

DIAGNOSTIC UTILITY OF FINE-NEEDLE ASPIRATION (FNA) CYTOLOGY IN THE MANAGEMENT OF LIVER DISEASE IN A DISTRICT HOSPITAL: An evaluation of 50 cases at Murang'a and Machakos District Hospitals in Kenya.

T.L.Shiramba^{1*}, H.ALodeny², A.K.Gachii³, J.M Kabanga², J.K Kuria²

¹ King Faisal Hospital, Kigali (KFH,K), Rwanda.

² Kenya Medical Research Institute (KEMRI), Kenya

³ Kenyatta National Hospital, Nairobi, Kenya

ABSTRACT

Introduction: Fine-needle aspiration (FNA) cytology is a cost-effective technique of obtaining cellular specimens for diagnosis. It has many advantages over large needle core biopsies that make it quite suitable for out-patient departments and institutions without facilities for histopathologic diagnosis. Any site of the body can be sampled with FNA technique.

Methods: Patients with liver disease visiting Murang'a and Machakos District Hospitals were identified for study. Focal lesions of the liver were aspirated using a 21 gauge fine-needle attached to a 10ml syringe. Thin smears of specimens were spread onto microscope slides and the slides dropped into 95% ethanol for 30 minutes.

The smears were stained by the Papanicolaou stain and evaluated on the light microscope.

Results: 21 of the 50 (42%) specimens had malignant cells; 15 of 50 (30%) specimens were necrotic; 2 of the 50 (4%) showed fatty change; 1 of 50 (2%) showed reactive cell changes later confirmed on histology to be cirrhosis; and 11 of 50 (22%) showed normal hepatocytes.

Conclusions: The diagnostic utility of FNA cytology of the 50 patients with liver disease enabled diagnoses to be made for those patients. Clinical management options were based on the diagnoses made by fine-needle aspiration cytology. These results support the diagnostic utility of FNA cytology in the management of liver disease, especially in institutions without histopathology facilities.

Keywords: Cytology, Fine Needle Aspiration, Liver Disease, Hepatocellular Carcinoma

RESUME

Introduction : L'examen cytologique après aspiration avec aiguille fine (FNA) est une technique rentable pour obtenir des échantillons cellulaires dans le but diagnostique. Elle a beaucoup d'avantages par rapport aux grandes biopsies obtenues avec de grosses aiguilles. Elle est tout à fait appropriée aux patients reçus en ambulatoire et aux établissements dépourvus d'équipements pour le diagnostic histopathologique. N'importe quelle partie du corps peut être prélevée cette technique.

Méthodes : Des patients avec pathologies hépatiques fréquentant les hôpitaux régionaux de Murang'a et de Machakos ont été recrutés pour l'étude. Des lésions focales du foie ont été aspirées en utilisant une fine aiguille 21G fixée sur une seringue de 10 ml. Des frottis minces des échantillons aspirés ont été confectionnés sur lame porte objet et fixés à l'éthanol 95% pendant 30 minutes et ensuite colorés par la technique de Papanicolaou.

Résultats : 21 échantillons sur 50 (42%) ont montrés des cellules malignes; 15 sur 50 (30%) étaient nécrotiques ; 2 sur 50 (4%) ont montré une dégénérescence graisseuse; 1 échantillon sur 50 (2%) a montré cellules réactionnelles confirmés plus tard comme lésions cirrhotiques par l'examen histopathologique. Enfin, 11 échantillons sur 50 (22%) ont montré des hépatocytes normaux.

Conclusions : La technique utilisant la technique d'aspiration avec aiguille fine a permis de poser un diagnostic précis pour 50 patients présentant une affection hépatique. Des options de prise en charge cliniques ont été basées sur les diagnostics posés grâce à l'examen cytologique après aspiration par aiguille fine.

Ces résultats confirment la pertinence du diagnostic cytologique après aspiration par aiguille fine dans la prise en charge des patients avec affections hépatiques, particulièrement dans les établissements dépourvus d'équipements d'histopathologie.

