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Original Research Article

Evolution of Ovarian Neoplasms in a Semi-Urban Population: A 3-Year Study at a Teaching Hospital in Odisha, India

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Abstract

Background: Due to its complex histology, embryology, and steroidogenesis, the female gonad known as "OVARY" has the potential to develop into cancer. Ovarian neoplasms therefore vary greatly in their biological behavior and structure. The study's primary goals are to determine the prevalence and distribution of different mass lesions in the ovary among the people that are followed, as well as their histological and clinical characteristics.

Methods: This three-year retrospective and descriptive study was conducted at the Obstetrics and Gynaecology Department of Hi-Tech medical college and hospital, Bhubaneswar, India, between 'time period'. The study included all cases of ovarian tumors that were determined to be neoplastic (benign, malignant, and metastatic).

Results: 134 (4%) of the 728 gynaecological hospitalizations had ovarian tumors. Out of these, 23.36% had non-neoplastic lesions and 74.64% had neoplastic lesions. The most prevalent histological pattern seen in 77 neoplasms was epithelial tumors (72.45%). Mucinous tumors (52.07%) were more common among them than serous tumors (45.92%). The most prevalent benign ovarian tumor was mucinous cystadenoma (61.31%), while serous cystadenocarcinoma (59.65%) was the most common malignant tumor. Of the non-epithelial ovarian tumors, germ cell tumors accounted for the majority (59%) of cases.

Conclusion: There were more ovarian neoplasms among the admissions than non-neoplastic ones. Germ cell tumors were the second most prevalent histological type found, with surface epithelial type being the most common. The most common benign kind was mucinous cystadenoma, while the most common malignant type was serous cystadenocarcinoma. The age at which malignant ovarian tumors originate has dramatically decreased, and the most common symptom has been identified as an abdominal mass.

Keywords: Neoplasm, Germ cell tumour, Ovarian tumour, Epithelial tumour, Mucinous cystadenoma.

Introduction

The second most frequent type of cancer in the female genital system is ovarian cancer. Because it's usually diagnosed at an advanced stage, with dismal prognoses, it's commonly referred to as the 'silent killer'. Globally, there were 239,000 new instances of ovarian cancer in 2014, with an estimated 152,000 deaths from the disease [1]. In underdeveloped nations like India, 10–15% of gynaecological cancers are caused by ovarian cancer [2].

In 2015, there were 21,290 new cases of ovarian cancer in the US, accounting for 14,180 deaths. The disease has an approximate lifetime risk of 1.33% and an age-adjusted yearly incidence rate of 11.4 per 100,000 women. It is estimated that a woman has a 1 in 70 to 1 in 100 chance of acquiring ovarian cancer over her lifetime [3].

Age-adjusted ovarian cancer incidence rates in India range from 10.7 to 11.2 per 100,000 in different locations, with certain urban areas having the greatest incidence [4]. Ovarian cancer is the most common cause of mortality from gynaecological cancers, and despite treatment advances, it still poses a serious threat to gynaecologists around the world. This is mainly due to the fact that there are no

known precursor lesions and the ovaries are located deep within the pelvis, making access difficult. As a result, current screening techniques for early detection are not very successful.

In order to better understand the clinical and pathological features of ovarian cancers and their implications for diagnosis, treatment results, and appropriate management in our teaching hospital, we conducted this study.

Methodology

In this study, women with ovarian masses were examined who underwent surgery throughout a three-year period, from 'March 2018 to March 2021'. The study was conducted at 'Hi-Tech medical college and hospital, Bhubaneswar Hi-Tech medical college and hospital, Bhubaneswar', India.

Patients who were receiving medical care were not included. The pertinent medical histories were gathered from the individuals. The pathology lab received the tissue samples that were extracted during surgery and will be examined there. After classifying the identified lesions into two groups—neoplastic, or associated with tumors, and non-neoplastic, or unrelated to tumors—we conducted an analysis on each group.

The results were classified using the World Health Organization's (WHO) ovarian tumor categorization method. Using descriptive statistics, the data were analyzed that had been gathered and displayed it in tables.

Result

There were 728 gynaecological admissions in all during the study period. Specifically, throughout a three-year period, we examined 134 cases of ovarian malignancies. Of these, 23.36% were non-neoplastic lesions and 74.64% were verified to be genuine neoplastic lesions.

