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Research Article

Clinicopathological Analysis of Mucinous Ovarian Tumors at a Single Center in Indonesia, 2019-2023

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ABSTRACT

Background: Mucinous ovarian tumors are a rare subtype of epithelial ovarian tumors, accounting for approximately 3% of all cases. These tumors exhibit unique clinical and pathological characteristics, with a particularly poor prognosis in advanced stages due to low responsiveness to platinum-based chemotherapy. **Objective:** This study aims to analyze the relationships between clinicopathological characteristics in patients with mucinous ovarian tumors treated at a single center in Indonesia between 2019 and 2023. **Materials and Methods:** A correlational study from March to June 2024 analyzed patients with confirmed mucinous ovarian tumors in Indonesia, focusing on age, histopathological grade, FIGO stage, CA-125 levels, tumor size, and metastasis presence. **Results:** A study of 123 mucinous ovarian tumor patients found that 57.7% were over 40. Histopathological analysis revealed 21.1% were benign, 26% borderline, and 52.8% malignant. Patients over 40 had more malignant tumors, advanced-stage disease, and omental metastasis. A significant correlation was found between malignant histopathology and advanced FIGO stage, as well as between advanced FIGO stage and both lymph node and omental metastasis. Tumor size was associated with elevated CA-125 levels and bilateral tumors. **Conclusion:** Mucinous ovarian tumors in patients over 40 years old are more likely to be malignant, present at an advanced stage, and involve omental metastasis. Malignant histopathological results are associated with advanced FIGO stages, which in turn are linked to lymph node and omental metastasis. Tumors larger than 10 cm tend to have elevated CA-125 levels.

Key words: Clinicopathological characteristics, Indonesia, Mucinous ovarian tumors, Single center.

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INTRODUCTION

In Indonesia, one of the top five causes of cancer-related mortality is ovarian tumors. Ovarian tumors rank second in frequency but are the worst malignant gynecological disease; owing to delayed diagnosis, the 5-year life expectancy is less than 45%.[1–3] The incidence of Muscinosum ovarian tumors, an uncommon subtype of epithelial ovarian tumors with distinct clinical and pathological features, range 3%.[1,4] Because advanced tumors respond poorly to platinum-based chemotherapy, the prognosis is dismal.[5,6] The purpose of this study is to examine the correlation between clinicopathological features in ovarian tumors with mucous cells and Dr. Soetomo General Academic Hospital from 2019 to 2023.

MATERIAL AND METHODS

The Hospital Ethics and Research Committee, Dr. Soetomo General Academic Hospital Surabaya, accepted ethical approval under the number 0939/ KEPK/III/2024 on March 14, 2024. Dr. Soetomo Surabaya conducted a correlative investigation at General Academic Hospital, using a full sample of patients with complete medical records who had undergone primary surgery. Age, histological grade, FIGO stage, CA-125 level, tumor size, sideness, KGB metastasis, and omental metastasis were among the variables analyzed.[3,5,7–9] The bivariate Chi-square test and Fischer exact test are statistical techniques used in SPSS V.26 statistical analysis to identify the relationship between variables with significance p <0.05.

RESULTS

According to Table 1, 57.7% of the 123 patients investigated were over 40 years old. A histopathological analysis classified 26% as borderline, 21% as malignant, and 52.8% as benign. 94.31% of the tumors had a diameter greater than 10 cm. The histology results identified the FIGO stage as malignant, indicating an early stage in 39.83% of cases. 95.12% of the cases were unilateral sideness. The percentage of those with increased CA-125 values was 60.98%. Just 1.62% of patients had KGB metastases, whereas 5.69% of cases had omental metastases.

Table 1: Frequency Distribution of Clinicopathological Characteristics of Patients with Muscinosum Ovarian Tumour at Dr. Soetomo General Academic Hospital in 2019-2023.

Table 2 demonstrates a correlation between advanced FIGO stage and omental metastases in patients older than 40. The age beyond 40 years old was associated with higher malignant histological results, but not statistically significant.

Table 3 demonstrates the statistical correlation between histological malignancy and omental metastasis, where all patients with omental metastasis had malignant histology results, and the early FIGO stage was associated with malignant histopathological results.

All lymph node and omentum metastases were discovered at the advanced FIGO stage, as Table 4 demonstrates the statistical relationship between the FIGO stage and KGB and omentum metastases.

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Table 1: Frequency Distribution of Clinicopathological Characteristics of Patients with Muscinosum Ovarian Tumour at RSUD Dr. Soetomo in 2019-2023.

