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RESEARCH ARTICLE

TOUCH IMPRINT CYTOLOGY AND ITS CORRELATION WITH HISTOMORPHOLOGIC FINDINGS IN LYMPHADENOPATHIES

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ABSTRACT

Background: As one of the great philosopher has rightly said "Old is gold", Touch imprint cytology is older technique than any other technique which gives a quick and promising results, also it is less expensive, technically easy and does not require additional infrastructure like frozen section.
Aim: To evaluate role and efficacy of imprint cytology in early diagnosis of various lymphadenopathies, to correlate the imprint cytology findings with histomorphological diagnosis and to establish suitability of the procedure.
Materials and Methods: Study comprised of 50 prospective cases of lymphadenopathy undergoing excision in minor and major operation theatres. Touch imprints were prepared, stained with different stains and findings were noted. These lymph nodes were then subjected for histopathological analysis to create a correlation between them.
Results: The commonest age group came out to be 4th and 5th decade with a female preponderance. The overall accuracy rate of touch imprint cytology technique as compared to histomorphologic findings came out to be 98%, sensitivity 90.91% and specificity 100%.
Conclusion: Thus, Touch imprint cytology should be as a protocol for every case of lymphadenopathy undergoing excision as it is proved to be extremely effective as a diagnostic tool, as well as safe, inexpensive and expeditious.

INTRODUCTION

The lymphatic system - described by Erasistratus in Alexandria more than 2000 years ago (Russell and Williams, 2004). Since then "On the spot" diagnosis is an urgent requirement of the surgeons and to know that the biopsied lymph node is reactive, tuberculous or malignant. Dudgeon and Patrick in 1927 first described the use of imprint smears of fresh tissues in the rapid diagnosis of tumors (Dudgeon and Patrick, 1927).

MATERIALS AND METHODS

This prospective study was conducted from January 2006 to December 2007 in which 50 cases were studied. For Imprint smears stains used were-1% aqueous Toluidine blue, Papanicolaou stain, Leishman stain, Ziehl-Neelsen stain and on histopathological sections Hematoxylin-Eosin (H and E) staining was done and only histpathologically proven non-Hodgkins lymphoma cases were subjected to Leucocyte common antigen(LCA).

RESULTS

The number of males was 18(36%) and females were 32(64%). The male to female ratio was 1:1.78. In the present study the youngest patient was male child of 1 year and oldest was a male aged 70 years, showing a wide range of age distribution.
The three main study groups were-malignant, reactive lymphadenopathy (specific) and reactive lymphadenopathy (non-specific) which were further divided into individual cases (Table 1)

The most common site was cervical lymphadenopathy that were 20(40%) followed by axillary lymphadenopathy came out to be 11(22%). In our study correlation was excellent as, x^2 = 44.32, P<0.0001, sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy were 90.91 %, 100%, 100%,97.5% and 98% respectively. Thus, there is highly significant association between histomorphological and cytological diagnosis in study groups (Table 2).

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Table 1. Distribution of different cases on touch imprint cytology

Study Groups	Individual cases	No of cases	Percentage
Malignancy	Non Hodgkin lymphoma	4	8
	Hodgkin lymphoma	2	4
	Metastasis	5	10
Reactive lymphadenopathy (Specific)	Tuberculous Lymphadenitis	15	30
	Necrotizing lymphadenitis (Kicuchi's)	2	4
Reactive lymphadenopathy (Non Specific)	Reactive (Non Specific)	22	44
	Total	50	100

Table 2. Correlation between histomorphological and cytological diagnosis in study groups

Cytological diagnosis	Histopathological diagnosis		Total (%)
	Malignant (%)	Reactive hyperplasia (%)	
Malignant	10 (20)	0 (0)	10 (20)
Reactive hyperplasia	1 (2)**	39 (78)	40 (80)
Total	11 (22)	39 (78)	50 (100)

**: False negative cases

Table 3. Comparison of sensitivity and specificity of present study with the studies

S.No.	Author	No. of cases studied	Sensitivity	Specificity
1	Tamiolakis D *et al*	36	88.80%	100%
2	Asthana S *et al*	30	87.50%	95.40%
3	Edward A. L *et al*	50	64%	100%
4	Ratanawichitram A *et al*	55	82%	100%
5	Arif S.H *et al*	102	95.05%	98.69%
6	Orki *et al*	255	93.10%	99.50%
7	Present Study	50	90.91%	100%

