

# The incidence of female genital tumors in the province of Sassari in the period 1992-2000

**A. Cossu<sup>1</sup>, M.D.; M. Budroni<sup>2</sup>, M.D.; G. Capobianco<sup>3</sup>, M.D., Ob/Gyn, Ph.D. Fellowship;  
D. Pirino<sup>2</sup>, M.D.; G. Palmieri<sup>4</sup>, M.D.; S. Dessole<sup>3</sup>, M.D., Professor of Gynaecology and Obstetrics;  
F. Tanda<sup>1</sup>, M.D., Professor of Pathologic Anatomy; R. Cesaraccio<sup>2</sup>, M.D.;  
P.L. Cherchi<sup>3</sup>, M.D., Professor of Gynaecological Oncology**

<sup>1</sup>Institute of Pathologic Anatomy, University of Sassari

<sup>2</sup>Multizonal Epidemiologic Observational Center, Azienda USL 1, Sassari

<sup>3</sup>Department of Pharmacology, Gynaecology and Obstetrics, University of Sassari

<sup>4</sup>Institute of Biomolecular Chemistry, C.N.R., Sassari (Italy)

## Summary

The incidence of gynecologic tumors in the Province of Sassari in the period 1992-2000 has been studied in order to estimate their value and to make a comparison with the data of the period 1974-83. The analysis of our data regarding the period 1992-2000, if compared with those of the previous period 1974-83, showed a change in the percentage distribution of all gynecologic tumors, with an increase in the incidence of malignant tumors of the ovary (from 17.1% to 28.0%) and a reduction in the incidence of endometrial carcinoma (from 52.1% to 45.0%). Cervix cancer seemed stationary with a mild reduction (from 26.8% to 23.0%). The data showed, with regard to the incidence per 100,000, an increase of endometrial carcinoma (19.05 per 100,000 vs 11.99 per 100,000) and malignant ovarian tumor (11.99 per 100,000 vs 3.95 per 100,000). Our data reported a worrying increase of hormonal-dependent tumors in North Sardinia such as endometrial and ovarian cancer with the highest increase in malignant ovarian tumors. In comparison to the previous period we confirmed a historically low incidence of cervical and external genitalia tumors (vulva and vagina) in North Sardinia.

*Key words:* Gynecologic tumors; Incidence; North Sardinia.

## Introduction

Gynecologic malignant tumors have been increasing over the decades and account for about 20% of all female malignancies in the Western Countries [1]. Endometrial carcinoma and epithelial ovarian tumors which are known as "progress tumors" present an increase of incidence due to environmental and genetic factors [2].

On the contrary, the widely available Pap smear screening has been shown to reduce the incidence of advanced invasive cervical cancer and hence the mortality with a consistent increase in cervical intraepithelial neoplasia (CIN) [3].

In a previous paper [4] we evaluated the incidence of gynecologic tumors in the Province of Sassari from 1974 to 1983 and we observed a consistent increase of endometrial carcinoma in comparison to the data of previous decades, a reduction of invasive cervical cancer which presents in Sardinia the lowest incidence among Italian Cancer Registries [1].

The aim of this study was to evaluate the incidence trend of gynecologic tumors in our Province and to report the variations in comparison to other studies.

## Materials and Methods

In this collaborative study by the Obstetric and Gynaecologic Clinic, the Institute of Anatomy and Histopathology of Sassari

University and the Multizonal Epidemiologic Observational Centre of Local Health Unit no. 1 of Sassari, all cancers of the female genital tract, which were registered in the Province of Sassari in the period 1992-2000, have been studied in order to evaluate:

- Incidence per 100,000 women and per year.
- The age-class distribution.
- Incidence of most frequent tumors ("corpus uteri", cervix, ovary) per 100,000 women by age-class.
- The 3-year distribution of cervical tumors (in situ and invasive forms).

The data obtained have been compared with the results of our previous study [4] which involved the same population in the period 1974-1983.

## Results

Table 1 shows the distribution of gynecologic tumors with regard to the site of origin and year of first observation per 100,000 women.