Mots clés: Cytologie, Aspiration avec fine aiguille, Maladie hépatique, Carcinome Hépatocellulaire

INTRODUCTION

Liver diseases, particularly hepatocellular carcinoma, are common in Kenya. Resources for needle biopsy with subsequent histological diagnoses are not available in most district hospitals. Fine-needle aspiration (FNA) and cytology of aspirated cellular material is a cost effective technique of diagnosis that is easy to use in smaller health facilities (1- 4). In many centres, FNA has largely replaced conventional large needle core biopsy in the diagnosis of focal lesions in the liver (1-7). It has the advantage of less

discomfort, very low risk of complications, hospitalization of patient not necessary and enables a quick decision in options for clinical management (1-4). Its additional advantage is that it can be repeated from different sites until a satisfactory sample is obtained, without undue risks to the patient (1, 7). Use of imaging techniques make possible sampling of lesions, which may be inaccessible by other sampling methods, thereby making possible a tissue diagnosis in patients whose clinical conditions preclude other forms of obtaining specimens for investigation. Repeating of FNA from different sites has been reported to increase diagnostic sensitivity to over 90% (1, 2, and 3).

* Correspondence to:

Titus Shiramba
King Faisal Hospital, Kigali
P.O.Box 2534 Kigali-Rwanda
E-mail: tshiramba@yahoo.com

Dignostic Utility of Fine -Needle Aspiration

In the evaluation of liver disease, the main indications for FNA cytology are single or multiple focal abnormalities demonstrated by palpation, CT scan or by ultrasonography (4).

The aim of this study was to test the utility of FNA cytology in excluding malignant disease of the liver at district hospitals, where histopathology facilities are not established. The accuracy of FNA cytology in the specific diagnosis of primary hepatocellular carcinoma has been reported to increase to over 93% when combined with cell blocks (5,6). In this study only smears were used.

confirmed to be cirrhosis on histology, and 11 of the 50 (22%) showed normal hepatocytes.

Figure 1 shows ductal carcinoma cells, cribriform type, in liver aspirate; figure 2 shows papillary clusters of malignant cells in liver aspirate; figure 3 shows dyshesive, pleomorphic malignant cells in liver aspirate; and figure 4 shows necrotic liver cells in aspirate.

Table 1. Cytologic diagnoses of the 50 cases (n=50)

Diagnoses	N (%)
Hepatocellular carcinoma	21 (42%)
Necrosis*	15 (30%)
Fatty change	2 (4%)
Reactive cell changes	1(2%)
Normal Hepatocytes	11(22%)

Malignancy could not be excluded in the cases of necrosis

MATERIALS AND METHODS

Patients with suspected liver disease visiting Murang'a and Machakos District Hospitals were evaluated and those with nodular hepatomegally were indentified for study. All the patients evaluated had right upper abdominal complaint and all had hepatomegally. The lesions were located by palpation or ultrasonography. Focal lesions were aspirated by transcutaneous fine needle aspiration (FNA) using a 10ml syringe and 21 gauge 1½ inch length needle. The cellular material aspirated was dropped onto a microscope slide, spread thinly and then immediately fixed while still wet in 95% ethanol for 30 minutes.

The fixed smears were then air-dried, packed in slide-mailers and transported to the cytology laboratory at KEMRI in Nairobi. The fixed smears were stained by the Papanicolaou technique and interpreted on a light microscope by a cytologist.

RESULTS

50 patients were evaluated. Twenty one of the 50 (42%) specimens had malignant cells; fifteen of the 50 (30%) had necrotic cells; two of the 50 (4%) had fatty change; one of the 50 (2%) had reactive cell changes later

DISCUSSION

Diagnosis is an essential component of the management of any disease. FNA cytology established diagnoses on which the management of the 50 cases of liver disease was based: 21 hepatocellular carcinomas, 15 cases of necrotic liver, 2 cases of fatty change, 1 case of reactive hepatocytes and 11 normal livers. To get these diagnoses on tissue biopsies would have required many times the resources used for FNA cytology.

CONCLUSION

Diagnostic utility of FNA cytology is high, especially when the lesions are precisely identified clinically and augmented by liver ultrasound. It is less invasive, and can be done as an outpatient procedure. Clinical management options in these patients were made based on the cytological diagnosis. The results supported the diagnostic utility of FNA cytology in the management of liver disease, especially in institutions without histopathology facilities.

