Role Of Upper And Lower GIT Endoscopy In Patients With Suspected Bilateral Adnexal Masses

Abstract

Background: Ovarian malignancy is considered the third most common gynecologic cancer. Secondary ovarian tumors comprise 10–25% of all ovarian malignancies , Most common sites of primary tumor identified so far are from the stomach, colon, rectum, breast, endometrium, and appendix .Endoscopy is recommended especially in cases with signs suggestive of GI tract involvement, as bilateral adnexal masses. Still 20%-25% of primary HGSC are presented as bilateral tumors and hence bilateral ovarian tumors is not always metastatic tumors .this practice may has economic burden specially in low resources countries , so this practice need to be investigated about its value and need to be justified **Methods:** This retrospective clinical study evaluated the role and efficacy of GIT endoscopy in cases with bilateral suspected adnexal masses to diagnose secondary ovarian cancers with GIT primaries and to correlate between different modalities of investigations as tumor markers and imaging techniques. **Results:** A total of 33 patients with suspected with bilateral suspected adnexal masses confirmed by imaging who underwent upper and lower endoscopy were included , 21 patients finally diagnosed as primary ovarian tumors , and 12 patients with secondary ovarian metastasis. Upper endoscopy findings were free of abnormalities in the majority of both groups, but abnormalities were significantly more frequent in the metastatic tumor group.Similarly, findings of colonoscopy also varied between the groups.However, this difference did not reach statistical significance (P = 0.054). **Conclusions:** This study supports a risk-adapted approach to gastrointestinal evaluation in patients with suspected ovarian cancer. By relying on imaging and tumor markers to guide the use of endoscopy, clinicians can minimize unnecessary procedures, reduce healthcare costs, and focus resources on patients most likely to benefit.

Keywords: Ovarian cancer , Colonscopy , Upper endoscopy ,Bilateral adnexal masses.

Introduction

Ovarian malignancy is considered the third most common gynecologic cancer.(1) Ovarian cancer is the fifth most frequent cause of death from any cancer in women in the United States and the eighth worldwide .(2) This high mortality because it usually presented in advanced stage due to delayed diagnosis .(3) Evaluation of any ovarian mass primarily consists of clinical assessment, imaging studies, and tumor markers to discern a patient's risk factors for malignancy and characterize the mass; an ovarian cancer diagnosis is histologically confirmed. (4) The combination of a more extended tumor marker profile, including the addition of carcinoembryonic antigen (CEA) and/or carbohydrate antigen (CA 19-9) to CA 125, is useful mainly for differentiating

between metastatic tumors from the gastrointestinal tract or pancreas and primary ovarian malignancy (5) A transvaginal ultrasound examination is often regarded in clinical practice as the standard first-line imaging investigation for the assessment of adnexal pathology (6) Magnetic resonance imaging (MRI), alone or in combination with computed tomography (CT), predicts accurately the presence of peritoneal carcinomatosis in patients undergoing preoperative evaluation for cytoreductive surgery, particularly when the assessment is carried out by an experienced radiologist (7) Secondary ovarian tumors comprise 10–25% of all ovarian malignancies , Most common sites of primary tumor identified so far are from the stomach, colon, rectum, breast, endometrium, and appendix (8) Endoscopy is recommended especially in cases with signs suggestive of GI tract involvement, as bilateral adnexal masses. It is a useful modality as it can help in detection of GI primary in the least invasive manner by providing histopathological specimen (9) Still 20%-25% of primary HGSC are presented as bilateral tumors and hence bilateral ovarian tumors is not always metastatic tumors (10) Some centers do routinely upper and lower endoscopy in cases with suspected bilateral adnexal masses to exclude GIT primaries , and this practice may has economic burden specially in low resources countries , so this practice need to be investigated about its value and need to be justified specially it was noticed in our practice that few patients had changed their diagnoses or established treatment strategies due to the findings from gastrointestinal endoscopy.

Aim of the work:

To test the the efficacy of upper . lower endoscopy in coloration with GIT symptoms, preoperative imaging ,and tumor markers to diagnose metastasizing GIT tumors in cases with suspected bilateral adnexal masses.

Methodology :

After approval of the Research Ethics Committee of Mansoura University , a retrospective observational study done in Oncology Centre Mansoura University (OCMU) from jan 2021 to jan 2023 where all patients diagnosed with suspected bilateral ovarian Masses by imaging, examinations and underwent gastroscopy/ colonoscopy before treatment in our centre, we excluded any patients with one or more of this criteria , patients with a history of gastrointestinal cancer or ovarian cancer, or who had a definite pathological diagnosis before the gastrointestinal Examination , Those who did not undergo imaging examination , previous gastric or intestinal surgery and suffering from chronic intestinal diseases .

