The Myanmar Health Sciences Reserch Journal, Vol.2, No.2, 1990

Clinical, ultrasonic and pathologic analysis of ovarian tumours at the Central Women Hospital (A prospective study)

Katherine Ba-Thike, Nan-Oo*, Khin-Nyunt**, Saw-Lwin*** & Khin-San-Tint****

*Department of Obstetrics & Gynaecology, Institute of Medicine (1), Yangon
**Department of Obstetrics & Gynaecology, Institute of Medicine (2), Yangon
***Central Women Hospital, Yangon

During an 18 month period from 1st January 1988 to 30th June, 1989 90 cases diagnosed as ovarian tumours were admitted to Unit 11, Central Women Hospital. Pre-operative data collection on clinical features and ultrasonic findings were made. Following laparotomy, operative findings and histopathologic diagnosis were noted. 87 cases had a laparotomy. Out of 82 cases of ovarian tumours, 21 were malignant (25.6 per cent) and 61 (74.4 per cent) benign. The clinical and ultrasonic diagnostic accuracy of ovarian tumours were 87.35 per cent and 91.18 per cent. There was no statistical difference between the two methods in diagnosing ovarian tumours ($P>0.05$). The accuracy of differentiating malignant from benign ovarian tumours clinically, by ultrasound or by laparotomy using gross findings and histopathology as the definitive diagnosis was also calculated and there was no significant difference ($P>0.05$). The sensitivity, specificity, predictive values for positive and negative tests were calculated in differentiating benign from malignant ovarian tumours. It was found that clinical diagnosis had the highest sensitivity rate(73.68 per cent) whereas operative findings had the highest specificity rate (96.72 per cent).

INTRODUCTION

During the study period from 1st January 1988 to 30th June 1989, there were 237 cases of ovarian tumours out of a total of 2451 gynaecological admissions to the Central Women Hospital. The number of cases with a histological diagnosis of benign ovarian tumours were 190 and malignant tumours were 47.

Although benign ovarian tumours may be asymptomatic or give rise to symptomatology such as presence of a mass, abdominal discomfort or pain, the overall prognosis of benign ovarian tumours is good. However, malignant ovarian tumours tend to present with an altogether different picture. They tend to be asymptomatic. The presenting symptoms are usually of short duration and may be due to pressure alone or increased abdominal girth which may be attributed to middle age spread. These symptoms signify advanced growth and the overall 5 year survival is poor at 30% (1).

The traditional and time-honoured method of arriving at a diagnosis would be by taking a careful history and performing a thorough clinical examination. In recent years diagnostic imaging techniques, namely ultrasound scanning, nuclear magnetic resonance imaging and computerised tomographical imaging have emerged as ancillary aids in the diagnostic work-up. Indeed, there seems to be a tendency to rely heavily on these methods. One of the objectives of the study was to compare the accuracy of clinical skills to that of ultrasound imaging in the diagnosis of ovarian tumours. Another objective was to compare the diagnostic accuracy of various methods, viz clinical assessment, ultrasound examination and operative findings in the differentiation of benign from malignant ovarian tumours using pathological diagnosis as the definitive diagnosis.

The cornerstone of treatment for ovarian tumours and moreso for malignant ones is a staging laparotomy and surgery. In a country like ours where we have to put much reliance on operative findings to decide whether radical surgery is required, the correct diagnosis of malignancy at laparotomy is vital. Thus, testing the degree to which operative findings correlate with the definitive diagnosis would be helpful in determining the extent of surgery performed.

The third objective of determining the sensitivity and specificity of clinical, ultrasound and operative findings would indicate the degree of accuracy of diagnosing malignant ovarian tumours and the safe exclusion of benign ovarian tumours.

PATIENTS AND METHODS

This prospective study covered an 18 month period from 1st January 1988 to 30th June 1989. Included in the study were patients admitted to Unit 11, Central Women Hospital who were diagnosed as ovarian tumours either clinically or by ultrasound and patients with other clinical or ultrasound diagnoses who were found to be ovarian tumours at laparotomy. At first encounter with the patient, history taking and clinical examination were performed. This was followed by an ultrasound examination in most of the patients - 68 (75.55%) as circumstances permitted. At laparotomy, operative findings were systematically noted and recorded. In most of the patients 82-(89.13%), a histopathological diagnosis was obtained. The clinical examination and laparotomy were performed either by three persons of consultant status or 4 assistant surgeons each with at least 8 years experience in Gynaecology. In 9 cases which were emergencies, initial clinical examination or laparotomy were performed by 4 assistant surgeons of the Central Women Hospital. 64 (94.12%) of the ultrasound examinations were performed by the consultant radiologist of the Central Women Hospital and 4 (5.88%) others were performed by two other radiologists of consultant status. All the histopathological specimens were examined by the consultant pathologist of the Central Women Hospital.