Clinicopathological Characteristic	Frequency (%)
Age	
≤ 40 th	52 (42,3%)
> 40 th	71 (57,7%)
Histopathology	
Benign	26 (21,15%)
Borderline	32 (26,01%)
Malignant	65 (52,84%)
Tumor Size	
≤ 10 cm	7 (5,69%)
> 10 cm	116 (94,31%)
FIGO Stage	
Non-Malignant (Benign/ Borderline)	58 (47,15%)
Early (I)	49 (39,83%)
Advance (II, III, IV)	16 (13,02%)
Sideness	
Unilateral	117 (95,12%)
Bilateral	6 (4,88%)
CA-125	
<35 *units*/mL	48 (39,02%)
35-199 *units*/mL	55 (44,72%)
> 200 *units*/mL	20 (16,26%)
Metastasis	
Lymph Node	
Yes	2 (1,62%)
No	121 (98,38%)
Omentum	
Yes	7 (5,69%)
No	116 (94,31%)

Table 2: Relationship between age and clinicopathological characteristics.

Clinicopathological Characteristic	Age (years)		Total n (%)	p value
	≤ 40 n (%)	> 40 n (%)		
Histopathology				
Benign	15 (12,2)	11 (8,9)	26 (21,1)	
Borderline	10 (8,1)	22 (17,9)	32 (26,0)	0,126[a]
Malignant	27 (22,0)	38 (30,9)	65 (52,9)	
Tumor Size				
≤ 10 cm	4 (3,3)	3 (2,4)	7 (5,7)	0,455[b]
> 10 cm	48 (39,0)	68 (55,3)	116 (94,3)	
FIGO stage				
Non- Malignant (Benign/ Borderline)	25 (20,3)	33 (26,8)	58 (47,1)	
Early	26 (21,1)	23 (18,7)	49 (39,8)	0,004[a]
Advance	1 (0,8)	15 (12,2)	16 (13,0)	
Sideness				
Unilateral	51 (41,5)	66 (53,7)	117 (95,1)	0,400[b]
Bilateral	1 (0,8)	5 (4,1)	6 (4,9)	
CA-125				
<35 *units*/mL	13 (11,4)	34 (27,6)	48 (39,0)	
35-199 *units*/mL	29 (23,6)	26 (21,1)	55 (44,7)	0,052[a]
> 200 *units*/mL	9 (7,3)	11 (8,9)	20 (16,3)	
Metastasis				
Lymph Node				
Yes	0 (0,0)	2 (1,6)	2 (1,6)	0,508[b]
No	52 (42,3)	69 (56,1)	121 (98,4)	
Omentum				
Yes	0 (0,0)	7 (5,7)	7 (5,7)	0,021[b]
No	52 (42,3)	64 (52,0)	116 (94,3)	

Table 3: Relationship between Histopathological and Clinicopathological Characteristics.

Clinicopathological Characteristic	Histopathology			Total n (%)	p value
	Benign n (%)	Borderline n (%)	Malignant n (%)		
FIGO Stage					
Non-Malignant (Benign/ Borderline)	26 (21,1)	32 (26,0)	0 (0,0)	58 (47,1)	
Early	0 (0,0)	0 (0,0)	49 (39,9)	49 (39,9)	
Advance	0 (0,0)	0 (0,0)	16 (13,0)	16 (13,0)	0,000[b]
CA-125					
<35 *units*/mL	12 (9,8)	11 (8,9)	25 (20,3)	48 (39,0)	
35-199 *units*/mL	12 (9,8)	17 (13,8)	26 (21,1)	55 (44,7)	0,416[a]
> 200 *units*/mL	2 (1,6)	4 (3,3)	14 (11,4)	20 (16,3)	
Tumor Size					
≤ 10 cm	3 (2,4)	1 (0,8)	3 (2,4)	7 (5,6)	
> 10 cm	23 (18,7)	31 (25,2)	62 (50,5)	116 (94,4)	0,445[b]
Sideness					
Unilateral	24 (19,5)	32 (26,0)	61 (49,6)	117 (95,1)	
Bilateral	2 (1,6)	0 (0,0)	4 (3,3)	6 (4,9)	0,345[b]
Metastasis Lymph Node					
Yes	0 (0,0)	0 (0,0)	2 (1,6)	2 (1,6)	1,000[b]
No	26 (21,1)	32 (26,0)	63 (51,2)	121 (98,4)	
Omentum					
Yes	0 (0,0)	0 (0,0)	7 (5,7)	7 (5,7)	0,046[b]
No	26 (21,1)	32 (26,0)	58 (47,2)	116 (94,3)	

[a]Chi-square
[b]Fischer-exact test

Table 4: Relationship between FIGO stage and clinicopathological characteristics.