8.03% were borderline tumors, 30.07% were malignant, and 58.88% were benign ovarian neoplasms. With 72.45% of the patients in the research, the epithelial type was the most prevalent histological pattern found. The mucinous type accounted for 52.07% of the epithelial tumors, whereas the serous type comprised 45.92%.

Mucinous cystadenoma (61.31%) was the most common benign ovarian tumor, and serous cystadenocarcinoma (59.65%) was the most common malignant ovarian tumor. Of all ovarian tumors, non-epithelial tumors accounted for 24.55%, with germ cell tumors being the most common kind at 56.44%. Mature, benign cystic teratomas were the most frequent type of germ cell tumor.

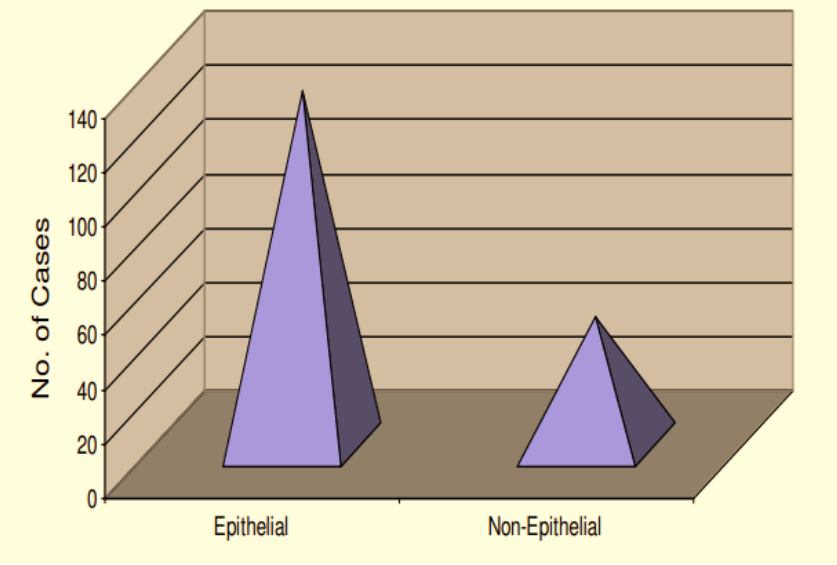

Figure 1: Neoplastic Ovarian Masses' Histopathological Pattern

Three cases of malignant germ cell tumors—one each of immature teratoma, endodermal sinus tumor, and malignant dysgerminoma—accounted for 10.11 percent of the total. Ten instances (20.27%) were related to sex cord stromal tumors, of which two were benign theca cell tumors and eight were benign granulosa cell tumors. In addition, there were two cases (4%) of gastrointestinal tract metastases and six cases (12.89%) of benign fibromas.

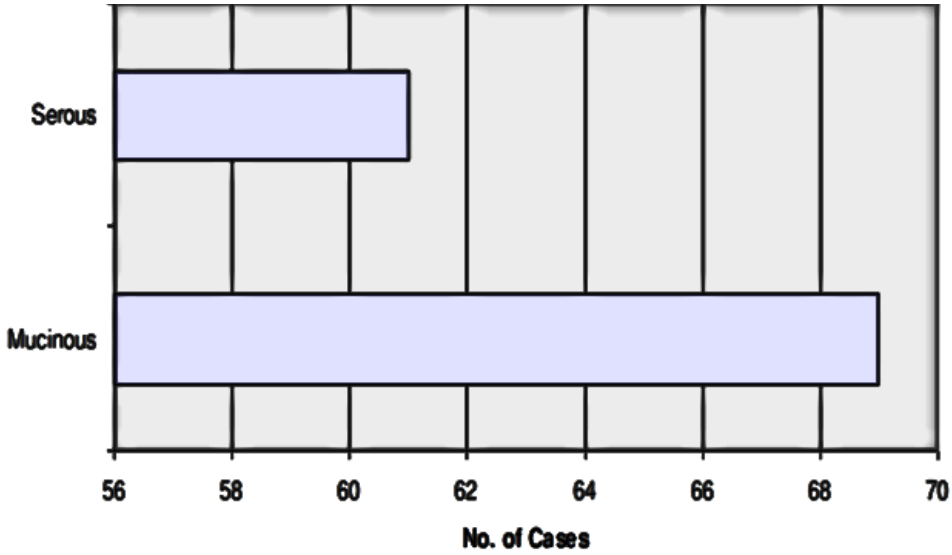

Figure 2: Epithelial tumor distribution

The age range of 20–40 years was more frequently associated with benign epithelial tumors, whereas the elderly (40–60 years) were more likely to have malignant tumors. The most frequent initial symptoms were stomach pain and a lump in the belly.

