

## Epidemiology of Gynecological Cancers in a Tertiary Care Center (Government General Hospital, Guntur)

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### Abstract:

**Introduction:** Comprehensive statistics on gynecologic malignancies reported from India are deficient. This study was performed to ascertain the profile of gynecologic cancers presented to our center, regarding prevalence, age at presentation, frequency of involvement at various sites, region and religion wise distribution.

**Aim:** To describe the epidemiology of gynecological cancers in a tertiary care hospital. **Methodology:** Retrospective review of records of cancers patients from Department of Radiotherapy, at a tertiary care center, from April 2010 to December 2014 was performed. Cases were stratified based on gender, age, region and religion wise

**Results:** The total number of cases registered in Radiotherapy Department during the study period is 6148 of which gynecological cancer cases constituted 1750. Cervical malignancies were the commonest at our center as compared to uterine malignancies in data from Surveillance, Epidemiology, and End Results (SEER) Program of United States and European Union. All malignancies except cervical cancers affected a younger age group at our center than in the US population. Most of the cases (61%) were between 41 to 60 years of age group, and were residents of rural areas.

**Conclusion:** Cervical cancer is still the most common gynecological cancer in the developing world. HPV vaccination is the primary prevention of cervical cancer. Secondary prevention through conducting health education and creating awareness about cervical cancer is thus a critical element in determining whether a woman will undergo Pap test or not.

**Key words:** Gynecological Cancers, Cervical Cancer, Screening, Pap smear.

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### I. Introduction:

Gynecologic cancers include cervical cancer, ovarian cancer, uterine/endometrial cancer, vaginal cancer and vulval cancer. They form a huge burden of morbidity and mortality around the world. Data available from various centers worldwide are indicative of vast regional variability in incidence, common sites of occurrence, age and stage of presentation. Cancer Cervix is one of the common gynecologic malignancies and is the major cause of cancer mortality among Indian women.<sup>1,2</sup> We aimed to undertake this study to collect comprehensive information from our center on gynecologic malignancies. A retrospective analysis of gynecologic malignancies at our center over the past decade was done. An attempt has been made to compare our data with that available from cancer registries in India and across the world.

### II. Methodology:

The records of the Radiotherapy department in our center were retrospectively reviewed to identify all cases of Gynecologic malignancies. All cases registered at our center or referred to it and treated in the Department of Radiotherapy during April 2010 to December 2014 were reviewed. Information on site of affliction, patient age, religion and region of residence was collected. All cases included for the study had a definite histologic diagnosis made either on biopsy or resection specimens. The data was analyzed using Microsoft Excel software. Descriptive statistics are presented for gynecological cancers according to their age at presentation, religion, region and type of cancer. Results are presented as numbers with percentage.

### III. Results:

The total number of cases that were registered in Radiotherapy department from 2010 to 2014 is 6168. In the present study out of 6168 cases (Table I), 39.55% were male and 60.45% female. The year wise distribution of Gynecological Cancers is shown in Table II. A total of 1750 new cases of gynecologic malignancies were reported and treated at our center between April 2010 and December 2014. Carcinoma Cervix accounted for about 40% (1480 Of 3728 females) of all female cancer patients. Age wise distribution of carcinoma cervix is shown in Table III. The age ranged from 15 to 83 years (median 53). Patients between 41 and 60 years of age constituted the commonest age group affected (61% cases). As expected cervix was the

commonest site affected accounting for 85% (1480 of 1738) of all gynecological malignancies. The other sites of involvement included Ovary (82), Uterus/Endometrium (46), Vulva (52), Vagina (76) and Fallopian Tube (2). Religion wise distribution of cervical cancer cases were shown in Table IV. Hindus constituted almost three quarters while Muslims constituted less than 4% of all cervical cancer patients. Majority of carcinoma cervix cases were stage III (41.62%) at initial presentation. Stage wise distribution of cervical cancer cases is shown in table V. Regional distribution of all cancers cases registered with our department is shown in table VI. Most of the cases came from Guntur district (64.26%), where the hospital is located.

#### **IV. Discussion:**

Worldwide, cervical cancer is the second most common malignancy in women worldwide after breast cancer. Cervix was the commonest site of affliction among gynecologic malignancies in our cohort of patients.