Patient records were revised and there was 33 patients full-filling the criteria mentioned above.

The following data Age , main complaint , GIT symptoms , family history of GIT cancer , past history of any cancer, type of imaging ,imaging finding, tumor markers (CA 125, CEA , CA 19.9) , finding of upper and lower endoscopy ,final histopathology and diagnosis are collected , and the data was analyzed to see the efficacy of upper . lower endoscopy in coloration with GIT symptoms, preoperative imaging ,and tumor markers to diagnose metastasizing GIT tumors in cases with bilateral adnexal masses.

Results

Table 1 : Demographic and Clinical-Pathological Characteristics

Variables		**Primary ovarian tumor (n=21)**	**Ovarian metastatic tumor (n=12)**	**P**
Age, y	Median	55	48	0.542 **
	IQR	25.40-61.50	25.90-64.25	
Personal History	Negative	20 (95.2%)	8(66.7%)	0.028*
	Positive	1(4.8%)	4 (33.3%)	
Digestive symptoms	Negative	21(100%)	9 (75%)	0.016*
	Positive	0	3 (25%)	
CA125	Median	255	215	0.427**
	IQR	100-1000	86.25-736.25	
CEA	Median	2	6.5	<0.001**
	IQR	1.70-4.00	3.25-14.75	
CA199	Median	25	32	0.427**
	IQR	3.20-37.00	4.87-96.50	

**P values were calculated using a two-sided Mann-Whitney U rank-sum test.
*P values were calculated using a two-sided Wald χ^2 test.
***Only one case reported positive family history as her mother experienced hepatocarcinoma.
****Regarding final diagnosis **High-grade serous ovarian cancer** was the most frequent diagnosis. **Metastatic tumors** (from breast, colon, and stomach). A variety of other tumor types, including **low-grade tumors**, **borderline tumors** were present but less frequent.

The findings highlight some notable differences between patients with primary ovarian tumors and those with ovarian metastatic tumors. The median age of patients in both groups was similar, with primary ovarian tumor patients being slightly older (55 years) compared to those with metastatic ovarian tumors (48 years). Interestingly, a positive personal history was significantly more common among patients with

metastatic tumors, seen in 33.3% of cases, whereas almost all primary tumor patients (95.2%) had no relevant history.

Digestive symptoms were another distinguishing factor. While none of the primary ovarian tumor patients reported digestive symptoms, a quarter of metastatic tumor patients experienced them, suggesting a possible link to the metastatic process.

When looking at tumor markers, the CA125 levels were elevated in both groups but did not show a significant difference. However, CEA levels were markedly higher in metastatic tumor patients, with a median of 6.5 compared to 2 in primary tumor patients, pointing to its potential role in identifying metastatic disease. Similarly, CA199 levels showed no significant variation between the two groups.

Overall, these findings underline the subtle yet meaningful clinical and laboratory differences between primary and metastatic ovarian tumors, offering insights into their unique presentations.

TABLE 2 | The diagnostic value of ovarian metastatic carcinoma against the studied tumor markers

Test Result Variable(s)	AUC	P.Value	Cut off	Sensitivity(%)	Specificity(%)	Asymptotic 95% Confidence Interval	
						Lower Bound	Upper Bound
CA125	0.413	0.410	136	75%	38%	0.214	0.611
CEA	0.845	0.001	2.90	91%	61%	0.709	0.981
CA199	0.585	0.421	41	50%	81%	0.369	0.802