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APPENDIX

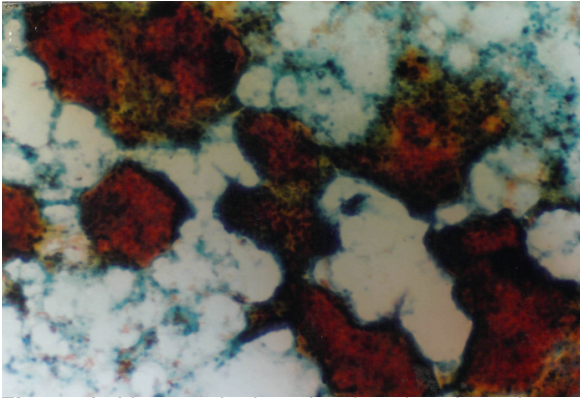


Figure 1: Liver aspiration showing ductal carcinoma in situ, cribriform type. Large monolayered sheet of uniform epithelial cells with rounded spaces Pap. stain X 40

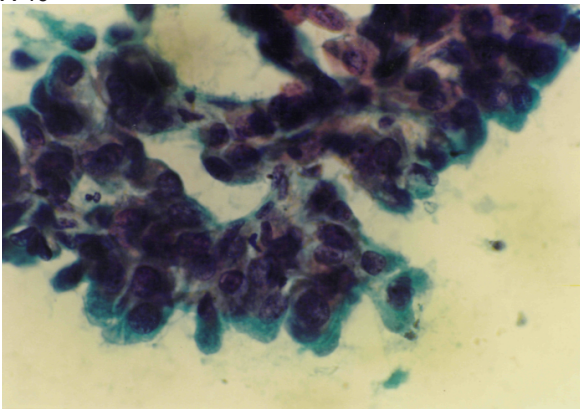


Figure 2: Pappilary clusters of pleomorphic malignant cells from a liver aspirate. Pap.. stain. X40

APPENDIX

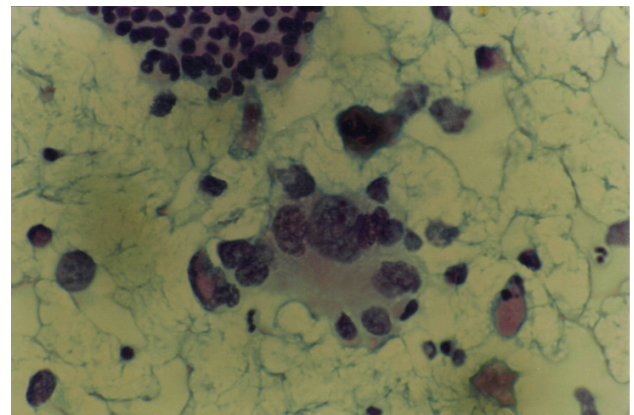


Figure 3: Dysshesive, pleomorphic malignant malignant cells exhibiting coarse chromatin and prominent nucleoli. Note a cluster of cholangiocytes with small hyperchromatic nuclei at thetop of the photomicrograph. Pap. Stain. X 40

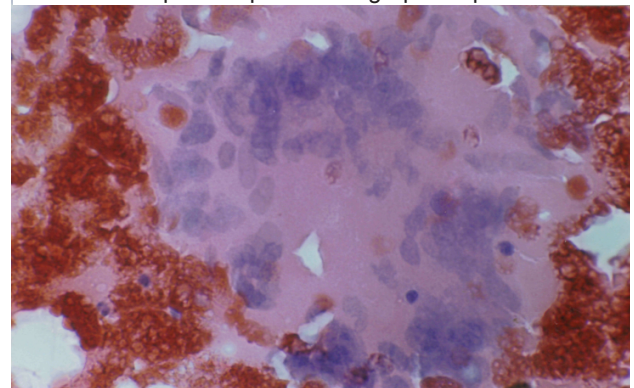


Figure 4: Ncrosis of liver cells from an aspirate degerative nuclei whose cytoplasmic borders cannot be discerned surrounded by erythrocytes. Pap. Stain. X40

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