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Review Article

Review Article: Characteristics of Ovarian Cancer Across Age, Epithelial Histopathology, and Stages

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ABSTRACT

Background: Ovarian cancer is a disease that has a high mortality rate, it has 185 thousand deaths in 2018. In Indonesia, it is estimated that there are 100 cancer patients per 100 thousand people. Ovarian cancer is a malignancy with no specific symptoms, as a result advanced stage is commonly found at diagnosis and there is no effective screening test to date. However, genetic factors have been found to play a role in this disease. **Aims:** The aim of this study is to find out the characteristics of ovarian cancer patients. **Methods:** This research uses a review article research design, with a narrative type. Data collection was taken from a collection of journals sourced from Pubmed and met the inclusion and exclusion criteria set by the author and then summarized. Six journals that included the characteristics of ovarian cancer patients are included in this review article. **Results:** According to the six journals, the mean age is 54 years old, the most stage found is stage 3, and the most epithelial histopathology found is serous. **Conclusion:** According to the six journals that were reviewed, the characteristics of ovarian cancer patients based on age, stage, and epithelial histopathology were found to be consistent with the theory that has been established.

Keywords: age, epithelial histopathology, ovarian cancer, patients characteristics, review article

1. Introduction

Ovarian cancer is growth of cancer cells within ovarian tissue [1]. Worldwide, approximately 200,000 women are diagnosed with ovarian cancer and 125,000 die each year [2]. According to The Global Cancer Observatory in 2018, there are 13,310 new cases of ovarian cancer in Indonesia [3].

Risk factors of ovarian cancer include nulliparity, early menarche, and late menopause; the risk increases with age and decreases after the age of 80, but the greatest risk factor is family history. Repeated ovulation that causes ovulatory rupture and repair theoretically creates opportunities for malignant gene mutations. This may explain the apparent protective effects of oral contraceptives, late menarche, early menopause, multiparity, and breastfeeding because each of these factors decreases the occurrence of ovulation [4].

Ovarian cancer is often portrayed as the disease that whispers because it does not present with dramatic bleeding, excruciating pain, or an obvious lump. Symptoms that often appear are bloating, pelvic or abdominal pain, difficulty eating, and frequent urination. Patients and their health care providers often attribute such nonspecific changes to menopause, aging, dietary indiscretions, stress, depression, or functional bowel problems [3]. As a result, substantial delays prior to diagnosis are very common [4].

The USPSTF advises against screening for ovarian cancer in women without symptoms, particularly those who don't have a known high-risk hereditary cancer syndrome. Additionally, the USPSTF does not endorse regular screening for ovarian cancer through any method. Procedures like transvaginal ultrasound and serum cancer antigen 125 testing, commonly employed to assess women with symptoms of ovarian cancer, have been studied for screening purposes but are not recommended as routine screening methods [5].

Ovarian cancer tends to develop from three kinds of tissue: approximately 85 to 95 percent from epithelial cells which usually occurs in women older than 50 years, 5 to 8 percent from stromal cells which can occur in women of any age, and 3 to 5 percent from germ cells which usually occurs in women within the age of 15 to 19 [4]. The aim of this study is to find out the age, stage, and epithelial histopathology characteristics of ovarian cancer patients.

2. Methods

This study is a review article. Data collection was taken from a collection of journals sourced from Pubmed with "Ovarian Cancer" AND "Clinical Characteristics" as the mesh words and met the inclusion criteria and exclusion criteria set by the author and then summarized.

Inclusion criteria were the literature included in this review consists of studies that provide data on the characteristics of patients with ovarian cancer. Only articles written in English were selected to ensure consistency and clarity in data interpretation. Furthermore, the selected studies are based on primary data to guarantee the originality and reliability of the findings. To maintain the relevance and timeliness of the information, only literature published in 2019 was considered. Additionally, all selected literature had to be freely accessible to ensure that the data sources are available without any financial barriers. The exclusion criteria for this review included literature that consists of review articles, as the focus was on selecting studies based on original primary data.

3. Results

This study uses journals that were published on Pubmed from 1st January 2019 to 31st December 2019. After the inclusion and exclusion criteria were applied, there were 214 journals found and analyzed by the author, but only six journals that provide age, stage and epithelial histopathology characteristics of ovarian cancer patients in the same parameter the author wanted. Picture 1 shows the selection process of picking the right journals to use in this study. One of the weaknesses of this study is the lack of resources to purchase or access paid journals.