Clinicopathological Characteristic	FIGO Stage			Total n (%)	p value
	Non-Malignant (Benign/ Borderline) n (%)	Early n (%)	Advance n (%)		
CA-125					
<35 *units*/mL	23 (18,7)	18 (14,6)	7 (5,7)	48 (39,0)	
35-199 *units*/mL	29 (23,6)	21 (17,1)	5 (4,1)	55 (44,7)	
> 200 *units*/mL	6 (4,9)	10 (8,1)	4 (3,3)	20 (16,3)	0,444[a]
Tumor Size					
≤ 10 cm	4 (3,3)	2 (1,6)	1 (0,8)	7 (5,7)	
> 10 cm	54 (43,9)	47 (38,2)	15 (12,2)	116 (94,3)	0,872[b]
Sideness					
Unilateral	56 (45,5)	48 (39,0)	13 (10,6)	117 (95,1)	
Bilateral	2 (1,6)	1 (0,8)	3 (2,5)	6 (4,9)	0,055[b]
Metastasis Lymph node					
Yes	0 (0,0)	0 (0,0)	2 (1,6)	2 (1,6)	0,016[b]
No	58 (47,2)	49 (39,8)	14 (11,4)	121 (98,4)	
Omentum					
Yes	0 (0,0)	0 (0,0)	7 (5,7)	7 (5,7)	
No	58 (47,2)	49 (39,8)	9 (7,3)	116 (94,3)	0,000[b]

[a]Chi-square
[b]Fischer-exact test

Table 5: Relationship between CA-125 Level Results and Clinicopathological Characteristics.

Clinicopathological Characteristic	CA-125 units/mL			Total n (%)	p value
	<35 n (%)	35-199 n (%)	≥ 200 n (%)		
Tumor size					
≤ 10 cm	5 (4,1)	0 (0,0)	2 (1,6)	7 (5,7)	0,023[b]
> 10 cm	43 (35,0)	55 (44,7)	18 (13,8)	116 (94,3)	
Sideness					
Unilateral	45 (36,6)	53 (43,1)	19 (15,4)	117 (95,1)	0,861[b]
Bilateral	3 (2,4)	2 (1,6)	1 (0,8)	6 (4,9)	
Metastasis Lymph node					
Yes	1 (0,8)	0 (0,0)	1 (0,8)	2 (1,6)	0,153[b]
No	47 (38,2)	55 (44,7)	19 (15,4)	121 (98,4)	
Omentum					
Yes	3 (2,4)	3 (2,4)	1 (0,8)	7 (5,7)	1,000[b]
No	45 (36,6)	52 (42,3)	19 (15,4)	116 (94,3)	

[a]Chi-square
[b]Fischer-exact test

Table 6. Relationship between *Sideness* and Clinicopathological Characteristics.

Clinicopathological Characteristic	*Sideness*		Total n (%)	p value
	Unilateral n (%)	Bilateral n (%)		
Metastasis Lymph node				
Yes	2 (1,6)	0 (0,0)	2 (1,6)	1,000[b]
No	115 (93,5)	6 (4,9)	121 (98,4)	
Omentum				
Yes	4 (3,2)	3 (2,4)	7 (5,7)	0,002[b]
No	113 (91,8)	3 (2,4)	116 (94,4)	

[a]Chi-square
[b]Fischer-exact test

Table 5 displays the CA-125 values. The study statistically showed a correlation between tumor size and elevated CA-125 levels, with the majority of the increase occurring between 35 and 199 units/ml for tumor sizes larger than 10 cm.

Table 6 showed statistical evidence of a relationship between omental metastases and sideness, revealing that unilateral tumors had more metastases than bilateral tumors. The omentum, KGB metastasis, tumor size, and sideness were not significantly associated. Furthermore, we found no clear correlation between KGB metastatic disease and omental metastases.

DISCUSSION/CONCLUSION

The study reveals that age and histological features significantly impact the prognosis and progression of mucinous ovarian tumors, with elderly patients, particularly those over 40, more susceptible to malignant histology.[1,7,8,10,11]

Because of their aggressive biological characteristics, malignant mucinous ovarian tumors, which frequently grow to a size of more than 10 cm and only form on one side, have a worse prognosis than tumors that develop unilaterally.[12,13] Due to localized and distant dissemination, the advanced FIGO stage demonstrated KGB and omental metastases, which was indicative of a bad prognosis.[10,14] The common tumor marker CA-125 does not significantly correlate with omental metastasis, KGB, or lateralization; this suggests that additional supplementary factors, such as HE-4, are necessary to evaluate the prognosis of mucinous ovarian cancers.[9,12,15,16]

This study highlights how crucial it is to conduct additional research in order to comprehend prognostic factors and create the best possible treatment plans based on the biological properties of tumours.[6,13] It is anticipated that research in the areas of transcriptomics, proteomics, and genomics will advance treatment, diagnosis, and prevention.[4,17,18] It is anticipated that new, more potent treatment targets will be discovered as molecular mechanisms become clearer in order to overcome chemotherapy resistance and enhance patients' quality of life.[18–20] To provide complete care, a multidisciplinary approach comprising pathologists, gynecologists, and oncologists is essential.[2,14,20,21]

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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