IMPRINT CYTOLOGY IN FRESHLY RESECTED SURGICAL SPECIMENS

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ABSTRACT

INTRODUCTION

Intra operative imprint smears are extensively used in neoplastic & non-neoplastic conditions. This has been proved beneficial in tumors of breast, thyroid parathyroid, head and neck tumors, kidneys, reproductive organs & in general deep seated solid viscera where in preoperative access for biopsy is difficult. Misdiagnosis or over diagnosis of carcinoma has been prevented through the study of imprint cytology. It is an acceptable and reliable method within the field of cytopathology.

RESULTS

The study was done in Dr. B. R. Ambedkar Medical College. One hundred cases were evaluated from 1995 to 2012 in freshly resected Lymph nodes, soft tissues, kidney, prostate, thyroid and bone. The slides were revived for cytological and histopathological analysis and the results were tabulated.

KEYWORDS

Touch smears, Benign and malignant conditions, Imprint cytology.

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INTRODUCTION: Imprints prepared from fresh surgical specimens give excellent cytological clarity. Imprint cytology has also provided an effective tool in the assessment of adequacy of samples obtained from freshly resected surgical specimens. Assessment of the adequacy of the specimen and immediate interpretation of the results leads to better treatment planning and reducing patient anxiety.

Intra-operative imprint smears are being increasingly used to evaluate the sentinel lymph node. The efficiency of the touch imprint preparation technique has been proven so far in the diagnosis of diverse tumours including breast,[1]gastrointestinal tract,[2]lymph nodes[3] and bone marrow. Jacobs et al.[4]Demonstrated that Touch Imprint Smears (TIC) of core needle biopsies of non-palpable breast cancers was highly informative and it decreased the number of biopsies required for diagnosis. Gentry et al. showed that TIC smears of pelvic lymph nodes in patients with prostate cancer were a simple and highly sensitive method for the detection of lymph node metastases. Similarly, Chiecoet al.[5] [6]and Lo et al. revealed that touch imprint cell preparation from Core Needle Biopsy (CNB)of the prostate was a useful technique contributing to histopathological evaluation.

AIM: The aim of the study was to evaluate the accuracy and adequacy of intra operative touch smears and to correlate its cytology with histopathological findings.

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MATERIAL AND METHODS: The tumour was bisected to note the macroscopic features. The cut surfaces were pressed onto a clean glass slide and fixed in 95% methanol.

Special emphasis was given to tumour-bearing area and rapid H & E staining was done. The interpretations were done by the cytopathologist. The results of the imprint smears were compared with the paraffin sections.

