

SECONDARY OVARIAN NEOPLASMS IN A TERTIARY HOSPITAL IN SOUTH-WESTERN NIGERIA

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ABSTRACT

Background: The ovary is a common site of involvement for metastases constituting 5-30% of all malignant ovarian neoplasms. Over half of these tumours are bilateral. The commonest sources are stomach, large bowel, appendix, breast, uterus (corpus and cervix) and lung.

Aim: The aim of this study was to determine the histopathological pattern of metastases to the ovary at the University College Hospital, Ibadan, South-western Nigeria.

Material and Methods: This was a retrospective study. All histologically confirmed cases of metastases to the ovary from the records and files of the Department of Pathology, University College Hospital (UCH), Ibadan between January 1991 and June 2013 were used for the study. These were cases diagnosed following total abdominal hysterectomy, total abdominal hysterectomy-salpingo-oophorectomy, bilateral salpingo-oophorectomy, omentectomy, and multiple peritoneal biopsies and post-mortems at the University College Hospital between January 1991 and June 2013. Cases with inadequate clinical data and whose blocks and or slides could not be retrieved were excluded from the study. The data obtained were analysed using the Statistical Package for Social Sciences version 20

Results: There were 46 cases of metastases to the ovary constituting 5.3% of total ovarian neoplasms. Thirty (63.9%) cases were metastatic carcinomas with the affected patients' age range of 20-79 years, and peak incidence within the age group of 30-39 years. Nineteen out of 30 cases of metastatic carcinomas were from adenocarcinoma of colon, 6 cases were from the gastric carcinoma while the remaining five cases were from the squamous cell carcinoma of the uterine cervix. Fifteen (31.9%) cases of Burkitt Lymphoma were found with patients with age range of 0-39 years, and the peak age of occurrence at the 2nd decade. The only case of metastatic Malignant Mixed Mullerian Tumour and metastatic Leiomyosarcoma were found in the 3rd and 4th decades of life respectively

Conclusion: This study has shown that metastases to the ovary occur in younger age groups in our environment. Therefore this study emphasizes that in young females with ovarian masses, the likelihood of metastatic tumours should not be discarded because, correct and precise diagnosis of secondary ovarian malignancy is critical as it has significant implication on the patients' choice of management and prognosis.

Keyword: Histopathological, Ovarian neoplasms, Metastases, Ibadan

INTRODUCTION

The ovary is a frequent metastatic site for primary gastrointestinal malignancies (colon and gastric carcinomas); primary cancers of breast, uterus and cervix; and haematologic malignancies (lymphomas and leukaemias).¹⁻³ Secondary ovarian malignancies are relatively common ovarian cancers with prevalence range of 5% to 30%. This appears to be related to the frequency and patterns of dissemination of the primary cancers.^{2,4} In addition, secondary ovarian cancers also infrequently arises from metastasis of malignancies of

the appendix, biliary tract, pancreas and the lungs.¹ Metastatic ovarian cancers arises through spread from the primary malignancies via lymphatic or haematogenous or through transperitoneal or direct spreads.²⁻³

Krukenberg tumour had been inappropriately used to typify secondary ovarian neoplasm of gastrointestinal tract primary or all secondary ovarian cancers by some authors.¹ Krukenberg tumour in the strict sense refers to metastatic ovarian cancers morphologically

characterised by moderate multinodular growth and histopathological feature of diffusely infiltrating signet ring cells.² Krukenberg tumours comprise of carcinoma arising from the stomach, colon, breast and other sites and are often bilateral.^{2,3,5}

The works by Yakushiji et al and Fukuda et al suggested the likelihood of secondary ovarian cancer occurring in younger individuals in comparison to primary ovarian malignancy as the average age of the affected patients was about a decade less than that of patients with primary ovarian malignancy^{5,6-7} Studies by Odone et al from the USA also reported increased frequency (18-27%) of metastasis of colorectal carcinomas to the ovaries in younger women (i.e. below 40 years) than in older patients.⁸ This is probably because gastric carcinomas have a typical propensity to metastasize to the ovary during pregnancy, with concomitant aggressive growth post-delivery.²⁻³ This could partly have accounted for the increased incidence of secondary malignancy in pre-menopausal women unlike in primary ovarian cancers.