It is also the leading site reported from other registries in India and South Asia.<sup>3,4</sup> In hospital based registries in India, including a consolidated report from the National Cancer Registry Program (NCRP) as well as rural institutes, cervical cancer remains the commonest gynecologic cancer and among the two most common cancers overall in females, rivaled only by breast cancer.<sup>5,6</sup> Ovary was the second leading site among gynecologic malignancies at our center. It is also the leading site reported from Tehran.<sup>7</sup> Data from Globocan 2002 also shows a relatively higher incidence of ovarian malignancies in the West as compared to data from our registry, the NCRP and other cancer registries in India.<sup>5,6,8</sup> Uterine malignancies were the commonest ones reported from the Surveillance, Epidemiology, and End Results (SEER) Program (of the United States) and European Union and significantly higher in proportion as compared to those reported at our center.<sup>9,10</sup> Table VII compares frequencies of gynecologic malignancies according to their site of origin across various registries worldwide.

Cancer of the cervix is a common cancer that afflicts Indian woman -physically, psychologically, socially and financially. Cervical cancer can be prevented by identifying pre-cancerous lesions early using Pap smear screening and treating these lesions before they progress to cancer.<sup>12</sup> Prevention, early diagnosis and treatment have been shown to reduce mortality due to cervical cancer in many countries and HPV vaccine has high efficacy for prevention of HPV vaccine types and related outcomes.<sup>13</sup> Sudhir et al found that major proportions of the rural women were not aware of the risk factors of cervical cancer, the screening process and its importance as well as good hygienic practices.<sup>14</sup> Our study supports these results. Majority of cases presented in clinical stage III in our study. In our study lack of awareness about screening, about symptoms of disease, lack of knowledge regarding where to go for the test are among the most important causes of presentation in advanced stage.

Three quarters of all cervical cancer cases in our study belonged to Hindu religion. Aswathy et al found similar findings in their study, in which more than half of the study population (54.8%) were Hindus.<sup>15</sup> The lower risk of cervical cancer in muslim women was noted internationally<sup>16</sup>, the custom of circumcision in muslim men (Less HPV virus colonization in penis) which reduces the sexual transmission of HPV is the likely explanation although other factors might play a role. Low socio-economic status is also recognized as a risk factor for many health problems, including cervical cancer, particularly in low-resource settings. This may be due to restricted access to health care services, limited income, poor nutrition, and a low level of awareness about health issues and preventive behavior such as genital hygiene. All of these factors can make them more vulnerable to illness and preventable diseases such as cervical cancer. Studies reported that poor hygienic practices or conditions may increase risk of HPV infection or cervical cancer while there is no consistent evidence to support this assertion.<sup>17</sup>

#### **V. Conclusion**

We present comprehensive data from our institute on gynecologic malignancies which brings to light aspects not adequately reported from the Indian subcontinent including age specific incidence and religion wise presentation. Cervical cancer in below 15 years age group has not been reported in other registries. Stage at presentation has also not been quantitatively addressed in most Indian registries. Small number of cases of vulval, vaginal and fallopian tube cancers in our registry due to their rarity were not suitable for making statistical comparisons/estimates however; these are among the only data presently available on these cancers in India. Comparative analysis with other registries reflects lacunae in the gynecologic cancer detection programs in India. Conducting health education and creating awareness about cervical cancer is thus a critical element in determining whether a woman will undergo Pap test or not. A cost-effective second-generation HPV vaccine is needed for developing countries to address various issues specific to the region. We need to develop a cost

effective screening method by training paramedical staff at primary health center level, to screen the women from 30 years onwards, and to refer the women with positive result to tertiary health care center for further evaluation by Pap smear, HPV – DNA testing and guided cervical biopsy.

Table I: Year wise distribution of male & female patients that attended RT department from 2010 to 2014:

Year	Male	Female	Total Number
2010	445 (40.41)	656 (59.59)	1101
2011	481 (41.78)	670 (58.22)	1151
2012	461 (35.65)	832 (64.35)	1293
2013	457 (37.15)	773(62.85)	1230
2014	596 (42.79)	797 (57.21)	1393
<b>Total Number</b>	2440 (39.56)	3728 (60.44)	6168

**Table II. Year wise distribution of Gynecological cancers:**

S. No	Name of cancers	2010	2011	2012	2013	2014	Total
1.	Ca. Cervix	267(86.40)	166(80.58)	381(85.4)	344(86.4)	322(82.3)	1480(86.1)
2.	Ca. Ovary	12(3.88)	14(6.81)	19(4.2)	17(4.27)	20(5.1)	82 (4.68)
3.	Ca. Vulva	17(5.50)	11(5.40)	09(2.0)	08(2.01)	07(1.7)	52 (2.97)
4.	Ca. Vagina	10(3.32)	08(3.88)	21(4.7)	16(4.02)	21(5.37)	76 (4.34)
6.	Ca. Uterus	02(0.64)	07(3.40)	16(3.5)	13(4.02)	08(2.0)	46 (2.62)
7.	Ca. Fallopian tube	01(0.32)	00	00	00	01(0.2)	02 (0.11)
8.	Total	309	206	446	398	379	1738

