

Formalin Sedimentum: Best from waste- A Single blinded study

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Received: 11/10/2017 Revised: 14/10/2017 Accepted: 23/10/2017

Abstract

Introduction: Sediment cytology is the cytological examination of smears prepared from sediment of the biopsy specimen fixatives. Analysis and interpretation of the cytological picture with correlation of clinical and radiological data allows early diagnosis.

Aim: To evaluate the role of sediment cytology of cut biopsy specimen fixatives.

Materials and Methods: The fixatives in which the biopsy specimens were received were centrifuged and cytological smears prepared and analyzed. The results were compared with histological diagnosis.

Results: Of 60 lesions studied by sediment cytology, 38 were benign, 12 malignant and 10 cases were inconclusive. Final histopathological diagnosis proved 15 lesions as malignant and 45 lesions as benign. Comparing the cytological diagnosis with histological sections, 50 out of 60 cases were concordant. The overall diagnostic accuracy of 83% was achieved.

Conclusion: Cut Biopsy fixative sediment cytology is a good ancillary technique that aids in early diagnosis.

Key words: Sediment cytology, fixative.

Introduction

Timely diagnosis of the disease process is cornerstone for initiation of the treatment. Early intervention and proper treatment helps to reduce mortality. Many techniques are evolved over years to aid in early diagnosis. One such method is biopsy sediment cytology.

Formalin is common fixative used in histopathology for proper preservation of

specimens. It contains many exfoliated cells from the cut surface of the specimen. It is usually discarded after the purpose is served. Instead of that, sediment and smears prepared from formalin, can be good source for cytological analysis. Cytoanalysis of such sediment preparation can help in early diagnosis, though the diagnosis is not definitive, it helps in early initiation of treatment.¹

Biopsy sediment cytology has been successfully evaluated in variety of lesions such as breast and cervix, esophagus and stomach, bladder, lung, bone lesions and ovarian neoplasms.²

Aim of the present study is to describe the cytomorphological features of different lesions,

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and to evaluate the role of sediment cytology in differentiating them into benign and malignant lesions.

Materials and Methods

Formalin that was used as fixative was the material for our study. Formalin from 60 specimens chosen randomly by random number table were included. The specimens were already cut and grossed. Variety of specimens ranging from inflammatory, benign, malignant were included. The specimen were agitated in the formalin to facilitate exfoliation and the formalin was allowed to settle for an hour. Supernatant was carefully pipetted out and discarded. 5ml of remaining solution was centrifuged at 1000rpm for 10min. The sediment from this was used to prepare smears on albuminized slides. Smears were stained by Papanicolaou and hematoxylin and eosin stains. The pathologist reporting the smears were blinded from the details about the specimen. The smears were evaluated subjectively to classify them as benign / malignant/ inflammatory smears based on cytomorphological features. Later the results were compared with histopathological diagnosis.

Results

The smears that showed features of malignancy such as increased nuclear cytoplasmic ratio, nuclear hyperchromasia, irregular nuclear membrane , moderate amount of cytoplasm were labelled as squamous cell carcinoma(Fig 1b), Two smears showed sheets of dyscohesive monotonous round cells which on histopathology were diagnosed as non Hodgkins lymphoma and small round cell tumour , ovary(Fig 1c). Three of the smears showed papillary architecture with pleomorphic columnar cells, labelled as papillary carcinoma of thyroid(Fig 1a) and infiltrating ductal carcinoma (Fig 1d). One of the smear showed pleomorphic cells with brown pigment in cytoplasm which turned out to be Malignant Melanoma on histopathology. The smears that showed no cellularity, were from adenocarcinoma intestine and one from carcinoma stomach.

Among the 45 benign lesions, 38 were satisfactory. Majority of the smears showed chronic inflammatory infiltrate along with benign epithelial cells. Background showed, colloid in colloid goiter (3 cases) bile pigment in chronic cholecystitis (3 cases). Among 7 benign cases which were unsatisfactory, there were 2 skin cases, cholecystitis and neurofibroma 2 each and 1 case of benign ovarian cyst.

