Radiol Oncol 2003; 37(1): 37-42.

Breast cancer in the Czech Republic

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Background. *Malignant neoplasms present one of the most serious chapters of morbidity, mortality, and the overall perspective of the health status of Czech population. Malignant neoplasms have been registered in the Czech Republic since the end of the 1950s. Guarantor of the all-state registry is the Institute of Health Information and Statistics of the Czech Republic (IHIS CR), and conceptual and methodological steering is performed by the Council of the Czech Cancer Registry. The five most frequently diagnoses in Czech males and seven most frequently diagnoses in Czech females were followed during the last 20 years. The most frequent malignant neoplasm in Czech women is breast cancer.*

Conclusions. *The incidence of this cancer has increased by 75% during the studied period. During the year 2001, three pilot studies of preventive mammography screening were done in the country. One case of asymptomatic breast cancer in the study costs 80,000 Kč (in reality it was 120,000 Kč). These costs are markedly lower than the combined therapy of advanced stages of breast cancer.*

Key words: breast neoplasms; mammography; Czech Republic

Introduction

Malignant neoplasms (MN) present one of the most serious chapters of morbidity, mortality, and the overall perspective of the health status of Czech population. They can also be seen as an important measure of the health status of our population. Due to the extent of their occurrence and lethality, fatality rate, the incomplete knowledge of their etiopathogenesis, therapy, and prevention, they must be considered as one of the primary questions and tasks for the coming years. Neoplasms represent a challenge for health care and the whole society as well. MN are the second most common cause of death and constitute about 25% of all deaths in the Czech Republic.[1]

Received 23 January 2003
Accepted 7 February 2003

The theme of the article was presented as an invited lecture at the »1st Open Meeting on Public Health and Oncology: Breast Cancer«, held in Ljubljana June 14th, 2002.

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Methodology

MN have been registered in the Czech Republic since the end of the 1950s. In 1976,

the cancer registry was established. Since 1991, the Cancer Registry of the Czech Republic has been a member of the International Association of Cancer Registries (IACR). It collaborates with the European Network of Cancer Registries and keeps in contact with registries in many countries.

In the early 1990s, the collection, supplementing, checking, and completion of data were gradually taken over by the 85 District Units of the Czech Cancer Registry, which are aggregated into 8 Regional Units. Guarantor of the all-state registry is the Institute of Health Information and Statistics of the Czech Republic (IHIS CR), and conceptual and methodological steering is performed by the Council of the Czech Cancer Registry.

The basic source of information contained in the Registry is the mandatory form »Report on neoplasm« (NZIS 022 2) filled in by the physician who diagnoses the disease. The notification is returned within 3 months to the District Unit of the Registry where it is checked, supplemented by additional data, and included in the database. The Registry is also complemented on the basis of check-up reports and by comparison with the database of deaths in the Czech Statistical Office (CSO).

Registration is performed according to the Decree of the Ministry of Health and Social Affairs (MSHA) of the CSR no.3/1989 in Bulletin of MHSA CSR (reg. in Law Collection, part 19/1988) - »Dispensary care for patients with precanceroses and cancer and mandatory notification of neoplasms«, applying methodology NZIS (the National Health Information System) no.515/1987 - »Cancer Registry«, following the »Instruction on data entries and returns« 56/1997 in the NZIS methodology »Handbooks for regional and district units« and other appropriate methodological instructions.

Data for the publication »Neoplasms« are usually processed with a two-year delay, which is necessary for the completion of the Registry with missing patients and missing data.[2]

Trends of registered cases of cancer

Trends of incidence of registered cancer cases (ICD - 10, dg. C00 - C097 and dg. D00 - D09) are shown in Figure 1. The relative indicators (cases per 100 000 males or females) are computed with reference to the mid-year population and also to world standard and European standard populations, the same for both genders, as published in the WHO Yearbook.