RESULTS

Ninety cases diagnosed clinically as ovarian tumours were admitted to Unit 11, Central Women Hospital. 87 cases had a laparotomy.

The accuracy of clinical and ultrasound examination in the diagnosis of ovarian tumours is shown in Table (1). Statistical tests indicated that there was no significant difference between the two methods in diagnosing ovarian tumours ($P>0.05$). Therefore, ultrasound scanning is not superior to clinical diagnosis in the accurate diagnosis of ovarian tumours.

The accuracy of differentiating malignant from benign ovarian tumours clinically, by ultrasound or by laparotomy using gross findings and histopathology as the definitive diagnosis is shown in Table (2). There was no significant difference between clinical diagnosis, ultrasound diagnosis and operative findings in differentiating benign from malignant tumours ($P>0.05$).

Table 1. The accurate diagnosis of clinical and ultrasound examination in the diagnosis of ovarian tumours

	Number	Per cent
Clinical Diagnosis		
Ovarian tumours correctly diagnosed -	76	87.35
Ovarian tumours diagnosed as other pelvic tumours -	6	6.89
Other pelvic tumours diagnosed as ovarian tumours -	5	5.76
	87	100.00
Ultrasound Diagnosis		
Ovarian tumours correctly diagnosed -	62	91.18
Ovarian tumours diagnosed as other pelvic tumours -	5	7.35
Other pelvic tumours diagnosed as ovarian tumours -	1	1.47
	68	100.00

The sensitivity, specificity and predictive values for positive and negative tests were calculated in differentiating malignant from benign tumours. (Table 3) Statistical tests showed that there was no significant difference in the sensitivity of clinical assessment and operative findings in diagnosing ovarian tumours ($P>0.05$). However, there was a significant difference between clinical assessment and ultrasound examination ($P<0.05$) and operative findings and ultrasound examination ($P<0.05$) indicating that both clinical and operative findings were superior to ultrasound in predicting malignancy. With regard to specificity, there was no significant

Table 3. Sensitivity, specificity, positive predictive value and negative predictive value in differentiating malignant from benign ovarian tumours

	Clinical	Ultrasound	Operative
Sensitivity	73.68	50.00	66.66
Specificity	89.47	90.47	96.72
Predictive value (positive)	70.00	71.42	87.50
Predictive value (negative)	91.07	79.16	89.39

Table 2. Accuracy in differentiating malignant from benign ovarian tumours by clinical diagnosis, ultrasound diagnosis and operative findings

	Correct		Incorrect		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Clinical Diagnosis	68	85.53	11	14.47	76	100
Ultrasound Diagnosis	48	77.42	14	22.58	62	100
Operative Findings	73	89.02	9	10.98	82	100

difference between the three methods in diagnosing ovarian tumours ($P>0.05$).

In the predictive value of a positive test, operative finding was of the highest score whereas in the predictive value of a negative test, clinical examination scored the highest value.

DISCUSSION

The distinction of ovarian tumours from other pelvic tumours including benign ovarian tumours become increasingly important as ovarian cancer is now the commonest malignancy of the female genital tract in most western countries (2). In a retrospective study on genital cancer at the Central Women Hospital, ovarian cancer was second to carcinoma cervix, carcinoma cervix being 52.1 per cent and carcinoma ovaries 36.1% (3). Although ovarian cancer incidence is only slightly higher than the incidence of cancer of the uterine cervix and corpus, survival is considerably worse (4). Ovarian cancer causes more deaths than the combined deaths of cancer of the uterine cervix and corpus (5). Therefore, accuracy in diagnosis becomes imperative. It has been estimated that 15 per cent are incorrectly thought to be fibroids and another 35 per cent to be benign cysts while the remaining 50 per cent are correctly diagnosed pre-operatively (6). In this study, ovarian tumours were correctly diagnosed in 76 out of 87 (87.35 per cent) patients by clinical examination. Ultrasound diagnosis was accurate in 62 out of 68 (91.18 per cent) patients. However, significance testing showed that ultrasound scanning was not superior to clinical diagnosis. In a country like ours where ancillary aids might not be available in all state and divisional hospitals, this is a welcome fact. However, the clinicians involved had at least 8 years experience in gynaecology and this may have been responsible for the high rate of accuracy.

