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HISTO AND CYTO-PATHOLOGIC DIAGNOSES AT A RURAL HOSPITAL IN KENYA

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ABSTRACT

Background: Cancer has emerged as one of the common causes of morbidity and mortality in rural areas and as a major cause of premature deaths.

Objectives: To provide histo-pathology and cyto-pathology data in a rural district hospital and highlight on the common malignancies seen in a rural setting in Kenya.

Design: Prospective study.

Setting: Histopathology Department, Machakos Provincial Hospital, Machakos district, Kenya.

Subjects: Two hundred and sixty eight patients referred to Machakos laboratory for histopathology, fine needle aspirate or pap smear cyto-pathology were analysed.

Main outcome measures: Staining with routine stains such Pap stain, Haematoxylin and Eosin was effective method of making a primary accurate and definitive histo-pathology and cyto-pathology diagnosis in a rural district hospital setting.

Results: Histo-pathology biopsies comprised 71.6% of the total slides seen. Pap smear cervical cytology comprised 13.8% while fine needle aspirate and post-mortem biopsies comprised 12.3%, 2.2% respectively. The commonest histo-pathology biopsies seen were breast comprising 24% of the total cases, followed by endometrium contributing 14.9%, then followed by skin 11.5%, lymph node 11.5%, cervical 11%, and gastrointestinal 6.3%. Most of pap smear cyto-pathology showed evidence of infection comprising 54% while fine needle aspirate infections and malignancy showed equal rate 24% of all cyto-pathology seen during this study.

Conclusions: This is the first time histo-pathology and cyto-pathology data have been provided from a rural district hospital setting in Kenya. The malignant and pre-malignant pattern seen at Machakos General Hospital may be used to gain a broader picture of the common malignant conditions prevalent in any defined population in this country. This also serves as an important cancer epidemiological data in this region during the period of study.

INTRODUCTION

Numerous studies have been undertaken of medical conditions in hospitals in Kenya and East Africa depending on clinical diagnosis but very little information exists on histo-pathology and cyto-pathology diagnosis both of surgical biopsy and conditions requiring fine needle aspirate (FNA) or pap smear (1-3). Although histopathology has been practised for a relatively long time, cytopathology is a new discipline which has proved to be cheap, quick, accurate in making diagnosis for pre-malignant and malignant lesions. It has been used quite widely in screening for cancer of the cervix with remarked reduction of both mortality and morbidity in developed countries. On the contrary, Pap smear cytology screening has not been widely practised in developing countries due to lack of personnel and very little is known by the rural women of its usefulness as a screening procedure for the cancer of the cervix (1,2,4).

This prospective study attempts to evaluate the prevalence of histo-pathology and cyto-pathology

diagnosis in Machakos hospital and thereby give some indication of the relative prevalence of pre-malignant and malignant lesions seen in this laboratory during the period of study.

MATERIALS AND METHODS

This study was conducted at Machakos provincial hospital histopathology laboratory between September 1993 and December 1994. This is the largest hospital in Eastern Province and acts as a referral centre for five hospitals, namely Kangundo, Kathiani, Kitui, Makindu, Kajjido and Mwingi. It has in-patient bed capacity of 540 patients and out patient daily turn out of about 200 patients. Fine needle aspirate was done both as an out-patient and in-patient procedure for those admitted in wards with palpable masses. Most of the pap smears were done as out patient procedure at mother-child-health clinic while the histopathology specimens were taken both from out-patients and in-patients. Some specimens for histopathology were also received from other nearby hospitals.

Pap Smear Method (2,5): Smears were taken from the squamo-columnar junction in two steps in-corporating both the

endocervical and ectocervical areas. After visualisation of the cervix using normal speculum examination, a cotton tip application was inserted into the endo-cervix then rotated, withdrawn and discharged onto the glass slides. This was followed by Ayres spatula which was applied firmly and rotated through 360 degrees to swab the whole cervical region then discharged and mixed with the earlier specimen and smeared on a clean glass slide marked with the patient's name.

The smear was immediately fixed in a solution of 95% alcohol. After fixation, the slides were stained with routine Papanicolau stains according to the standard protocols.

Fine needle aspirate technique(2,5): Patients with palpable masses were referred to histo-pathology department for FNA. The aspirations were done both at out patient minor theatre and in the wards for those admitted with palpable masses.