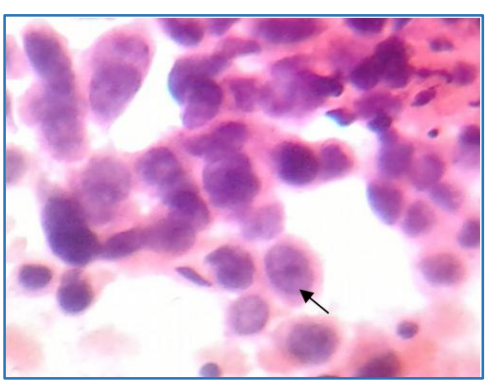

Fig. 1: Amelanotic melanoma. Tumour cells revealing prominent nucleoli

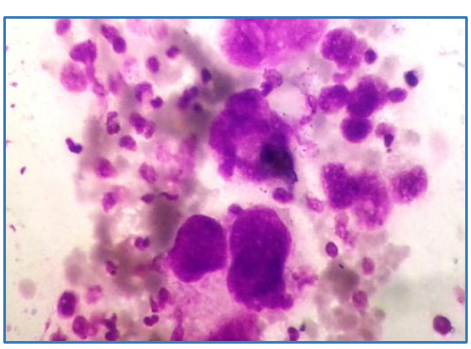

Fig. 2: Soft tissue sarcoma showing pleomorphic giant cells and lipid vacuoles

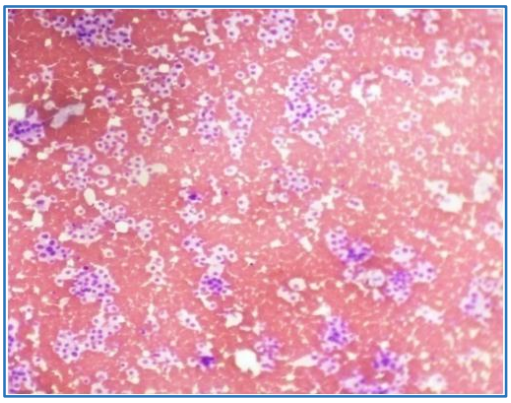

Fig. 3: Renal cell carcinoma showing clear polygonal cells

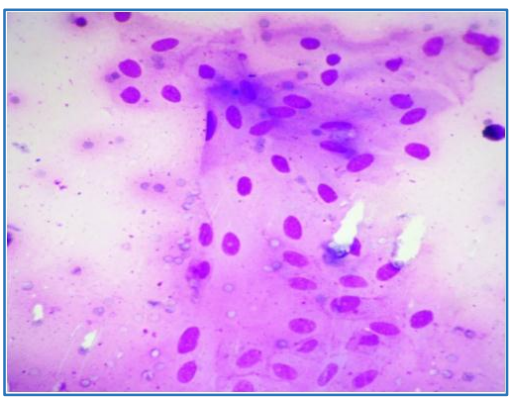

Fig. 4: Hashimoto's Thyroiditis Showing epithelioid histiocytes

OBSERVATIONS/RESULTS: The study was done in Dr. B. R. Ambedkar Medical College. One hundred cases were evaluated from 1995 to 2012 in various freshly resected organs like Lymph nodes, Soft tissues, Kidney, Prostate, Thyroid and Bone.

Sl. No.	Organs Studied	No. of Cases
1.	Lymph nodes	30
2.	Soft tissues	25
3.	Kidney	10
4.	Prostate	10
5.	Thyroid	20
6.	Bone	5
Total		**100 Cases**
Table 1		

The slides were reviewed for cytological and histopathological study, results are tabulated as follows.

Sl. No.	Lesions	No. of Cases
1.	**Lymph Nodes**	**Total: 30**
1a.	Benign lesions-e.g.: Reactive Lymphadenitis and Tuberculosis	20
1b.	Metastatic deposits	10
2.	**Soft Tissues**	**Total: 25**
2a.	Benign	20
2b.	Malignant	5
3.	**Renal System**	**Total: 10**
3a.	Benign-renal angiolipoma	1
3b.	Malignant-renal cell carcinoma	9
4.	**Prostate**	**Total:10**
4a.	Benign	7
4b.	Malignant	3
5.	**Thyroid**	**Total:20**
5a.	Benign including cysts	15
5b.	Malignant including cysts	5
6.	**Bone**	**Total: 5**
6a.	Malignant lesions	5
Table 2		

Exclusion Criteria: Necrotic and hemorrhagic areas (Non-viable areas).

Inclusion Criteria: Entire cut surface at five to six areas (viable areas).

DISCUSSION: The touch imprint smear is an acceptable and reliable method within the field of cytopathology. The technique involves touching a specimen on to a glass slide without compressing the tissue. The technique is simple, cost effective, preserves the original sample for permanent fixation and appears to be reliable. [7, 8]

Aspiration effect during core biopsy sampling is one of the important factors that increases the efficiency of the touch imprint technique. It is a simple and highly sensitive method for the detection of lymph node metastases. TIC smears of core needle biopsies of non-palpable breast cancers were highly informative and it decreased the number of repeated biopsies. [9,]

In the literature, there is little published information about the use of imprint cytology in diagnosing prostatic carcinoma Mannweiler et al found imprint cytology helpful in diagnosing prostate malignancy, particularly in clinically suspicious cases with an elevated Prostatic Specific Antigen (PSA) level and a digital rectal examination, which had previous routine biopsies with an inconclusive result for malignancy. Willemset al concluded that this method had a central role in diagnosis and management of prostatic carcinoma, including post-therapy follow-up. In our study, imprint cytology in prostatic carcinoma yielded adequate material and the cytological interpretation was readable. This was noted in known cases of carcinoma of prostate

Our study established that the TIC smears were a quick, easy and reliable method to evaluate the cytomorphological features. It is found that in thyroid aspirates that are Hasihmoto's Thyroiditis, epithelioid histiocytes which were missed on FNAC could be appreciable in imprint cytology. In Lymph node aspirates, prominent eosinophilic nucleoli were seen as seen on histopathology, which has been quoted in the literature also. In Soft tissue sarcoma smears, minute details could be evaluated such has lipid vacuoles and multinucleated giant cells in ease. Hence, our study proves imprint smears are good enough to appreciate and interpret between

benign and malignant conditions. Adequacy and back ground of the smears were excellent to evaluate as there were no smearing artefacts or bloody back ground. Sensitivity and specificity of imprint cytology were determined to be very high.

CONCLUSIONS: Imprint smears are a simple, accurate, rapid and cost-effective method. In our study, we could appreciate cytomorphological features which were well preserved. The clarity of nuclear and cytoplasmic features was excellent for interpretation. Therefore, imprint cytology should be done on solid organs sparing necrotic, cystic and haemorrhagic areas. Serial slicing of the organ will be better in the above conditions.

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