DISCUSSION

Our study showed female preponderance having an average age of 46 years however, in study done by Orki et al there was male preponderance with overall average age of 54 years. Cervical lymph nodes (40%) were the most common group involved in present study similar findings were also observed by Prasad *et al.* 1993. There were four diagnostic categories: reactive change, non-Hodgkins lymphoma, Hodkins lymphoma and secondary malignancy in the present study as shown in Table 1. Similar diagnostic categories were also assigned by Molyneux *et al*. 1997. In the present study out of 50 cases, Imprint cytology of 80% cases were reactive lymph node which is supported in study done by Ultmann *et al.* 1958. However, study done by Ademilyi *et al* 1986 showed only 34%of reactive lymph nodes. Biopsy was done in all 50 cases and was correlated with touch imprint smears. Out of 50 cases, touch imprint cytology diagnosis of 49 cases (98%) correlated with histological diagnosis, while one case (2%) did not correlate. This one case diagnosed cytologically as reactive lymph node was non-Hodgkins lymphoma such observation has been reported earlier by various authors (Ultmann *et al.,* 1958; Ademilyi *et al.,* 1986; Moore and Reagan, 1953). According to these studies, in non-Hodgkin lymphoma the cells were usually monotonous lymphoid cells differing little from normal of reactive lymph node cells (lymphocytes). Thus, in present study there was only one false negative, according to Motomura *et al.* main reason for false- negative results of imprint cytology was poor quality of the imprint samples because of sampling error (Motomura *et al.,* 2007). The accuracy range of different workers varied from 77.8% to 99.4% (Latifa Ghandur-Mnaymneth and Jose PAZ, 1985; Kenichi *et al.,* 2004; Asthana *et al.,* 2003).

The present study has accuracy rate of 98%. The sensitivity and specificity of present study was 90.91%, 100% respectively and is compared with various studies as shown in Table 3.

Conclusion

Touch imprint cytology of lymph nodes is handy, economical and quite an effective tool due to its simplicity, rapid availability of reliable results and low cost for accurate diagnosis of lymph node lesions. Imprints taken without excessive pressure helped us to reduce the false positivity rate. Results of our study were outstanding and comparable with those of others. Touch imprint cytology is suitable for practice in areas with scant resources and also where cryostat is not available. Touch imprint cytology should also be used to complement routine histopathology of various lymph node disorders

REFERENCES

Ademiluyi, S. A., Akinyanju, O. O., Mordi, V. P..N. Evaluation of lymph node imprint in rapid diagnosis of lymph node biopsy specimens. *J Clin Pathol* 1986; 39:688-689

Arif, S. H., Hassan, M. J., Jain, M., Verma, A. K. and Naim, M. Role of imprint cytology in diagnosis of lymph node lesions. *Ind Med Gaz*. 2011;145(10):385-90

Asthana, S. Suryanarayana, Deo, S. V., Shukla, N. K., Jain, P., Anand, M. and Rajive, K. *Head and neck J* 2003, 25(5):368-372

Dudgeon, L. S. and Patrick, C. V. A new method for the rapid microscopical diagnosis of tumours, with an account of 200 cases so examined. *B J Surg* 1927;15;250-61

Edward, A. L., Perry, S., Stephen, A. S., Gregory, W., Andrew, B. and Kim R. G. Intra-operative imprint cytology for evaluation of sentinel lymph nodes from visceral malignancies. *J of Gastrointestinal Surg*. 2003; 7(5):687-691

Kenichi, O., Tatsuo, K., Akira, H., Naoki, Y., Keiichi, T. and Fimihiko, I. Ann Thorac Surg. 2004; 78:1190-1193

Latifa Ghandur-Mnaymneth and Jose PAZ. The use of touch preprations (Tissue Imprints) in the rapid intra-operative diagnosis of Metastatic lymph node disease in cancer staging procedures. Cancer 1985; 56:339-344

Molyneux, A., Attanoos, R. and Coghill, S. The value of lymph node imprint cytodiagnosis :an assessment of interobserver agreement and diagnostic accuracy. Cytopathology 1997; 8(4):256-264

Moore, R. D. and Reagan, J. W. Cellular study of lymph node imprints. Cancer 1953;6:606-61

Motomura, K., Nagumo, S., Yoshifumi, K. and Hiroki, K. Intraoperative Imprint of sentinel nodes Metastases in breast cancer. *Breast Cancer* 14:350-353, 2007

Orki, A., Tezel, C., Kosam, A., Ersev, A., Dudu, C. and Arman, B. Feasibility of imprint cytology for evaluation of mediastinal lymph nodes in Lung Cancer. *Japanese Journal of clinical Oncology* 2006; 36(2):76-79

Prashad, R. "Role of fine needle Aspiration cytology in the diagnosis of lymphadenopathy". *Indian J Chest Dis Allied Sci* 1993, 35(l):27-29

Ratanawichitram, A., Biscotti, C. V., Levy, L. and Crowe, J. P. Touch imprint cytological analysis of Sentinel lymph nodes for detecting axillary metastases in patients with breast cancer. Br J of Surg. 1999,86(10):1346-1348.

Russell, R. C. G, Williams, N. S. Bailey and Love's short practice of surgery, 24 Ed, New York:Oxford University press. 974pp. 2004

Tamiolakis, D., Papadopoulos, N., Venizelos, J., Lambropoulou, M., Ramanidis, C. and Petrakis, G. *et al*. Intra-operative touch imprint cytological analysis of sentinel lymph nodes for the presence of metastases in breast cancer. Onkologie int *J. for cancer research and treatment* 2006; 29(8-9): 112-116

Ultmann, J. E., Koprowska, I. and Engle, R. L. A cytological study of lymph node imprints. Cancer 1958; 11:507-524

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