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Frequency of Different Types of Ovarian Cancer in Vali-e-Asr Hospital (Tehran University of Medical Sciences) 2001-2003

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Abstract: Purpose of this study was to report histology specific age adjusted ovarian cancer incidence rates from 2001-2003 in Tehran University Hospital (valie-Asr hospital). This was a case series study including all microscopically confirmed cases of ovarian malignancies from 2001-2003. There were 152 cases of ovarian cancer, 102 (67.1%) epithelial type, 26 (17.1%) germ cell tumors, 14 (9.2%) sex cord stromal and 10 (6.6%) metastatic ovarian tumors. Present results were compatible with results from nonwestern countries. Epithelial type tumors and sexcord-stromal tumors were more prevalent after the age 50 (40 and 44.4%consequently). Germ cell tumors were more prevalent before 20 (16 cases, 61.5%) ($\chi^2 = 42.54$, p-value = 0.000). Stage of disease in epithelial type tumors was advanced in most of patients but most germ cell tumors and sexcord-stromal tumors were stage I ($\chi^2 = 19.6$, p-value = 0.000). Present study showed that epithelial ovarian tumors in comparison to western countries are less frequent in Iran but still this histologic type is the most prevalent type of ovarian malignancy in this area of the world. Of course in younger patients we can predict more probability of germ cell tumors with more localized disease and better prognosis.

Key words: Ovarian cancer, frequency, epithelial tumors, germ cell tumors, sex cord-stromal tumors

INTRODUCTION

Of all gynecologic cancers, ovarian malignancies represent the greatest clinical challenge and are fourth most common cause of death from malignancies in women (Berek, 2005). Ovarian cancer is a family of malignancies that displays great histopathological diversity (Berek, 2002).

Epithelial cancers are the most common ovarian malignancies and consists 90% of ovarian cancers (Ozols *et al.*, 2005). The median age of patients with epithelial ovarian cancer is 60 years and average lifetime risk is 1 in 70.

Ovarian cancer rises sharply between ages 45 and 54 years and remains elevated for the remainder of a woman's life, paralleling gonadotropin levels over this period (Berek, 2005). Nulliparity is associated with an increased risk whereas oral contraceptive use, pregnancy and lactation are associated with a reduced risk of ovarian cancer (Caninstra, 2004; Greer *et al.*, 2006; Gronwald *et al.*, 2006; Montella *et al.*, 2005). A popular theory to account for these findings is that these events lead to a break in monthly ovulation and that it is repeated disruption and healing of the surface of the ovary that is the cause of ovarian cancer (Berek, 2005; Brinton *et al.*, 2005).

Dietary risk factors are meat intake and cheese intake. Higher tomato consumption and tea consumption reduces the risk significantly (Larsson and Wolk, 2005; Kiani *et al.*, 2006).

Different histopathologic types of ovarian epithelial tumors are serous, mucinous, endometrioid, clear cell, brenner and undifferentiated (Quirk and Natarajan, 2005).

Nonepithelial ovarian cancers are uncommon. These include malignancies of germ cell origin, sexcord-stromal cell origin, metastatic carcinoma to the ovary and a variety of extremely rare ovarian cancers. Nonepithelial tumors account for 10% of all ovarian cancers (Caninstra, 2004).

The purpose of this study was to report histology-specific age-adjusted ovarian cancer incidence rates from 2001 to 2003 in gynecology oncology patients of Vali-e-Asr Hospital of Tehran University of Medical Sciences which is the main referral center for gynecology oncology patients in Iran.

MATERIALS AND METHODS

This was a case series study which included all microscopically confirmed cases of ovarian malignancies admitted in Vali-e-Asr hospital gynecology oncology ward from 2001 to 2003.

We gathered data from ward files, which included histologic type of tumor, age, parity and stage of disease.

Analysis of variables was done by SPSS software via Chi square test for comparing relationship of ovarian cancer according to age and stage of disease. Also some descriptive statistics like frequency of different histologic types, frequency of different age groups and stages were calculated.

RESULTS

There were 152 cases of ovarian cancer between years 2001 and 2003 including 102 (67.1%) epithelial ovarian tumors, 26 (17.1%) germ cell tumors, 14 (9.2%) sex cord stromal and 10 (6.6%) metastatic ovarian tumors.

Also between all gynecological cancer cases, most frequent cancer which led to patient hospitalization in gynecology oncology ward was ovarian cancer (31.7% of all patient hospitalizations in this ward) cancer of cervix (137 cases-28.5%) and uterine cancer (62 cases-13.5%) were 2nd and 3rd leading causes for hospitalization at the same time in our center.

Epithelial ovarian cancer was most prevalent after the age 50 (40 cases, 39.2%) 31 cases (29.5%) were 41-50 year old and 30 (29.4%) were 20-40 years. We had one case before 20 (0.98%).