Corpus uteri tumors (454), including both endometrial carcinomas (438) and malignant stromal types (16), showed a mean incidence of 19.05/100,000 with annual fluctuation ranging from 17.6 (2000) to 24.7 (1998). Uterine sarcomas (16) had a mean incidence of 0.6/100,000 women.

Tumors of the cervix (234), including both invasive (144) and in situ (90) types, had a mean incidence of 9.8/100,000 with values ranging from 6.7 to 15.5/100,000. All malignant tumors of the uterus (corpus plus cervix:

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Table 1. — Distribution of gynecologic tumors in relation to the site of origin and year of first observation (rate/100,000 women per year).

	Corpus uteri		Cervix		Ovary		Vulva		Vagina	
	No. cases /100,000	No. cases (in situ) /100,000	No. cases (in situ) /100,000	No. cases (border line) /100,000	No. cases /100,000	No. cases /100,000	No. cases /100,000	No. cases /100,000	No. cases /100,000	No. cases /100,000
1992	44	18.4	16	(1) 6.7	28	(5) 11.7	4	1.6	1	0.4
1993	43	18.0	27	(9) 11.3	27	(-) 11.3	4	1.6	-	-
1994	48	20.1	25	(3) 10.4	33	(1) 13.8	4	1.6	1	0.4
1995	55	23.0	29	(12) 12.1	31	(-) 13.0	3	1.2	-	-
1996	48	20.1	20	(5) 8.3	26	(-) 10.9	6	2.5	1	0.4
1997	58	24.3	37	(23) 15.5	38	(3) 15.9	4	1.6	1	0.4
1998	59	24.7	32	(13) 13.4	47	(1) 19.7	5	2.0	2	0.8
1999	57	23.9	23	(11) 9.6	27	(4) 11.3	1	0.4	2	0.8
2000	42	17.6	25	(13) 10.4	28	(2) 11.7	3	1.2	1	0.4
Total	454		234	(90)	285	(16)	34		9	
Mean /100,000	19.05		9.8		11.9		1.4		0.37	

688) had a mean incidence of 28.8/100,000, with a minimum of 24.7 (1992) and a maximum of 39.5 (1997).

The mean incidence of malignant ovarian cancers (285), including 16 cases of border-line tumors without invasive implants, resulted to be 11.9/100,000.

Tumors of the vulva (34) had a mean incidence of 1.4/100,000, and those of the vagina (9) 0.37/100,000.

Figure 1 shows the percentage incidence of gynaecologic tumors in relation to the site of origin. Tumors of the "corpus uteri" accounted for 45.0%, followed by malignant ovarian tumors (28.0%) and cervical carcinomas (23.0%). Tumors of vulva and vagina were 3.0% and 1.0%, respectively.

The distribution of cases in relation to the age of onset is shown in Figure 2. Tumors of the corpus uteri had a bimodal curve with two peaks of incidence: the first from

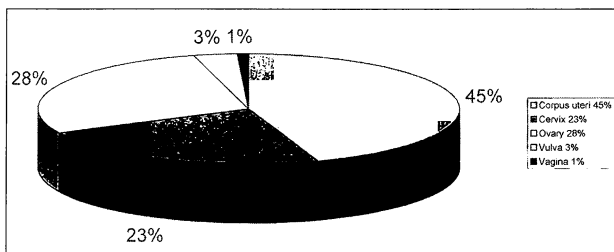


Figure 1. — Percentage of incidence of gynecologic tumors in relation to the site of origin.

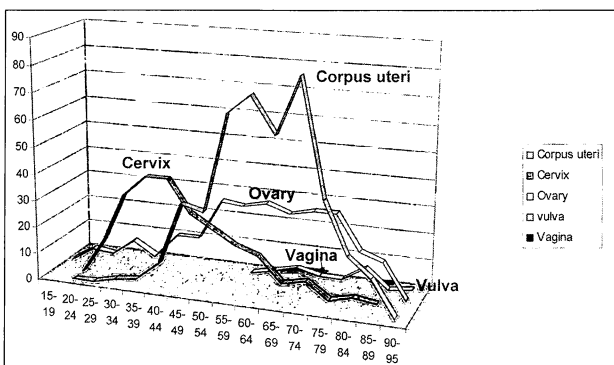


Figure 2. — Distribution of cases in relation to the age of onset.