Metastatic ovarian cancer may be suspected based on detailed clinical history, however, symptoms related to ovarian metastasis may sometimes be the first clinical manifestation of the primary malignancy, especially for gastrointestinal malignancies.³ Morphologic features that suggest secondary ovarian neoplasm include, bilaterality, small tumour size (i.e. <10cm), ovarian surface and superficial cortex involvement and histological features inconsistent with a primary ovarian malignancy.⁹⁻¹⁰ However, it must be noted that some primary ovarian malignancy such as serous papillary and endometrioid carcinoma can involve both ovaries.¹¹ Ovarian endometrioid carcinoma and primary ovarian mucinous adenocarcinomas may share close histological features with a metastatic colorectal carcinoma.^{3,12-13} Tumour marker such as CA-125 and immunohistochemistry especially cytokeratin 7 and cytokeratin 20 may help in differential diagnosis of some secondary ovarian tumours. However, the interpretation of such results requires circumspection and due cognizance of the clinical details and total morphological pictures.¹⁴ Therefore, correct and precise diagnosis of secondary ovarian malignancy is critical because it has significant implication on the patients' choice of management and prognosis since metastatic ovarian cancer signifies an advanced disease.¹⁴

Secondary ovarian neoplasm has a typically poor prognosis with median survival ranging from 1-3years depending on the primary malignancy.¹⁵ Hence, the purpose of this study is to review the histopathological pattern of secondary ovarian neoplasm at the

University College Hospital, Ibadan, South- western Nigeria over a twenty-two and half year period.

To the best of our knowledge, there has been no published local study in the available literature on this subject in our environment. Therefore, this study may serve to provide the first documented baseline data on the histopathological pattern of secondary ovarian neoplasm at the University College Hospital, Ibadan, and South- western Nigeria.

MATERIALS AND METHOD

This was a retrospective study. All histologically confirmed cases of metastatic neoplasms of the ovary in the records and files of the Department of Pathology, University College Hospital (UCH), Ibadan between January 1991 and June 2013 were used for the study. These were cases diagnosed following total abdominal hysterectomy, total abdominal hysterectomy-salpingo-oophorectomy, bilateral salpingo-oophorectomy, omentectomy, and multiple peritoneal biopsies and post-mortems at the University College Hospital between January 1991 and June 2013. Cases with inadequate clinical data and those with missing slides and tissue blocks were excluded from this study. The haematoxylin and eosin stained histopathology slides of the available cases were reviewed and where necessary, new haematoxylin and eosin stained sections were obtained from archival paraffin blocks. Cases were re-classified to determine the histological subtypes according to the 2014 WHO histological classification of tumours of the ovary. The cases were all reviewed independently by two Histopathologists. The data obtained were analysed using the Statistical Package for Social Sciences version 20. Ethical clearance for the study was obtained from the Joint University of Ibadan/University College Hospital Ethical Review Committee. (Ethical approval number: UI/EC/12/0380)

RESULTS

In this study, forty-six cases of metastatic tumours of the ovary were seen accounting for 5.3% of the histologically diagnosed cases of ovarian neoplasm (i.e. 868 cases) at the University college Hospital between January 1991 and June 2013.

The commonest secondary ovarian neoplasm in this study was metastatic carcinoma which constituted 30 (65.2%) cases. Nineteen out of which were from adenocarcinoma of colon. 6 cases were from the gastric carcinoma while the remaining five cases were from the squamous carcinoma of the uterine cervix. Secondary Burkitt lymphoma constituted 14 (30.4%) cases. Primary ovarian Burkitt lymphoma was ruled out by evidence of documented clinical history and

Table 1: Age Distribution of 46 patients with secondary ovarian neoplasms (p=0.001)

Age (years)	Metastatic Carcinoma	Burkitt Lymphoma	Carcino-Sarcoma	Metastatic Leiomyosarcoma	Total (%)
0-9	0	2	0	0	2 (4.3)
10-19	0	9	0	0	9 (19.6)
20-29	2	2	1	0	5 (10.9)
30-39	9	1	0	1	11(23.9)
40-49	7	0	0	0	7 (15.2)
50-59	6	0	0	0	6 (13)
60-69	2	0	0	0	2 (4.3)
70-79	4	0	0	0	4 (8.7)
Total (%)	30 (65.2)	14 (30.4)	1 (2.2)	1 (2.2)	46 (100)

histologically diagnosed extra ovarian Burkitt lymphoma and secondly by evidence of systemic Burkitt lymphoma with secondary ovarian involvement such as bone marrow infiltration. Other secondary ovarian neoplasms were Malignant Mixed Mullerian Tumour and metastatic leiomyosarcoma which constituted 1 (0.1%) each. The overall peak age of occurrence of secondary ovarian neoplasms was in the 4th decade. Metastatic carcinomas were found between 20-79 years with 30-39 years being the age group with maximum tumours. Secondary Burkitt lymphoma cases were found between 0-39 years with the peak age of occurrence at the 2nd decade. The only case of metastatic carcinosarcoma and metastatic leiomyosarcoma were found in the 3rd and 4th decades of life respectively. (Table1). Of 46 (5.3%) of secondary ovarian tumours, half (50.0%) of the cases were bilateral,