**Table III. Age wise distribution of Carcinoma cervix:**

S. No	Age group	Percentage of distribution
1.	0-20	1%
2.	21-40	17%
3.	41-60	61%
4.	61-80	20%
5.	81-100	1%

Figure I. Age wise distribution of Carcinoma Cervix:

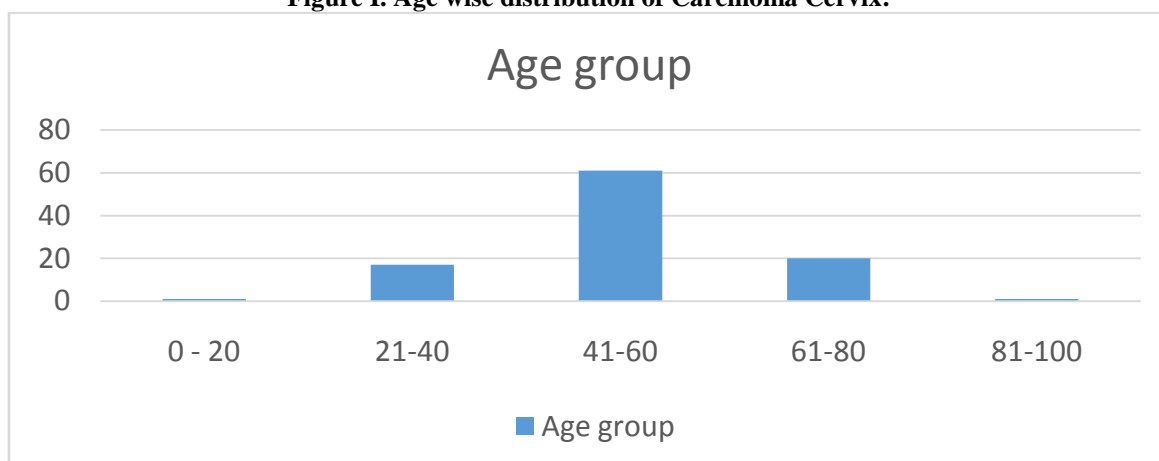


Table IV: Religion wise distribution of Cervical Cancer Number with Percentage

S. No	Year	Hindu	Christian	Muslim	Total Number
1.	2010	173 (64.79)	79(29.58)	15 (5.61)	267
2.	2011	107 (69.43)	50(25.90)	9 (4.66)	166
3.	2012	292 (76.64)	72(18.89)	17 (4.46)	381
4.	2013	266 (77.32)	67(19.47)	11 (3.19)	344
5.	2014	255 (79.19)	59(18.32)	8 (2.48)	322
	<b>Total Number</b>	<b>1093 (73.85)</b>	<b>327 (22.09)</b>	<b>60 (4.05)</b>	<b>1480</b>

Table V: Clinical Stage at presentation

Clinical Stage	Cases	Percentage
<b>I</b>	<b>176</b>	<b>11.89</b>
<b>II</b>	<b>551</b>	<b>37.23</b>
<b>III</b>	<b>616</b>	<b>41.62</b>
<b>IV</b>	<b>137</b>	<b>9.26</b>

Table VI: Region wise distribution of all cancers (male and female)

Year Wise	Guntur	Krishna	Prakasam	Other Dist.	Total Number
<b>2010</b>	793 (72.02)	18 (17.98)	8 (7.99)	02 (1.99)	1101
<b>2011</b>	795 (69.07)	184 (15.98)	103 (8.94)	69 (5.99)	1151
<b>2012</b>	842 (65.11)	245 (18.94)	155 (11.98)	51 (3.94)	1293
<b>2013</b>	739 (60.08)	233 (18.94)	172 (13.98)	86 (6.99)	1230
<b>2014</b>	795 (57.07)	292 (20.96)	195 (13.99)	111 (7.96)	1393
<b>Total Number</b>	<b>3964 (64.26)</b>	<b>972 (15.75)</b>	<b>633 (10.26)</b>	<b>319 (5.17)</b>	<b>6168</b>

Table VII: Sites of involvement of gynecologic cancers-comparison with international data<sup>7-11</sup>

Site	Our center	SEER	European union	UK	Indonesia	Tehran
<b>Cervix</b>	86.1%	16.24%	24.48%	18.28%	75%	19.6%
<b>Ovary</b>	4.68%	26.95%	34.48%	36.34%	19.63%	55.5%
<b>Uterus</b>	2.62%	49.14%	41.14%	38.92%	4.2%	24.9%
<b>Vulva</b>	2.97%	4.67%		5.16%	0.68%	
<b>Vagina</b>	4.34%	1.48%		1.29%	0.46%	

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