In the differentiation of benign from malignant ovarian tumours, the diagnostic accuracy for clinical, ultrasound and operative findings were 85.53 per cent, 77.42 per cent and 89.02 per cent respectively. Significance tests showed that all three methods were at par in differentiating benign from malignant ovarian tumours. In the clinical work-up of a case, one would take into consideration the behaviour of the tumour, the general condition of the patient and the local extent of the disease.

Ovarian carcinoma is best regarded as a peritoneal disease.

Ultrasound examination would include assessment of pelvic masses, the presence of ascites (either minimal or clinically evident), involvement of the liver with secondaries and the condition of other abdominal viscera, e.g. kidneys. In studies in the west, it has been found that ultrasound is poor in the detection of ascites, omental and peritoneal metastases and lymphadenopathy (7). Thus, attempts have been made to correlate echo pattern with benign and malignant tumours (8). In that study, it was found that the percentage of accuracy of diagnosing malignant ovarian tumour was 89.36 per cent with a low rate (0.66 per cent) of false negative diagnosis. Histologic and echo pattern correlation was also high. We have not correlated echo pattern with malignancy or histology in our study. At staging laparotomy, the assessment would include details regarding the presence of ascites, the extent of the tumour at the ovary (extra-capsular tumour or capsule ruptured), and involvement of the fallopian tubes, uterus, visceral peritoneum, omentum, diaphragm, liver and lymph nodes.

In the differentiation of malignant from benign tumours, it was found that clinical assessment and operative findings were more sensitive parameters compared to ultrasound examination.

This indicates that they would pick-up all positive cases i.e. malignancy. Regarding specificity, there was no significant difference between the three parameters indicating that the exclusion of malignancy by these three methods is reliable.

Operative findings scored highest in the predictive value of a positive test indicating that it could detect the highest number of patients with malignant disease. Clinical examination, with the highest predictive value of a negative test could correctly exclude malignancy.

In this study sensitivity has been defined as true positives/true positives + false negatives and specificity as true negatives/true negatives + false positives. Sensitivity indicates the number of malignant cases correctly identified. On the other hand specificity is the number of benign cases correctly identified or malignant cases confidently excluded.

Predictive value of a positive test means percentage of cases who are clinically malignant and are truly malignant whereas the predictive value of a negative test is the percentage of cases who are clinically benign and are benign (i.e. not malignant).

REFERENCES

1. Oram, D. & Jacobs, I. Improving the prognosis in ovarian cancer in Progress in Obstetrics and Gynaecology. Churchill Livingstone, London, 1987, 6: Ed. Studd, J.J. 390-432.

2. Office of Population Censuses & Surveys. Cancer Statistics: registrations Series MBI, No. 15. HMSO London, 1986.

3. Mya-Mya & Ba-Thike, K. Overview of gynaecological malignancy at the Central Women Hospital. Bur. Med. Journal, 1984, 30(4): 362-372.

4. Beral, V. The epidemiology of ovarian cancer in Ovarian Cancer. The Way Ahead - proceedings of the Seventeenth Study group of the Royal College of Obstetricians and Gynaecologists, 1987, 21-31.

5. American Cancer Society 1982 Cancer facts and figures, New York.

6. Munnel, E.W. Cancer of the ovary. In: Gusberg, Frick(eds) Corseadon's gynaecologic cancer, 5th. edn: Williams and Wilkins, New York, 1978, 15: 375.

7. Requard, C.K., Mattler, F.A. & Wicks, J.D. Pre-operative sonography of malignant ovarian neoplasms. Am J. Radiol. 1981, 137: 79-82.

8. Vera, MTR, Okai, T., Mukubo, M, Kozuma, S., Maeda, T & Mizino, M. Ultrasonic valuation and classification of ovarian tumours. Asia-Oceania J. Obstet: Gynae, 1986, 12(1): 89-97.

Accepted for publication 13 June 1990.