Procedure: The area was inspected and the mass palpated to define the boundaries and parts close to the surface. The vascularity and safety for a blind procedure was then assessed and ascertained. After ascertaining that the syringe and the plunger moved freely and had adequate suction pressure by fixing the index finger at the tip of the syringe firmly and pulling the plunger halfway, a 21-gauge needle was attached on to it. The area was then cleaned with a spirit swab. The mass was immobilised by holding it between the fingers. Then the needle was pushed into the mass holding it perpendicular to the surface of the skin. Without changing the position, the plunger was pulled back to create a negative suction pressure and the needle moved up and down to loosen the cells to be easily sucked through the needle hole into the syringe. The needle was then withdrawn and material in the needle and syringe pushed to expel the contents on the glass slides marked with patient's name. The materials were immediately fixed in 95% alcohol/ether fixative. Routine Haematoxylin/Eosin staining was performed according to the standard protocols.

Histopathology method: After receiving the biopsies in laboratory already fixed in 10% formal saline the gross description was done by the author in terms of number, size, colour and consistency. The sections were sampled and put forward for routine processing and staining using the standard haematoxylin/eosin staining technique and then subsequent mounting on a glass slide.

RESULTS

There were two hundred and sixty eight patients investigated at the histopathology department. The majority of cases were for histopathology comprising 71.6%, Pap smear cytology 13.8%; fine needle aspirate, 12.3% while autopsy cases were 2.2% of the slides examined.

Breast was the leading organ contributing 24% of all biopsies examined, followed by endometrium comprising 14.9%, then skin, lymph node and cervix.

Breast showed the highest frequency of malignant lesions comprising 29.5% of all malignant lesions, followed by the cervix (21.4%), skin (16.6%) and lymph node (9.5%) (Table 1). Of all cervical biopsies examined, 85% were invasive malignant lesions while 52.2% breast biopsies examined revealed malignant lesions. This was in contrast to endometrial biopsies where 79% of the slides showed normal cycle and only 2% showed malignant transformation (Table - 2).

Table 1

Frequency of histo-pathology biopsies and malignant lesions in each organ

Organ	No.	%	Malignant	%
Breast	46	24	24	29.5
Endometrium	28	14.9	2	2.4
Skin	23	12	14	16.6
Lymph node	22	11.5	8	9.5
Cervix	21	11	18	21.4
Gut	12	6.3	6	7.1
Ovary	9	4.7	5	6
Eye	6	3.1	2	2.4
Prostate	5	2.6	1	1.2
Thyroid	3	1.6	0	0
Postmortem	6	3.1	-	-
Others	14	6.2	4	4.7
Total	192	100	84	100

Table 2

Prevalence of conditions as seen in biopsies taken

	Malignant		Benign		Normal		Total	
	No	%	No	%	No	%	No	%
Breast	24	52.2	21	45.2	0	0	45	100
Endometrium	2	7	4	14	22	79	28	100
Cervix	18	85	3	15	0	0	21	100
Ovary	5	55.3	3	33.3	1	11.1	9	100
Skin	13	56	8	34.6	2	9.1	23	100
Gut	5	41.6	5	41.6	2	16.6	12	100

Breast and cervix biopsies showed either malignant or benign lesion while most of the endometrial curettages showed normal cycle.

Table 3

Pap smear cytology

	No	%
Infections	20	54
Normal smears	3	8
Low grade squamous intraepithelial lesion	3	8
High grade squamous intraepithelial lesion	5	13.5
Malignant smears	3	8.1
Unascertainable smears	3	8.1
Total	37	100

Most of pap smear cytology had infective process comprising 54%. Abnormal smear contributed 21.5% of all smears seen and malignant lesions comprised 8.1% (Table 3). Fine needle aspirate had high cases that were reported as unascertainable 30.3%, malignancy and infection both contributed 24.2% of all fine needle aspirates seen while benign conditions comprised 15.2%.

DISCUSSION

In this study, slides for histo-pathology were the most frequent followed by Pap smear, fine needle and then

postmortem slides respectively. This was partly because histo-pathology is a diagnostic procedure and frequently requested by physicians for active management of patients. Autopsy practice in the hospital set up has reduced and will continue to reduce due to several factors including delays of the report both to the clinician and the relatives, poorly done post-mortems and the cost-effectiveness of post-mortem examination to the hospital administration(6). Cyto-pathology of Pap smear and fine needle aspirate is relatively a new diagnostic and screening tests and is yet to be popularised and accepted, especially at a rural setting where personnel and resources are minimal.

Malignant conditions for all the organs and systems examined are more common than benign lesions except the endometrium, the lymph node and the pap smears cytology. This indicates that most of the biopsied masses in this hospital were for diagnosing malignant conditions.

Although cancer of the cervix is considered as preventable disease due to cytological pap smear screening, 80% all the cervical biopsies revealed invasive malignant conditions and only 20% were pre - malignant conditions. This supports the concept that most of patients with malignant conditions in developing countries present late to hospital and thus the need to emphasise for pap smear screening exercise.