The incidence of all registered cancer cases in males in the Czech Republic grew by 40.1% during the period 1985 - 1998 (1985 - 414.8 cases per 100 000 males; 1998 - 583.6 cases per 100 000 males), whereas in females, it grew by 50.1% during the same period (1985 - 363.7 cases per 100 000 females; 1998 - 548.7 cases per 100 000 females). In the period 1985 - 1998, the growing incidence trend is seen in both sexes also at the world and European levels:

- by 27.8% - males world rates (1985 - 324.8 per 100 000 males; 1998 - 415.1 per 100 000 males)
- by 38.7% - females world rates (229.4 - 318.2)
- by 42.8% - males European rates (427.5 - 610.7)
- by 39.2% - females European rates (319.7 - 444.9)

In Czech females compared to the world and European rates, the highest incidence was observed in the followed period. The incidence of all registered cancer cases in Czech males is lower compared to the European rates, but higher than the incidence in the world standard. But the incidence growth is steeper in both sexes in the Czech Republic compared to the world and European rates.[2,3]

Trends of registered cancer cases in the Czech Republic - selected diagnosis (per 100 000 inhabitants)

Trends of registered cases of selected diagnosis for males and females separately during the studied period of the last 20 years (1980 - 1999) in Czech Republic are shown in Figures 2 and 3. The incidence of all registered cancer cases in males in the Czech Republic grew from 378.4 cases per 100 000 males (1980) to 570.5 cases per 100 000 males. The growth index 1999/1980 is 150.8. The growth was faster in the nineties than in the eighties (index 1990/1980 is 120.5; index 1999/1990 is 125.1). The incidence in Czech females was permanently lower than in males (1980 - 322.3; 1999 - 537.9), but the difference was systematically falling down, with the index M/F of 117.4 in 1980; 111.7 in 1990; and 106.1 in 1999. The incidence in females was growing faster than in males.

According to the selected diagnosis in Czech males, MN of the lung (C 33 + C 34) with 97.6 cases per 100 000 males was the most frequent cancer in the year 1980. MN of the stomach (C16) ranked second, with 32.4 cases per 100 000 males. The incidence of MN of the lung slightly increased in the eighties (99.6) and decreased during the nineties (88.9). The second most frequent cancer for males in 1999 was MN of the prostate (53.8 cases per 100 000 males). The incidence increased by 128% during the followed period. A considerable increase (120%) is seen in colon cancer (from 19.8 to 43.6). The incidence of MN of the rectum has grown by 49% (24.9 to 37.1). A remarkable decrease from 32.4 to 20.4 (37%) is seen in stomach cancer. The above-mentioned five selected diagnoses included 52.4% of all notified diagnoses in 1980, while in 1999, it was only 42.9%.[3]

The selected seven most frequent diagnoses in females in the Czech Republic were followed during the period 1980 - 1999. In 1980 and in 1999, the proportion of these diagnoses to all registered cancer cases was 54.6%, and 43.8%, respectively. The most frequent cancer in 1980 was breast cancer (C 50) (51.5 cases per 100 000 females) and it kept that position also in 1999 (89.9 per 100 000 females). During the followed period of 20 years, its incidence grew by 75%. The cancer of the colon ranked second in 1999 and its incidence grew by 76.4% during the last 20 years. A remarkable increase in Czech females represents MN of the lung; it grew by 111.3% (from 10.6 to 22.4). In this same period, the incidence of MN of the lung decreased in Czech males by 10%. In females, a systematic decrease of 34% in stomach cancer incidence was observed in the followed period. A stable incidence (about 20 per 100 000) during the 20-year period was seen in MN of the cervix uteri. The incidence of the cancer of the rectum increased by 34% and the incidence of the cancer of the corpus uteri by 35%.[3]

Breast cancer

The most frequent and most serious MN in women is breast cancer. MN of the breast has been registered since 1953 in the Czech Republic (in absolute numbers, there were 1,700 cases per year). In 1980, the incidence of breast cancer was 51.5 per 100 000 women (2,739 cases), and in 1999, it was already 89.8 per 100 000 women (4,740 cases in absolute numbers), which is 2.5% more cases than the year before.[2,7]

In 1999, the breast cancer incidence in females was for the first time higher than that of the lung cancer in males (breast cancer incidence - 89.8; lung cancer incidence - 88.9). The incidence of breast cancer increased by 75% during last 20 years (as mentioned above).[3]

During the last ten years, the absolute number of deaths from breast cancer gradually increased by 3.4%, while the fatality rate

decreased. Compared to 1989, it decreased by more than 10% and its present value is approximately 41%.

