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Trends in Cervical Cancer Incidence in the District of Florence

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The trend in cervical cancer incidence in the District of Florence from 1975 to 1989 was investigated. Tuscany Cancer Registry data were available since 1985. Incidence data from 1975 to 1985 were obtained through a retrospective survey of all the Departments of Pathology and Gynaecology in the district. Cytological screening for cervical cancer has been available in the district since 1973, and since 1980 active invitation of residents aged 25 to 59 years has been in use. A significant trend in decreasing incidence was evident for the overall population ($P = 0.003$) and for 40–49 ($P = 0.028$), 50–59 ($P < 0.001$) and 60–69 ($P = 0.002$) year age groups, whereas no significant trend was observed for the age group 30–39 years. An association between attendance to screening and reduced incidence was evident, in that a greater reduction was evident for those cohorts (ages 50–59 and 60–69) who had a higher compliance to screening 10–15 years before. If the decrease in cervical cancer incidence was spontaneous, a parallel decrease of CIN3, which is commonly assumed to be the precursor of invasive carcinoma, would be expected. On the contrary, the detection rate of CIN3 at first Pap test showed a significant increase in the study period. All these findings suggest that the observed reduction in cervical cancer incidence was mostly due to the effect of screening, and stress the need for optimising the coverage of the invited population.

Key words: cervical cancer, screening, cytology

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INTRODUCTION

EVIDENCE ON cervical cancer screening efficacy is currently based on case-control studies of incident carcinomas and healthy controls [1], and on observation studies of cervical cancer incidence before and after screening [2].

A screening programme has been ongoing in the District of Florence since 1973 [3]. Before 1973, there was almost no coverage of the population. The features of the programme have been reported previously [3, 4]. The protective effect of screening has been demonstrated by means of a case-control study [3]. The present study evaluates the impact of screening on cervical cancer incidence.

MATERIAL AND METHODS

Data on incident invasive carcinoma and of cervical intraepithelial neoplasia III (CIN3) in the District of Florence were obtained through a retrospective review of histopathology and gynaecology departments' records for the 1975–1985 period and from the Tuscany Cancer Registry since 1985 [5]. Cancer incidence from 1975 to 1989 was determined and standardised according to the 1981 national census. Statistical significance of observed trends was determined by the χ^2 test for linear trend [6].

The CIN3 detection rate at first Pap test was monitored

according to screening files, as a decreasing trend of CIN3 detection rate might suggest a spontaneous decrease of cancer incidence independent of the screening effect. Age-specific attendance rates were determined by matching residence lists and screening files. Coverage was defined as having a Pap test in the last 5 years.

RESULTS

Age-specific cancer incidence is reported in Table 1. A decrease was evident for the overall population ($P = 0.003$) and for age groups 40–49 ($P = 0.028$), 50–59 ($P < 0.001$) and 60–69 ($P = 0.002$) years, whereas no trend was observed for the age group 30–39 years ($P = 0.193$).

An increase in CIN3 detection rate was observed (Table 2) being significant for all (ages 25–29, 30–39, 40–49 years, $P < 0.01$; ages 50–59 years, $P < 0.05$) except the oldest age group.

Coverage increased continually over time and was higher for age groups 30–39 years (1975 44%, 1988 61%) and 40–49 years (1975 47%, 1988 63%), compared to other age groups (25–29 years, 1975 44%, 1988 56%; 50–59 years, 1975 36%, 1988 48%; 60–69 years, 1975 16%, 1988 28%), a figure consistent with those reported by a national survey in 1989 [7].

DISCUSSION

Some possible biases of the study need to be discussed. First, incident data sources were not homogeneous (retrospective survey 1975–1985; cancer registry 1985–1989). Nevertheless, the sources of data were the same and under-registration of cases

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Table 1. Overall and age-specific incidence rates ($\times 100,000$) of infiltrating carcinoma of the cervix. District of Florence 1975–1989

Period	Age group (years)				
	30–39	40–49	50–59	60–69	30–69*
1975–1977	4.4	16.7	27.9	27.6	18.5
1978–1980	10.1	13.1	29.9	28.1	20.1
1981–1983	4.4	15.9	18.9	27.4	15.9
1984–1986	4.9	9.5	14.9	24.1	12.7
1987–1989	10.0	11.5	12.5	16.7	12.4

* Standardised on 1981 national census data.

Table 2. Age-specific detection rates ($\times 1000$) of CIN3 at first Pap test. District of Florence 1975–1989

Period	Age group (years)				
	25–29	30–39	40–49	50–59	60–64
1975–1977	0.72	1.68	1.74	1.56	1.08
1978–1980	2.01	2.23	1.71	1.72	0.00
1981–1983	2.84	3.32	2.64	2.23	2.23
1984–1986	1.61	2.83	4.04	2.18	0.94
1987–1989	3.20	4.08	3.66	2.52	2.97

in the retrospective survey should not be a major bias. Even assuming under-registration before 1985, the decreasing incidence trend would be even more meaningful.

Secondly, a reduction in cancer incidence, independent of screening, may be suggested as a possible confounder. This should be associated with a decrease in CIN3, which is considered the precursor of most cancers. On the contrary, CIN3 detection rate increased over time. The latter finding might be influenced by a detection (improved assessment, higher biopsy rate) or by a selection (selection of high-risk subjects among women at first Pap test) bias, but the hypothesis of a spontaneous decrease of CIN3 and cancer incidence seems quite unlikely.

Cancer incidence started to decrease approximately 10 years after screening onset. In fact, progression from dysplasia to cancer is slow, and the effect of treating screen-detected dysplasias will be evident only after a latency period [8].

An association between screening coverage and cancer incidence was evident, as the latter showed a greater decrease in those cohorts (ages 50–59 and 60–69 years) who had a higher coverage 10–15 years before. The apparent absence of a screening effect in younger women may be due to a combination of a screening effect and of a spontaneous increase in incidence. The latter hypothesis, suggested also by the observed increase in CIN3 detection rates, is consistent with recent reports of increased incidence in younger women [9].

Overall, our findings suggest that the observed decrease in cancer incidence is most likely a screening effect, and stress the need for optimising population coverage.

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