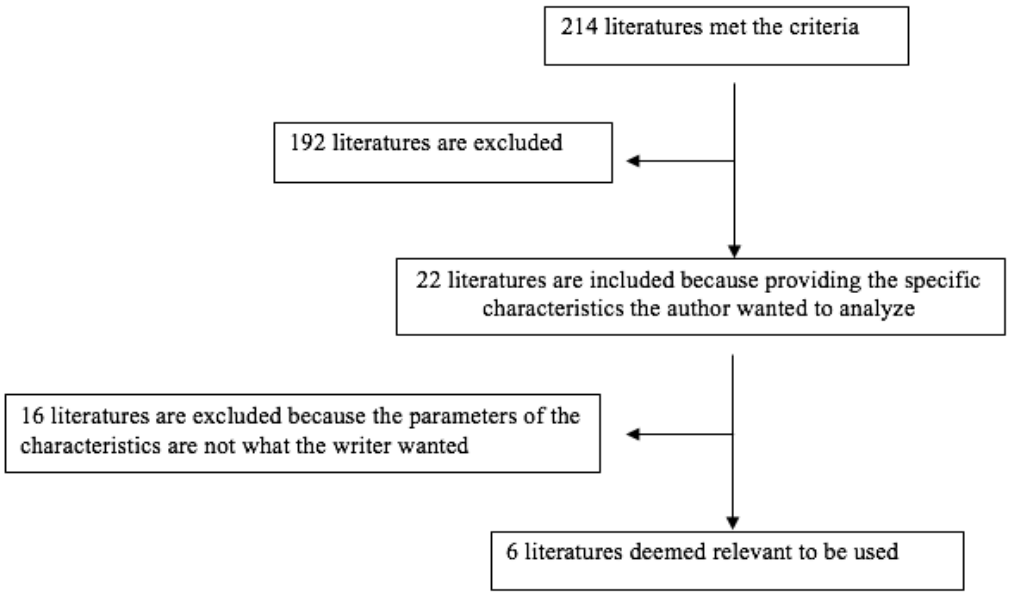

Figure 1. Journal Selections

Journal Characteristics

Shown below is the characteristic of the journals chosen by the writers that for the criteria and deemed relevant to use:

Table 1. Journal Characteristics

Journal	Title	Writers	Number of Patients
1	Association between TAB2 Gene Polymorphisms and Epithelial Ovarian Cancer in a Chinese Population [6]	Xingming Huang, Can Shen, Yan Zhang, Qin Li, Kai Li, Yanyun Wang, Yaping Song, Min Su, Bin Zhou, and Wei Wang	140
2	Clinical Features and Management of Women with Borderline Ovarian Tumors in a Single Center in Brazil [7]	Adriana Yoshida, Bárbara Virginia Gonçalves Tavares, Luís Otavio Sarian, Liliana Aparecida Lucci Ângelo Andrade, and Sophie Françoise Derchain.	57
3	Development of Web-Based Nomograms to Predict Treatment Response and Prognosis of Epithelial Ovarian Cancer [8]	Se Ik Kim, Minsun Song, Suhyun Hwangbo, Sungyoung Lee, Untack Cho, Ju-Hyun Kim, Maria Lee, Hee Seung Kim, Hyun Hoon Chung, Dae-Shik Suh, Taesung Park, and Yong-Sang Song.	866
4	High RIG-I expression in ovarian cancer associates with an immune-escape signature and poor clinical outcome [9]	Dominik Wolf, Heidi Fiegl, Alain G. Zeimet, Verena Wieser, Christian Marth, Susanne Sprung, Sieghart Sopper, Gunther Hartmann, Daniel Reimer, and Maximilian Boesch	141
5	SERS-based detection of haptoglobin in ovarian cyst fluid as a point-of-care diagnostic assay for epithelial ovarian cancer [10]	Jayakumar Perumal, Aniza Puteri Mahyuddin, Ghayathri Balasundaram, Douglas Goh, Chit Yaw Fu, Agne Kazakeviciute1, US Dinish, Mahesh Choolani, and Malini Olivo.	111
6	Expression of the luteinizing hormone receptor (LHR) in ovarian cancer [11]	Shigang Xiong, Paulette Mhawech-Fauceglia, Denice Tsao-Wei, Lynda Roman, Rajesh K. Gaur, Alan L. Epstein, and Jacek Pinski.	232

Shown below is the data for all 6 journals:

Age

Table 2 shows the mean of age of patients from the six journals. The mean of age from all six journals ranges from 48 to 62 years old, and the average value of the mean of age is 54 years.