Table 1: Correlation of sediment cytology and histopathology

	Satisfactory	Unsatisfactory	Total
Malignancy	12	3	15
Benign	38	7	45
	50	10	60

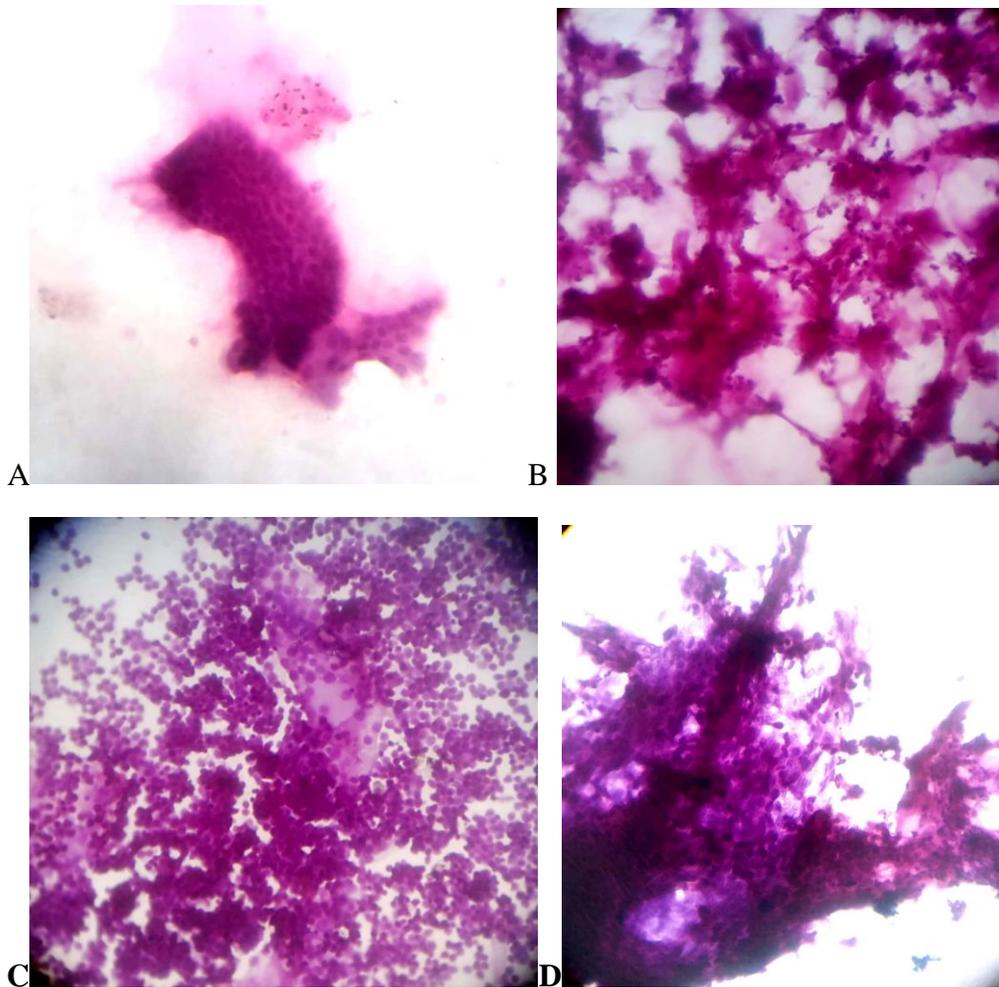


Figure 1: (A) Photomicrograph of thyroid cytology showing papillaroid pattern(H and E x40). (B) Squamoid cells seen in squamous cell carcinoma, (H and E x40). (C) Dyscohesive clusters of Small round cells in Small round cell tumour- Ovary (H and E x10).(D) Infiltrating ductal carcinoma showing anaplastic cells (H and E x10).

DISCUSSION

Biopsy sediment cytology is a new technique for rapid diagnosis of disease nature. It is easy, non-cumbersome, time saving, inexpensive technique to perform compared to frozen section.³ Hence it can be adopted at the centers where the facility of frozen sections are not available.⁴ Another added advantage is that, it is very useful technique, when the received biopsy is very tiny and inconclusive such as oral cavity lesions, guided biopsies from internal organs. Also this simple and easy

technique does not require any additional instruments.⁵

Of the 60 samples studied, 12 and 38 cases could be correctly labelled as malignant and benign respectively. The diagnostic accuracy was 83%. This was in concordance with other studies done by Valiathan et al with 79% and Shahid et al with 89% diagnostic accuracy. The yield of cells from benign lesions were unsatisfactory, concordant with studies done by Shah et al and Valiathan et al.

CONCLUSION

Cut biopsy fixative sediment cytology is a simple, inexpensive and rapid method ancillary technique that aids in early diagnosis.

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How to Cite this article : Nayak R, P Shashikala , K Rajashree . Formalin Sedimentum: Best from waste- A Single blinded study. *J Pub Health Med Res* 2017;5(2):23-26
Funding: Declared none Conflict of interest: Declared none