The number of MN in an unspecified stage, or more properly, with no stage identification in the notification, increased in cases of MN of the breast. This phenomenon was mostly seen in the 1990s. In cases where the stage was notified, the proportion of stages I and II was definitely growing, while the proportion of stages III and moderately also IV had a decreasing tendency. The cumulative 5-year survival rate in cases diagnosed in the years 1989-1993 increased in women by almost 10% compared to the cases diagnosed in the period 1980-1984.

Breast cancer incidence grows with age. During the last 5 years, the specific incidence of breast cancer increased more rapidly in the Czech Republic in the age groups of 55-59 years and 65-69 years (55-59: 1995 - 164.7 per 100 000; 1999 - 189.5; 65-69: 1995 - 218.7; 1999 - 248.7). It is important to mention that the specific incidence was markedly higher in all age groups over 50 years compared with the situation at the beginning of the 1990s.

On the basis of mandatory form »Report on neoplasms« it is possible to follow the changes in treatment modalities. Since the 1980s, the number of surgically treated breast cancer within 3 months from the diagnosis has been stabilized, ranging from 86 to 89 %. The proportion of radiotherapy is decreasing. In 1980, 76% of MN cases were treated by radiotherapy, in 1990, about 60%, and in 1999, 45%. On the other hand, the proportion of chemotherapy and hormonal therapy is increasing. In 1980 and 1999, respectively 11% and 46% of cases were treated by chemotherapy. As to the hormonal therapy, the proportion increased even more - from 8% of diagnosed breast cancer cases in 1980 to 49% of these cases in 1999.

The absolute number of deaths from breast cancer is under 2000 per year. Since the mid 1980s, the mortality rate has been ranging from 34 - 39 deaths per 100 000 women. The proportions of the mortality rate have been relatively stable in all age groups during the last 10 years. Breast cancer mortality increased only in the oldest age group (over 85 years old). This age group also had the highest specific mortality.[2,7]

Breast cancer incidence in the Czech Republic (even with its relatively steep growing tendency) is still lower in comparison with Western European countries. But it is higher compared to Slovakia, Hungary and Poland and similar to the incidence in Slovenia (see Table 1).

Table 1. Female breast cancer incidence per 100 000 in some selected European countries. Source: Database HFA 2000.

	1996	1997	1998	1999
Czech Republic	83,8	85,1	87,5	94,9
Slovenia	82,2	87,9	.	.
Slovakia	62,1	61,2	63,8	.
Hungary	35,0	41,7	43,0	97,5
Poland	48,8	.	.	.
Austria	110,1	110,8	109,3	.
Denmark	130,7	132,1	.	.
Finland	127,0	126,7	129,8	134,6
Norway	114,4	116,1	114,1	.
Netherlands	126,6	125,9	.	.
Sweden	130,6	130,1	138,2	140,9
United Kingdom	122,0	125,6	.	.

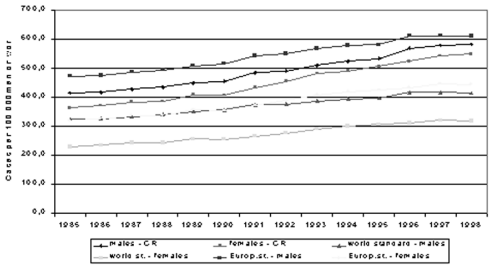

Figure 1. Trends of registered cancer cases (ICD - 10, dg. C00-C097 and dg. D00-D09). Source: UZIS CR[2]

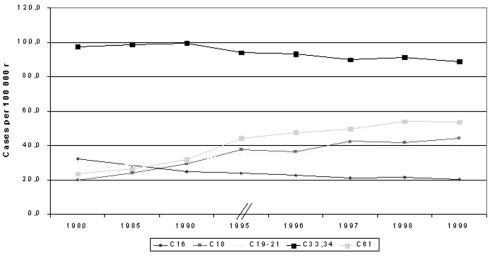

Figure 2. Trends of registered cancer cases - selected diagnoses (per 100 000 males) - males in the Czech Republic. Source: UZIS CR[4,5,6]
C16 - MN of stomach; C 18 - MN of colon; C 19-21 - MN of rectum; C 33, 34 - MN of lung; C 61- MN of prostate