Table 2. Mean of Age

Journal	Mean of Age (Years)
1	48.89
2	48.42
3	53.5
4	62.42
5	52.9
6	58
Mean	54.02

Stage

Table 3 shows the stage of patients from all six journals. The stage with the highest percentage from the first journal is stage 3, the second journal is stage 1, the third journal is stage 3, the fourth journal is stage 3, the fifth journal is stage 1 and the sixth journal is stage 3. The average value of each stage is 46.64% for stage 3 which places first with the highest percentage, 37.58% for stage 1 which places second, 10.02% for stage 4 which places third, and 7.06% for stage 3 which places last with the least percentage.

Table 3. Stage

Journal	Stage			
	1	2	3	4
1	31 (22.1%)	11 (7.9%)	90 (68.6%)	13 (9.3%)
2	47 (82.46%)	3 (5.26%)	7 (12.28%)	0
3	220 (25.4%)	62 (7.2%)	441 (50.9%)	143 (16.5%)
4	28 (19.86%)	12 (8.51%)	85 (60.28%)	16 (11.35%)
5	29 (53.7%)	3 (5.5%)	15 (27.8%)	7 (13%)
6	50 (22%)	18 (8%)	140 (60%)	24 (10%)
Mean	37.58%	7.06%	46.64%	10.02%

Epithelial Histopathology

Table 4 shows the epithelial histopathology of patients from all six journals. The type of epithelial histopathology with the highest percentage from the first journal is serous, the second journal is mucinous, the third journal is serous, the fourth journal is serous, the fifth journal is serous and the sixth journal is serous. From all six journals, the type of epithelial histopathology most found is serous.

Table 4. Epithelial Histopathology

Journal	Epithelial Histopathology			
	Serous	Clear Cell	Endometrioid	Mucinous
1	76 (54.3%)	16 (11.4%)	8 (5.7%)	9 (6.4%)
2	20 (35.09%)	-	1 (1.75%)	26 (45.61%)
3	529 (61.1%)	85 (9.8%)	96 (11.1%)	79 (9.1%)
4	79 (56.03%)	1 (0.71%)	20 (14.18%)	41 (29.08%)
5	17 (31.5%)	13 (24.1%)	9 (16.6%)	8 (14.8%)
6	160 (69%)	17 (7%)	21 (9%)	13 (6%)

3. Discussion

There are a few risks of ovarian cancer, such as nulliparity, early menarche and late menopause, race, age, environmental factors, and genetic factors. The overall incidence of ovarian cancer rises with age up to mid-70s and then declines slightly among women beyond 80 years [12]. However, a study that was done in 2019 cited that early menarche and late menopause, and lifestyle factors are still debated as a risk factor [13]. In

general, aging allows an extended period to accumulate random genetic alterations within the ovarian surface epithelium [12].

Therefore, the theory corroborates the data that were collected from all six journals. Patients that are diagnosed with ovarian cancer are on the older side. Most patients don't experience any symptoms, and the symptoms that arise are not specific, such as bloating, dyspareunia, and weight gain caused by ascites [14]. As a result, substantial delays prior to diagnosis are very common [4]. Therefore, the theory corroborates the data that were collected from all six journals.

The delay in diagnosing will lead to patients being diagnosed in later stages. The 5-year survival rate for stage 3 is 23 to 41%.There are four types of epithelial histopathology, which are serous, clear cell, endometrioid, and mucinous. From the four types, the most common found is serous, endometrioid places second, mucinous third, and clear cell fourth [12]. Therefore, the theory corroborates the data that were collected from all six journals.

4. Conclusion

Ovarian cancer primarily affects older women, with risk factors including nulliparity, early menarche, late menopause, genetic predisposition, and environmental influences. Although early reproductive factors and lifestyle are debated, aging remains a significant contributor due to the cumulative genetic alterations over time. The non-specific nature of early symptoms often leads to delayed diagnosis, resulting in patients presenting at more advanced stages, which correlates with poorer survival rates. Histopathologically, serous carcinoma is the most common epithelial subtype found, followed by endometrioid, mucinous, and clear cell types. These findings emphasize the need for heightened clinical awareness and early detection strategies to improve outcomes in ovarian cancer patients.

5. Data Availability Statement

The datasets generated and analyzed during the current study are not publicly available due to privacy and ethical considerations but are available from the corresponding author upon reasonable request.

6. Ethical Statement

Sumatera Medical Journal (SUMEJ) is a peer-reviewed electronic international journal. This statement clarifies ethical behavior of all parties involved in the act of publishing an article in Sumatera Medical Journal (SUMEJ), including the authors, the chief editor, the Editorial Board, the peer-reviewer and the publisher (TALENTA Publisher Universitas Sumatera Utara). This statement is based on COPE's Best Practice Guidelines for Journal Editors.

7. Author Contributions

All authors contributed to the design and implementation of this research, data analysis, and finalizing the manuscript.

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10. Conflict of Interest

Authors declares no conflict of interest.

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