinsed in Synermed® preservative for preparation in the laboratory according to the Synermed® manual technique. The LBC slides and the CSC were evaluated by two pathologists. The parameters assessed were cellularity, background, representative diagnostic material and preservation of cytomorphologic features.

ICC using antibodies to pan keratin (MNf 116) - Dako® and estrogen receptors (ER) - Novocastra® was performed on both LBC and CSC, and the intensity and proportion of staining graded. Grade 0 = negative, grade 1a = positive (CSC > LBC), grade 1b = positive (CSC = LBC), grade 1c = positive (CSC < LBC).

Table 1
Yield and quality of Conventional smear cytology (CSC) vs. Liquid based cytology (LBC)

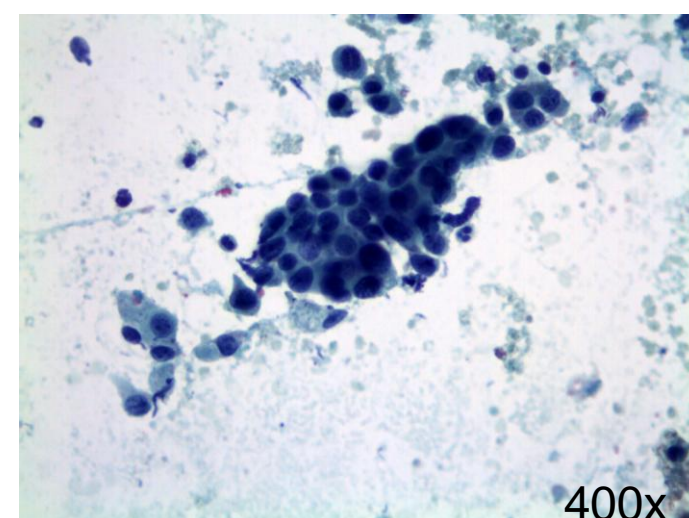
Grade	CSC	LBC
I. Inadequate/ not representative	6 (15.8%)	10 (26.3%)
II.Suspicious but not diagnostic	2 (5.3%)	1 (2.6%)
III.Diagnostic	30 (78.9%)	27 (71%)
IIIa Adequate	19 (50.0%)	9 (23.7%)
IIIb Excellent	11 (28.9%)	18 (47.4%)
Total	38	38

Results and Conclusion

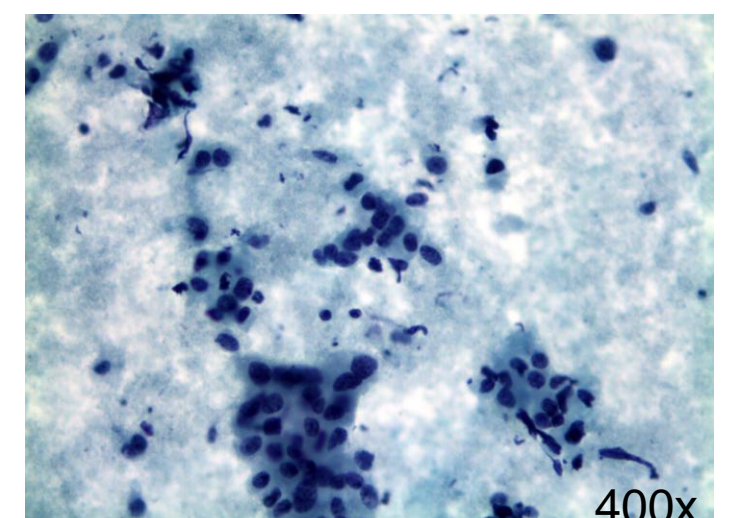
In 5 cases the aspirates were inadequate for diagnosis on both CSC and LBC. In the remaining 33 cases there was insufficient material in an additional 1 of the CSC case and 5 of the LBC smears. The LBC method was limited to the use of residual material. Adequacy for CSC was 84.2% and LBC 73.7% while CSC was diagnostic in 78.9% of cases and LBC 71% of cases. The LBC smears showed excellent results with both the cytoplasmic (MNf 116) and nuclear (ER) antibodies. The Synermed® LBC fixative and preparation method provides an alternative modality for obtaining well fixed and prepared slides from inexperienced aspirators.