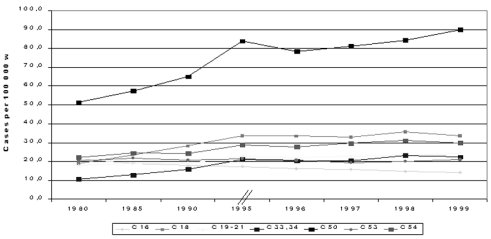

Figure 3. Trends of registered cancer cases selected diagnoses (per 100 000 females) - females in the Czech Republic. Source: UZIS CR[4-6]
C 16 - MN of stomach; C 18 - MN of colon; C 19-21 - MN of rectum; C 33, 34 - MN of lung; C 50 - MN of breast; C 53 - MN of cervix uteri; C 54 - MN of corpus uteri

Mammography - pilot study in the Czech Republic

The question of preventive mammography screening for all women of age 45 - 70 was discussed in the Czech Republic by the professionals several times. The main reason why it wasn't introduced was financial. For mammography examination women needed a recommendation either from a GP or a gynaecologist.

During the year 2001, three pilot studies were done in the country with the aim to make a detailed audit in a relatively short time and answer the questions by General Health Insurance Company before the introduction of payments for preventive screening. Two of the studies took place in Mamma Centrum in Prague and one in University Hospital in Hradec Králové. Each study included 1,500 women and the duration of each was 3 months.

The results of the first (that took place in Mamma Centrum in Prague from November 2000 to January 2001) are the following: Eleven cases of breast cancer were found among 1,500 examined women (9 of the women were without any symptom). Medical diagnoses were made within 2 hours from the examination in 98.5% of women. The 9 women who were diagnosed, but showed no symptoms, obviously benefited from the screening in the pilot study.

No doubt that preventive mammography is not a cheap method. Mamma Centrum obtained altogether 750,000 Kč to cover the pilot study; it means 500 Kč per one examined woman (1 EURO was approximately 31 Kč at that time). The real costs also included the clinical examination of a patient, registration, necessary ultrasonography for 1/4 of women, audit, taking of anamnesis, and the work of health professionals were at least 1.5 times higher.

One case of asymptomatic breast cancer in the study cost 80,000 Kč (in reality it was 120,000 Kč). These costs are markedly lower than the combined therapy of advanced stages of breast cancer. The economical profitability of the screening was proved. Preventive mammography screening was ratified in spring 2002 by the Decree of the Ministry of Health of the Czech Republic. The screening should start in November 2002 and is targeted to women aged 44 - 70 years once every 2 years.[8]

References

1. Drbal C. *Zdravotní stav populace ČR a jeho prognóza jako dominantní determinanta požadavku na systém péče o zdraví*. Studie Národohospodářského ústavu Josefa Hlávky. Praha: Národohospodářský ústav Josefa Hlávky; 1997.

2. Ústav zdravotnické statistiky a informatiky ČR. *Novotvary 1998 ČR. Cancer incidence in the Czech Republic*. Praha: ÚZIS, NOR ČR; 1998.

3. Hodačová L.: *K veřejnému zdraví na přelomu 20. a 21. století v kontextu trvale udržitelného života.* Disertačni práce, Hradec Králové: LF UK; 2002.

4. Ústav zdravotnické statistiky a informatiky ČR. *Zdravotnická ročenka vychodních Čech 1995-1999*. Hradec Králové: ÚZIS ČR, Regionální odbor východních Čech. 1996-2000; periodical - annually.

5. Ústav zdravotnické statistiky a informatiky ČR. *Zdravotnictví ČR 1997 - 1999 ve statistických údajích.* Praha: ÚZIS ČR, 1998 - 2000; periodical - annually.

6. Ústav zdravotnické statistiky a informatiky ČR. *Zdravotnická ročenka ČR 1980, 1985, 1990, 1995-1999*. Praha: ÚZIS ČR; 1981, 1986, 1991, 1996-2000; periodical - anually.

7. Jechová M. *Zhoubný novotvar prsu u žen* - Aktualní informace; Ústav zdravotnických informací a statistiky Ceske republiky, Narodní onkologický registr - ZN prsu u žen, Zdravotnická data novotvary 1998, Archiv aktualních informací; available on internet at: http:// www.uzis.cz.

8. Skovajsová M. Preventivní vyšetřovaní prsu - první zkušenosti podle nových pravidel mamarního screeningu. *Zdravotnické noviny* 2002; **51(18):** 22-3.