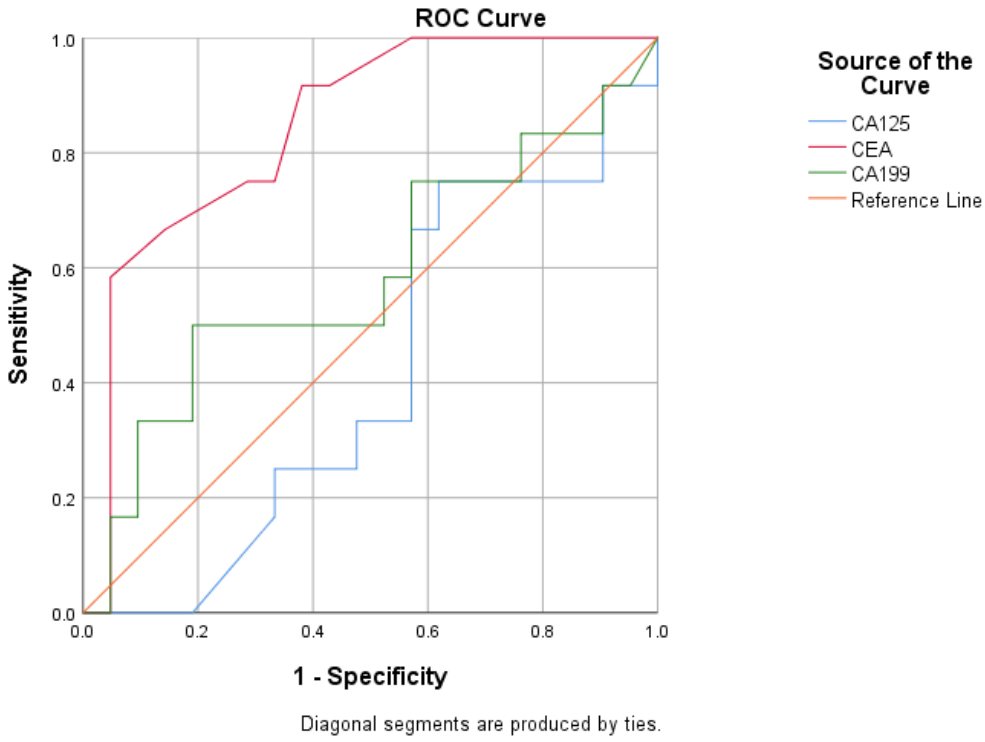

Fig .1 Sensitivity Vs Roc curve

The analysis of tumor markers highlights differences in their diagnostic performance for distinguishing between primary ovarian tumors and ovarian metastatic tumors. The **CA125** marker, while frequently used in ovarian cancer diagnostics, showed limited effectiveness in this analysis, with an AUC of 0.413. Its sensitivity was 75%, but specificity was low at 38%, meaning it might generate false positives.

In contrast, **CEA** demonstrated excellent diagnostic performance, with an AUC of 0.845, indicating strong reliability. At a cutoff value of 2.90, it achieved a high sensitivity of 91%, meaning it successfully identified most metastatic cases, while maintaining a reasonable specificity of 61%. This makes CEA a promising marker for identifying metastatic ovarian tumors.

The **CA199** marker showed moderate diagnostic utility, with an AUC of 0.585. At a cutoff of 41, it achieved good specificity (81%), meaning it could exclude non-metastatic cases effectively, but its sensitivity was only 50%, suggesting limited ability to detect metastatic tumors.

Overall, while CA125 remains a widely used marker, CEA outperformed it in this analysis and may serve as a valuable tool in differentiating metastatic ovarian tumors from primary ones.

Table3.Comparison between upper and lower endoscopy finding and the final diagnosis

Variables		Primary ovarian tumor (n=21)	Ovarian metastatic tumor (n=12)	P
finding of upper endoscopy	Free	20(95.2%)	6(50%)	0.009*
	Gastritis	1 (4.8%)	5(41.7%)	
	Malignant-looking	0	1(8.3%)	
finding of upper endoscopy	Free	21 (100%)	8(66.7%)	0.019*
	Colitis	0	1 (8.3%)	
	Malignant-looking	1(4.8%)	3(25%)	
Pre-operative imaging	Primary ovarian tumor	21(100%)	10(83.3%)	0.054*
	Ovarian metastatic tumor	0	2(16.7%)	

*P values were calculated using a two-sided Wald χ^2 test.

The results of upper endoscopy and pre-operative imaging reveal key differences between patients with primary ovarian tumors and those with ovarian metastatic tumors. Upper endoscopy findings were free of abnormalities in the majority of both groups, but abnormalities were significantly more frequent in the metastatic tumor group. Specifically, while 95.2% of primary tumor patients had normal endoscopy results, only 50% of metastatic tumor patients did. Gastritis was noted in 41.7% of metastatic tumor patients but only 4.8% of primary tumor patients, and malignant-looking findings were observed in 8.3% of the metastatic group, but none in the primary group (P = 0.009).

Similarly, findings of colonoscopy also varied between the groups. All primary ovarian tumor patients had no abnormalities, but only 66.7% of metastatic tumor patients showed normal results. Malignant-looking findings were significantly more frequent in the metastatic group (25%) compared to only 4.8% in the primary group (P = 0.019).