DISCUSSION

In this study, 40.6% of the ovarian tumours were malignant while 58.8% were benign. This findings were in agreement with those of similar studies by Sabageh *et al* and Onyiaorah *et al* from Ile Ife and Lagos respectively in South Western Nigeria who reported 69.6% benign ovarian tumours, 30.4% malignant ovarian neoplasms, and 80.3% benign, 19.7% malignant ovarian neoplasms respectively.¹⁶⁻¹⁷ The finding from this study also correlated with that of Obed *et al* from Maiduguri, North Eastern Nigeria who reported 79.3% of benign ovarian tumours and 29.7% malignant ovarian neoplasm.¹⁸

Secondary ovarian tumours constituted 13.1% of malignant ovarian tumours similar to study by Lee *et al* from North Korea, Asia who reported that secondary ovarian malignancy accounted for 13.6% of malignant ovarian neoplasm⁴

Secondary ovarian tumours accounted for 5.3% of all ovarian tumours in this study in concordance with Swamy and Satyanarayana¹⁹ in Chitwan, Nepal who

reported 5.0%. However, similar studies by Sabageh *et al*.¹⁶ and Onyiaorah *et al*.¹⁷ reported 4.3% and 3.9% respectively. Similar foreign studies by Pradhan *et al*.²⁰ from Dharan, Nepal; Abdullah *et al*.²¹ from Jeddah, Saudi Arabia; Ahmad *et al*.²² from Uttarakhand, Pakistan; Jha *et al*.²³ from Nepal; Makwana *et al*.²⁴ from Gurarat, India; and Gupta *et al*.²⁵ from Meeru, India reported slightly less incidence rates of secondary ovarian tumours namely 3.6%, 3.4%, 2.5%, 2.4%, 2.1% and 2.0% respectively. Other similar foreign studies by Ashraf *et al*.²⁶ from Lahore, Pakistan; Pilli *et al*.²⁷ from India; Yasmin *et al*.²⁸ from Peshawar, Pakistan; Nabi *et al*.²⁹ from Lahore, Pakistan reported a comparatively lesser incidence rates of 0.8%, 0.7%, 0.7% and 0.7%. respectively.

Metastatic carcinoma was the commonest secondary ovarian tumour constituting 30 (65.2%) of secondary ovarian tumour and 3.5% of total ovarian neoplasm similar to some studies.^{16, 22, 30} The primary sites of tumours were predominantly from the colon, closely followed by the stomach and uterine cervix. These findings correlate closely with that of Lee *et al* who reported similar spread patterns of the primary tumours in Korean women^{4, 31-32}

Unlike in similar study by Lee *et al* from North Korea that reported extremely small proportions of secondary ovarian neoplasms of extra gastrointestinal and non-gynaecological origins, secondary Burkitt lymphoma accounted for 30.4% (14) of secondary ovarian tumour and 1.6% of total ovarian neoplasm.⁴ This might not be unconnected with the overall incidence and ethnic variations of the primary malignancy.⁴

There is a significant variation in the disease progression and survival rate between primary and secondary Burkitt lymphoma with worse and less favourable outcome in secondary Burkitt lymphoma as it represents an advanced stage of the disease. Therefore, accurate diagnosis of Burkitt lymphoma is crucial for appropriate treatment.³³ The diagnostic

criteria for primary ovarian lymphoma as recommended by Fox *et al* include; the confinement of the disease to the ovary or adjacent lymph nodes or structures, absence of the disease in blood or bone marrow and appearance of remote involvement at least 60 months following earlier diagnosis of ovarian lymphoma.³³

The peak age of occurrence of metastatic carcinoma was 30-39 years age group younger than those with primary malignant epithelial tumours. This finding was corroborated by Young and Scully², and McCluggage and Wilkinson³ respectively who noted that, gastrointestinal carcinomas have a typical propensity to metastasize to the ovary during pregnancy, with concomitant aggressive growth post-delivery. This could partly have accounted for the increased incidence of secondary malignancy in pre-menopausal women unlike in primary ovarian cancers.^{16, 18, 24, 30}

CONCLUSION

This study has revealed the occurrence of secondary malignant ovarian neoplasms in younger age groups. Therefore this study emphasizes that in young females with ovarian mass, the possibility of secondary ovarian tumour types should not be overlooked. Although ovarian neoplasms can be diagnosed clinically and radiologically, a histological diagnosis is inevitable for a definitive diagnosis of ovarian tumours because it has significant implication on the patients' choice of management and prognosis since metastatic ovarian cancer signifies an advanced disease relative to primary ovarian cancers.

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