Table 2
Immunocytochemistry for ER and MNF – results and yield of Conventional smear cytology (CSC) vs. Liquid based cytology (LBC)

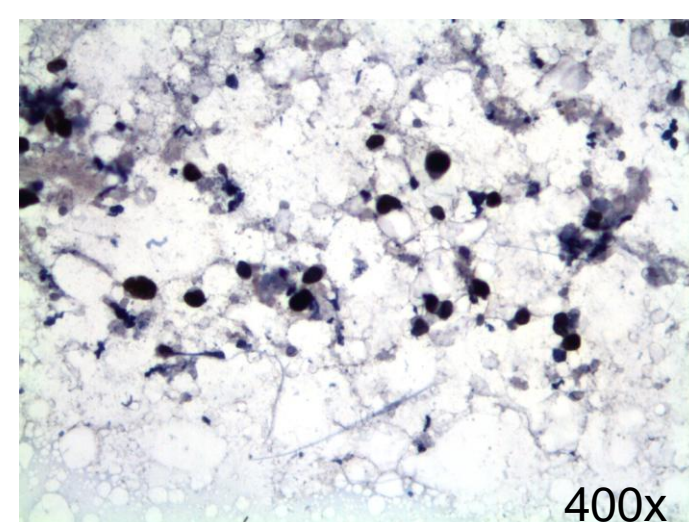
Grading	ER		MNf	
	CSC	LBC	CSC	LBC
Negative 0	10	12	2	2
Positive 1a	1		7	
Positive 1b		4		10
Positive 1c		4		4
Only CSC positive	5		1	
Only LBC positive		3		1
Total	24	24	24	24



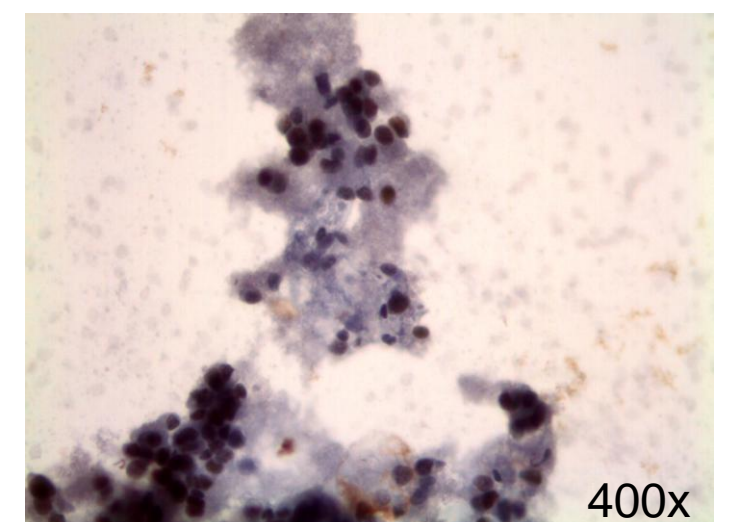
Breast CA CSC - Pap



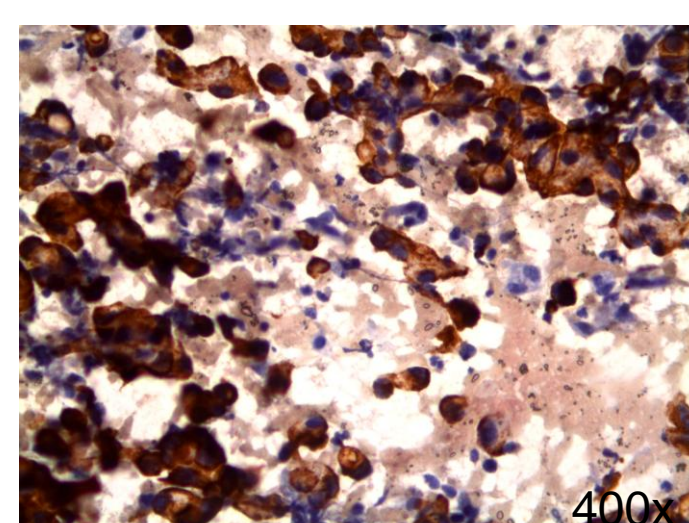
Breast CA LBC - Pap



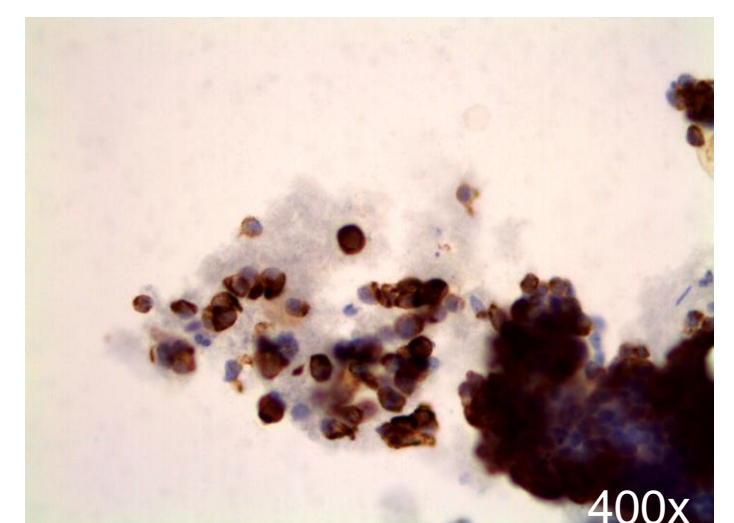
Breast CA CSC - ER



Breast CA LBC - ER



Breast CA CSC - MNF



Breast CA LBC - MNF

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