Table 2. — Incidence of the most frequent gynecologic tumors (corpus uteri, cervix, ovary) per 100,000 selected for age-group in the period 1974-83 and 1992-00.

Year	Corpus uteri		Cervix		Ovary	
	1974-83	1992-00	1974-83	1992-00	1974-83	1992-00
15-19	-	-	-	-	-	1.49
20-24	-	0.6	-	0.6	-	4.33
25-29	1.29	0.5	3.24	7.1	1.94	3.0
30-34	3.31	1.5	5.95	16.4	0.66	6.1
35-39	2.91	2.0	5.08	20.4	5.08	3.5
40-44	4.38	6.3	8.77	23.1	1.46	9.2
45-49	21.07	21.4	13.77	17.6	12.15	10.0
50-54	36.39	20.7	18.19	14.9	10.75	20.0
55-59	33.0	48.2	13.02	12.7	7.81	21.2
60-64	49.52	55.4	18.12	11.0	8.45	23.6
65-69	52.33	52.3	13.95	5.0	17.43	24.4
70-74	37.54	77.1	6.25	7.4	5.0	28.8
75-79	-	46.7	-	2.2	-	35.3
80-84	-	45.4	-	8.2	-	37.1
85-89	-	27.2	-	5.4	-	27.2
90-94	-	36.3	-	-	-	36.3
Mean /100,000	11.99	19.05	6.17	9.8	3.95	11.9

59 to 65 years, the second from 70 to 75 years. Cervical carcinomas had an earlier rise of the curve involving fertile age, with a peak in incidence between 40-45 years and a slow but constant regression in the most advanced ages. Malignant ovarian tumors displayed a little peak in young age related to germinal types and a second peak at 65-70 years, whereas tumors of the external genitalia (vulva and vagina) were exclusively observed in the seventh and eighth decades of life.

Table 2 shows the incidence of the most frequent gynecologic tumors (corpus uteri, cervix, ovary) per 100,000 women selected for age-group in the period 1974-83 and 1992-2000.

Malignant tumors of the corpus uteri had the highest incidence rate (77.1 per 100,000 women) between 70 and 74 years of age in the period 1992-2000 whereas it was (52.3 per 100,000 women) between 65 and 69 years of age in the period 1974-83.

Tumors of the cervix had the highest incidence rate (23.1 per 100,000) between 40 and 44 years of age in the period 1992-2000 whereas it was (18.19 per 100,000) between 50 and 54 years of age in the period 1974-83.

Malignant ovarian tumors had the peak incidence (37.1 per 100,000) in advanced age (80-84 yrs) in the period 1992-2000 whereas it was (17.43 per 100,000 women) in an early range (65-69 yrs) in the period 1974-83.

If we consider the age-groups at the highest risk for the corpus uteri (45-75 yrs) and for ovarian tumors (50-84 yrs), the following values were reported: 43.4 per 100,000 women for the former and 26.9 per 100,000 women for the latter, respectively.

Figure 3 shows the distribution for triennium of cervix carcinomas together with the ratio between in situ and invasive forms. A continuous increase of in situ forms was observed; these latter in the second triennium exceeded the incidence of invasive forms with a mild reduction in the last period.

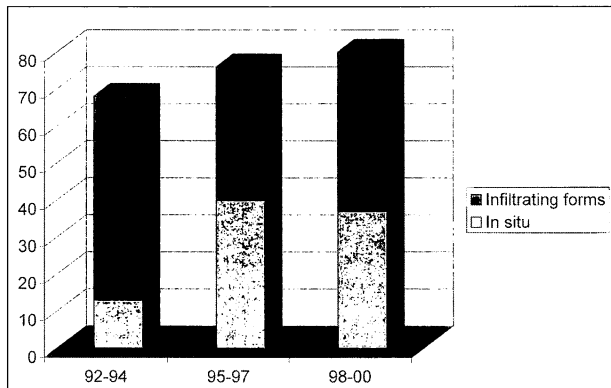


Figure 3. — Distribution per triennium of cervix carcinomas together with the ratio between in situ and invasive forms.