Breast malignant conditions represented 52.2% of all breast biopsies examined. This was lower than the frequency observed in cervical lesions probably due to self-examination and easy accessibility of the examination, which needs to be encouraged. Screening for breast cancer whether by mammography or regular physical examination by a trained health worker or both, has been demonstrated to reduce mortality in women by about 25% from breast cancer(7). Screening for breast malignancy by mammography is of greatest value in women aged 50-69 years, in developed countries. In sub-Saharan Africa women tend to develop breast cancer 10-15 years earlier than in Europe and North America. Breast cancer in younger women has been demonstrated to have a faster pre-clinical course and mammography is less sensitive. Screening both by mammography and self-physical examination for ten consecutive years can avert approximately 4000 deaths due to the fact that many women with early breast cancer can be treated with local resection followed by radiotherapy and axillary dissection. This reduces further the risk of local recurrence and rational use of adjuvant systemic therapy, which can in turn improve survival(7,8).

Breast and the cervical cancers were the most common malignancies. This showed that in this rural district hospital, female pathology was common and these findings call for attention to be paid to screening and early detection of breast and cervical pre-malignant and malignant lesions.

Most of the patients presented late when the disease had already metastasised to distant organs thus making treatment difficult, if not impossible. This corresponded with other studies where cancer of the breast has been seen as the most common malignant disease on a world-wide

scale with approximately 600,000 new cases diagnosed annually(9).

Cancer epidemiology is important and screening depends on the frequency of certain diseases in the population. Before setting a screening programme the epidemiology and the natural history of the condition to be screened for, the sensitivity and specificity of the screening method, its acceptability, its dangers and costs need to be taken into account(10). Both fine needle aspirate and pap smear cytology diagnosis, are quick, cheap and technically simple procedures thus suitable for cancer screening programmes(13).

The screening of female breast cancer by means of mammography and carcinoma of the uterine cervix by cytological smear, has eliminated or reduced these diseases in western world(5,7,10). These programmes need to be adapted if these cancers are to be controlled and prevented.

Malignant lesions of the ovary comprised 55.3% of all ovarian cases seen. Most of them were papillary serous adenocarcinoma. The rest comprised benign lesions mostly mucinous and serous cystadenomas. These tumours present late because by the time a patient notes abdominal swelling most of them are large for excision and have metastasised to the peritoneum and other distant organs.

Infection was present in 54% of all pap smear cytology examined. Low-grade and high-grade intraepithelial lesions comprised 21.5%, while malignant lesions constituted 8.1%. This trend further supports infection as a causative agent of cervical malignancy and the importance of pap smear cytology as a screening rather than a diagnostic test for a malignant condition(4).

Malignant lesions constituted 24.2% of fine needle aspirates; 15.2% were reported as benign, 24.2 % were infectious conditions, 30.3% were considered as unascertainable and 6% normal. Fine needle aspiration biopsy is a well-established diagnostic procedure where by minute sample of cellular materials are obtained for cytology examination. The cost-effectiveness of fine needle aspirate as relatively simple technique in an era of cost containment and government policies of shorter hospitalisation has led to the recent rise in its popularity world-wide. Fine needle aspirate cytology can be used in investigation of suspected malignant disease and may be useful in the diagnosis of variety of benign lesions, inflammatory and infectious conditions(5,12). In this study, 30.3% of fine needle aspirates were reported as unascertainable. This could have been due to various factors such as poor technique, fixative or poor history given to the pathologist since diagnosis by aspiration is as reliable as "the combined knowledge of the clinician and pathologist(4)".

In the developing countries, cancer control, prevention and surveillance is beyond the means of the national economics and it has become an option for the tiny population of society who comprise the clientele of doctors in commercial practice(13).

Cancer screening using Pap smear cytology, fine needle aspirate and tumour makers are all the essential ways of promoting health and early cancer detection by use of laboratory tests for detection of specific cancers or their processors and remains the only remedy in cancer related morbidity and mortality(11).

Both Pap smear and fine needle aspirate have been accepted as cheap, convenient and easily acceptable methods for the screening cancers of the uterine cervix and breast respectively. Tumour makers are ideal for screening for prostate cancer, hepatocellular cancer, gastric tumours, uterine and ovary cancer. Other malignant conditions like skin can be detected by regular simple visual inspection(11,13,14).

In conclusion, there is still much to be learnt about the pattern of histo-pathology and cyto-pathology diagnosis. It is hoped that this study has shed some light on the pattern currently seen at the Machakos General Hospital. Similar studies may be used to gain a broader picture of the common prevalent pre-malignant and malignant conditions since it is only from such hospital cancer epidemiological studies that the burden of cancer can be assessed in defined population. In underdeveloped countries, regional epidemiological cancer mapping is difficult because of lack of population-based cancer registries and information on cancer is mainly based on hospital records like in this one and this calls for the need for establishment of national central cancer registries(9).

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