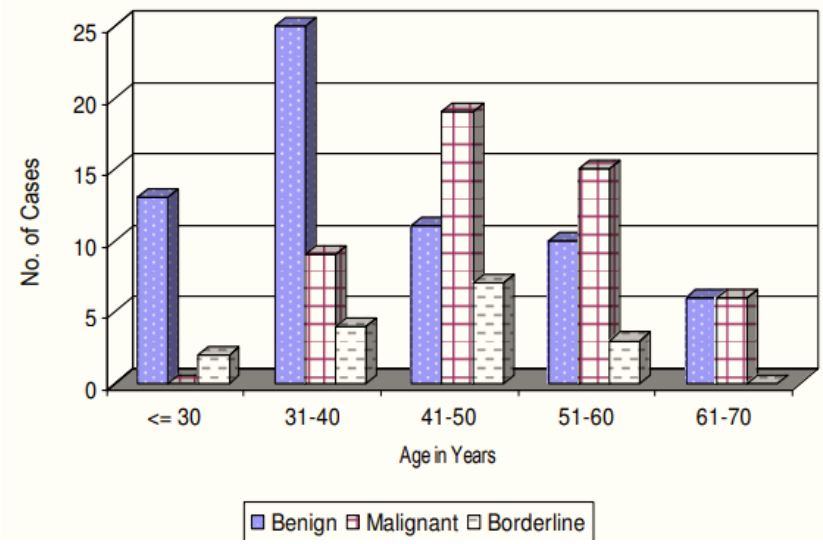

Figure 3: Age-related frequency of ovarian cancer

Discussion

Based on their development pattern, cell type, amount of stroma, and cellular atypia, epithelial ovarian tumors can be classified as benign, borderline, or malignant. The histologic similarity of these tumors to the lower genital tract epithelium leads to their naming [5]. Of the 77 cases in our analysis, 58.88% had benign ovarian tumors, 30.07% had malignant tumors, and 8.03% had borderline tumors. Comparable research revealed different percentages, and some indicated a gradual increase in malignant and borderline tumors [6, 7].

Serous cystadenocarcinomas accounted for 60.65% of malignant tumors, while mucinous cystadenomas were among the most common benign tumors (62.31%) [8]. Teratomas tend to be more common between Malaysians and Chinese, while serous tumors are more common in Indians. Ethnic differences have been noted in ovarian tumors [9].

In the investigation, germ cell tumors (mostly benign cystic teratomas) were the second largest group after epithelial tumors. Other research also found a substantial correlation between germ cell cancers and other populations' occurrence of these tumors [10, 11].

The symptoms of ovarian tumors might vary; they can show up as abdominal lumps and pain, or as asymptomatic abnormalities on regular ultrasound. The most prevalent symptom in our study was mass abdomen (66.79%), which was followed by

abdominal discomfort (25.55%). Additional symptoms included ascites, which is more frequently associated with malignant ovarian tumors, dyspepsia, and weight loss.

Consistent with earlier findings, the analysis indicated that the majority of benign tumors occurred in the 20–40 age range, while malignant tumors were more prevalent in the 40–60 age group [12].

The study is not without limits, though. The study is a retrospective, single-center investigation with a limited study duration and a small sample size. As a result, Indian women may differ in their precise ovarian tumor patterns, age distribution, and presenting symptoms. Further validation of our results requires larger multi-center investigations.

Conclusion

This study's primary benefit is that it provides a comprehensive picture of the incidence and histological type of ovarian tumors. Germ cell tumors are the most prevalent type of tumor after surface epithelial tumors. The majority of ovarian tumors in our population are of the benign mucinous type, the mean age at which malignancy occurs has significantly decreased, and both borderline and malignant ovarian tumors are on the rise.

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