### Discussion and conclusions

The analysis of our data regarding the period 1992-2000, if compared with those of the previous period 1974-83 [4], showed a change in the percentual distribution of all gynecologic tumors, with a reduction in the incidence of tumors of the corpus uteri (from 52.1% to 45.0%) especially due to the increase of malignant ovarian tumors which achieved second place with 28.0% – higher than 17.1% of the previous period. Cervix cancer seemed stationary with a mild reduction (from 26.8% to 23.0%). The same trend was reported for vulva and vagina tumors.

The analysis of the mean incidence per 100,000 showed an increase in corpus uteri cases with 19.05 per 100,000 which was higher than 11.99 per 100,000 in the previous period 1974-83. Malignant ovarian tumors quadrupled (11.99 vs 3.95 per 100,000). Cervix malignant tumors had a mild increase (9.8 vs 6.17 per 100,000) with a constant increase of in situ forms that balanced the invasive forms in the last triennium because of the wide diffusion of cytological mass screening in Sardinia. The incidence of external genitalia tumors (vulva and vagina) did not change in comparison to the period 1974-83.

The mean incidence of uterine neoplasias (malignant tumors of the uterine corpus and cervix) (28.8 per 100,000 women) was higher than 18.16 per 100,000 in the period 1974-83 [4] and 20.87 per 100,000 recognised by Deplano and Loddo for all Sardinia from 1965-67 [5]. However these last data of Deplano and Loddo [5] referred overall to invasive cases in advanced stage of disease.

The incidence of corpus uteri carcinoma changed from 7.76 per 100,000 reported by Maida and Eusebi [6] in the period 1965-69 to 11.99 per 100,000 in the period 1974-83 up to 19.05 per 100,000 in the period 1992-2000. These data showed that the incidence of this carcinoma had a true increase, achieving first place among the gynecologic tumors in industrialised countries.

Cervical carcinoma was quite stationary in Sardinia: in fact Maida and Eusebi [6] reported 10.15 per 100,000 women in the period 1965-69; our data [4] showed 6.17 per 100,000 women in the period 1974-83 up to 9.8 per 100,000 in the period 1992-2000. These data confirmed

the lowest prevalence of this neoplasia in Sardinia in comparison to that of North Italian regions which achieved 40 per 100,000 [7].

The increase in incidence of malignant ovarian tumors, which has quadrupled in the last 20 years, should be considered worrying because it confirms the highest incidence of hormonal-dependent tumors in Sardinia due more to genetic factors, as several studies of molecular biology demonstrated, than to environmental factors. In fact Sardinia has been through the centuries a geographical area with little population migration.

The constant increase of corpus uteri and ovarian tumors in the advanced age-groups (70-74 and 80-84 years, respectively) might be explained by the increase in the female population higher than 65 years of age that per se constitutes a class of age at enhanced risk of cancer. On the other hand we have reported a decrease in the age of diagnosis of cervical carcinoma from 50 to 45-49 years due to the wide diffusion of cytological mass screening that has permitted the diagnosis in the earliest age of the pre-invasive forms which are more treatable.

In conclusion, our recent data show a disturbing increase of hormonal-dependent tumors in Sardinia such as endometrial and ovarian cancer with the highest increase in malignant ovarian tumors which achieved second place among gynecologic tumors. In comparison to previous data [4-6] we confirmed a historically low incidence of cervical and external genitalia tumors (vulva and vagina) in Sardinia.

Molecular biology, studies which are performed in order to discover the presence of genetic mutations and chromosomal markers in patients with endometrial and ovarian cancer, will have a heavy preventive impact, allowing the screening of a population at high risk of these tumors and follow-up with personalized diagnostic protocols.

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Address reprint requests to:  
P. L. CHERCHI, M.D.  
Dpt. of Pharmacol., Gynecol. and Obstetrics  
University of Sassari  
Viale San Pietro, 12  
07100 Sassari (Italy)