Germ cell tumors were more prevalent before 20 (16 cases-61.53%) there was not any germ cell tumor after 40.

All of these findings were statistically significant with Chi-square test ($\chi^2 = 42.54$, p-value = 0.000).

Sex cord-stromal tumors were more prevalent after age 50 (6 cases-44.4%) least cases were before 20 years. (1 case-7.1%).

Metastatic tumors were prevalent between 40-50 years (4 cases-40%).

Mean age of all types of ovarian cancer was 41.84±15.5 and median age was 43.

Thirty four of 152 (22.3%) ovarian cancer cases were nulliparous, 41 and 44 cases (26.97 and 28.94%) in parities 1-3 and 4-6 consequently. Smallest group were patients with parity 6 and more (33 of 152 cases-21.6%).

Stage of disease in epithelial type tumors was III in most of patients (58 of 102 cases 57.05%) but 15 of 26 germ cell tumors (57.7%) and 10 of 14 sexcord-stromal tumors (70.1%) were stage I (Table 1) ($\chi^2 = 19.6$, p-value = 0.000).

Table 1: Frequency of different stages in ovarian cancer Valie-Asr hospital Tehran University (2001-2003)

Stages	Epithelial	Germ cell	Sex cord stromal
I	21 (20.6)	15 (57.6)	10 (71.4)
II	9 (8.8)	3 (11.5)	-
III	58 (56.8)	8 (30.7)	2 (14.2)
IV	14 (13.7)	-	2 (14.2)
Total	102	26	14

Values in parenthesis shows percentage; $\chi^2 = 19.6$, p-value = 0.000

Sixty six percent of patients were referred from sites other than Tehran and most of them were from north and center of Iran.

DISCUSSION

This study was done on all ovarian cancer patients of gynecology oncology ward of Valie-Asr hospital from 2001 to 2003, to determine frequency of different pathologic types in each age group and to compare relationship of ovarian cancer according to age and stage of disease.

From 152 ovarian cancer cases, 102 (67.1%) were epithelial type and 36 (23.9%) were nonepithelial tumors.

Ninety percent of ovarian cancers in western countries has been reported to be epithelial type but in Asian and black societies epithelial cancers are much less common (Berek, 2005; Berek, 2002; Caninstra, 2004).

In the SEER program of the national cancer institute for the years 1992 through 1999, epithelial ovarian cancer displayed the highest age adjusted incidence and was 95.3% of all ovarian cancers. Six percent of epithelial type tumors were in black people but this group had a larger part of nonepithelial tumors (12.1% of germ cell tumors and 21.8% of sex cord-stromal tumors were in blacks).

Present results are compatible with studies in Asian and black societies. In Present study epithelial ovarian cancer was significantly more prevalent after the age 50. In this study germ cell tumors were significantly more prevalent before 20 (16 cases-61.53%). There wasn't any germ cell tumor after 40.

In program of NCI median age of epithelial tumors was 61 years and 53.2% of cancers were 62 or more, 45% were 30-59 years and 4.2% were less than 30 years, 58% of germ cell tumors were before 30 and 9.4% were after 60. Median age was 26 in germ cell group (Caninstra, 2004).

In the study by You *et al.* (2005) most common gynecologic malignancy before age 25 years was ovary and most common histological type was germ cell.

In the study by Shiromizu *et al.* (1991) 33% of all 1,387 ovarian tumors were germ cell type. Mean age of patients with germ cell tumors ranged between 17.3 to 31.9 years.

In present study there were 14 cases in sex cord stromal group which 44.4% of them were after 50 years and only 1 case was before 20.

Median age of this tumor type in SEER study was 50 years with 57.3% between 30-59 years and 30.4% after 60 years (Caninstra, 2004). These results are compatible with present study.

About parity of patients there were 35 cases (23%) in nulliparous group. Observed risk factors for ovarian

cancer include a protective effect of pregnancy; breastfeeding and oral contraceptive use (Greer *et al.*, 2006; Gronwald *et al.*, 2006; Montella *et al.*, 2005).

In the study by Hinkula *et al.* (2006) from Finland risk of ovarian cancer was low in women with at least five deliveries.

Patients with epithelial ovarian cancer in this study (58 cases 56.7%) were significantly more in advanced stages at diagnosis but in germ cell and sex cord stromal most were in stage I at diagnosis.

In the SEER study (Caninstra, 2004) 60.6% of epithelial tumors were diagnosed when there was distant stage of tumor and only 25.7% were localized at diagnosis. Only 28.7% of germ cell tumors and 22.2% of sex cord-stromal tumors were in advanced stages at diagnosis.

Present study showed that epithelial ovarian tumors in comparison to western countries are less frequent in Iran but still this histologic type is the most prevalent type of ovarian malignancy in this area of the world.

Of course in younger patients we can predict more probability of germ cell tumors with more localized disease and better prognosis.

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