Pre-operative imaging results were also indicative of differences between the groups. All primary ovarian tumor patients (100%) were diagnosed with primary ovarian tumors through imaging, while 16.7% of metastatic ovarian tumor patients were identified with ovarian metastatic tumors on imaging. However, this difference did not reach statistical significance (P = 0.054).

Discussion

The findings from this study emphasize the importance of a tailored approach when evaluating patients with suspected ovarian cancer for potential gastrointestinal involvement(11). Upper endoscopy and colonoscopy, although valuable in specific contexts, showed limited utility as routine diagnostic tools for all patients and this finding was in similar to the finding of Liu et.al.,2021(12). As among the studied

cohort, gastrointestinal abnormalities were significantly more common in metastatic ovarian tumor cases than in primary ovarian tumors. Despite this, the overall prevalence of gastrointestinal involvement remained low, with most abnormalities already identifiable through imaging or tumor markers. This suggests that routine gastrointestinal endoscopy for all suspected ovarian cancer patients may not be necessary, especially in the absence of supporting evidence from non-invasive diagnostics.

The study highlighted that pre-operative imaging had a strong role in distinguishing primary ovarian tumors from metastatic ovarian tumors, with imaging successfully identifying primary tumors in all patients with confirmed diagnoses. This further underscore the limited added value of endoscopic procedures in these cases this finding supported and was in agreement with finding demonstrated by Castellani and his colleague (13).

Endoscopic findings influenced treatment plans for some patients, particularly those with metastatic disease, where the identification of gastrointestinal malignancies altered surgical strategies or prompted a shift to systemic therapies. However, Regarding our results for patients with primary ovarian tumors, endoscopy findings were almost universally normal, questioning the necessity of these invasive procedures in this subgroup so the gastrointestinal examination is performed only on patients with imaging or tumor marker indicators patients can be spared from an unnecessary gastrointestinal examination, which means great medical cost savings .Our flinging was in agreement in study conducted by Sundar et al(14)

Interestingly, for metastatic ovarian tumor patients, the findings suggest a nuanced role for gastrointestinal endoscopy in identifying metastatic sources when imaging or tumor marker indicators point to gastrointestinal involvement. This is particularly relevant given the higher rates of gastritis and malignant-looking findings observed in this group. However, the inability of endoscopy to detect lesions beyond the stomach and colon, such as appendiceal cancers, limits its overall diagnostic value. Previous studies have shown that appendiceal cancers are a more frequent source of ovarian metastases than gastric cancers, further diminishing the case for routine gastrointestinal endoscopy. (15)(16)(17).

Our data also showed that imaging was highly effective in distinguishing between primary and metastatic ovarian tumors. All patients with primary ovarian tumors were identified accurately through imaging, while 83.3% of metastatic cases were correctly classified. These findings suggest that combining imaging and tumor marker evaluations could significantly reduce the need for routine gastrointestinal endoscopies. Supported by previous studies (18)

Conclusion

This study supports a risk-adapted approach to gastrointestinal evaluation in patients with suspected ovarian cancer. By relying on imaging and tumor markers to guide the use of endoscopy, clinicians can minimize unnecessary procedures, reduce healthcare costs, and focus resources on patients most likely to benefit. While endoscopy retains diagnostic and therapeutic value in specific cases, its role as a routine procedure remains limited, particularly in the context of preoperative assessment for ovarian

cancer surgery. Further research is needed to refine patient selection criteria and explore the integration of endoscopy findings into comprehensive diagnostic and treatment algorithms.

Recommendations for Future Studies

- Increase sample size and include multicenter trials to improve generalizability.
- Extend follow-up duration to assess long-term outcomes, including overall survival.
- Evaluate quality of life and cost-effectiveness .

Ethics approval and consent to participate.

Ethics Approval:

The study received approval from the Institutional Review Board of the Medical Research Ethics Committee at Mansoura Faculty of Medicine, Mansoura University , as well as from the managers of the hospital where it was conducted. All patients were informed about the study and provided consent for their enrollment, ensuring that their confidentiality was maintained and that they had the right to refuse participation or withdraw at any time. Confidentiality and personal privacy were respected throughout all phases of the study, and the data collected was exclusively for research purposes and not utilized for any other activities.

consent for publication.

My manuscript does not contain any individual person's data in any form (including any individual details, images, or videos).

availability of data and materials

All the clinical , radiological and pathological data used in this manuscript is available on Mansoura University medical system (Ibn Sina Hospital management System)

https://srv137.mans.edu.eg/mus/newSystem/

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