

RESEARCH COMMUNICATION

Trends of Cancer Prevalence in Some Districts of West Bengal

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Abstract

An attempt has been made to understand the cancer prevalence in eight districts of West Bengal. Special emphasis was on the types of cancer most prevalent among the male and female populations. In this study we have represented the frequency by age and sex of different tumors among 9034 cancer cases registered over five years. Our findings indicate that liver cancer is predominant among males and cancer of the cervix uteri is most prevalent among females. The values by age indicate that cancer incidence increased during this study period, especially in Kolkata.

Key Words: Cancer trends - ICD-10 - etiology - prevalence.

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Introduction

For nearly half a century, the proportion of deaths attributed to cancer has increased progressively and it has doubled in many developed countries (Doll, 1991). Developing countries which accounts for nearly 75 percent of the world's population have lower incidence rates of cancer, in comparison to industrialized (Magrath, and Litvak, 1993). Until recently, communicable diseases were the major cause of death in India. The remarkable increase in urbanization and changes in lifestyle patterns, socio-economic progresses have all contributed to the phenomenal increase in cancer incidence.

In our study, we have attempted to make thorough epidemiological observation of cancer incidence, in some districts of West Bengal. While examining the epidemiological distribution of different cancer types, we kept in mind, the study of different cancer types with respect to age, sex and district. In this study eight districts of West Bengal were examined. Eleven major types of cancer, covering 27 cancer codes were included. These are Oral (code 140-150), Stomach (code 151), Colorectal (153-154), Liver (155), Gall bladder (code 156), Pancreas (code 157), Lung (code 162), Breast (code 174), Cervix (code 100), Lymphoma (201-202) and Leukemia (204-208). The codes have been used according to the ICD-10.

Materials and Methods

Data on name, age, sex, residence and tumor sites were

collected from 9034 records of Kolkata's two major Cancer hospitals for a period of five years (1991-1995). The records contained that patients registered from Kolkata and its neighbourhood districts. Tumor sites were coded by ICD-10. In this paper we have tried to represent the frequency distributions of age and sex by various cancer types. In this study, the observed cases per million populations of a particular sex and particular district have been noted as observed prevalence of cancer. Population data for Kolkata and its neighbouring districts were obtained from census 1991. The observed prevalence of cancer in the particular site or sex has been marker of statistical index of cancer prevalence in the particular site and sex. Owing to the dearth of systematic cancer registry this data could not be considered as whole prevalence of cancer in Kolkata and its neighboring districts, but it gives some idea about cancer prevalence

Results and Discussion

Data from two the specialized cancer treatment centers show, that in Kolkata and its neighbouring districts, cancer cases are increasing. During the past five years there has been an almost 2.6 percent annual increase. Out the 9034 cases, the frequencies less than five percent has not been considered for analysis. Further analysis only 5838 cases were considered. The details of the observed prevalence of cancer according to sex, type of cancer and district are shown in Table 1.

Results depicted in Figure 1 show that among the major

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cancer types liver cancer is predominant (19.17 %) followed by leukemia (18.75) and oral cancer (9.65).

If we consider the male population in particular, then the most prevalent cancer is liver cancer (22.43%) followed by leukemia (19.23%) and then lung cancer (12.72). In the female population the most prevalent cancer is Cervix uteri (17.31%) followed closely breast cancer (16.97%) and then liver cancer (15.36), leukemia (11.89%). We found that lung cancer is (12.72%) in males but it is only (3.23 %) in females. Figure 2 shows the pattern of age distribution in either sex in the prevalence of different cancer types. It is seen from our study that women are in the age group 40-50 year are recorded more, around 25 % of the total cancer in females registered in this age group. Men seems to be more prone to cancer in the age group 50-60 years age group and 21.6 % of the total cases in males were registered in this age group.

A definite epidemiological trend has emerged from this

study, liver cancer is undoubtedly the most predominant form of cancer in Kolkata and its neighbouring districts. It is to be noted that the observed prevalence in lung cancer between males and females indicates that, men are suffering more from lung cancer than females, it could be due to large proportion of men are smoking or they might be more affected by air pollution. Primary Hepatocellular Carcinoma (HCC) appears to be the principal type of liver cancer. The major casual factor so far identified has been chronic liver cirrhosis. The major casual factor so far identified has been chronic infection with hepatitis B-virus (HBV) (Basley, 1988). Other agents implicated, include injection of aflatoxin from fermented or moldy food grains, (Van Rensburg et. al. 1985) high in take of alcohol (Trichopoulos and Dey 1987), long term use of oral contraceptives (Neuberger et. al. 1986; Forman and vincent 1986) and cigarette smoking (Kew and Dibisceglie 1985). In low risk population cirrhosis has been identified both as a pre-cancerous condition (Anonymous,

Table 1. Cancer Prevalence Rate by Site by Sex

		Kolkata	North 24 Prg	South 24 Prgs	Howrah	Hooghly	Noida	Burdwan	Bankura
Oral (140-150)	Male	12.10	4.19	0.75	4.04	0.97	3.62	0.56	1.53
	Female	4.71	2.37	0.44	2.98	2.30	3.11	0.28	0.88
	Total	8.82	3.32	0.56	3.54	1.61	3.37	0.43	1.21
Stomach (151)	Male	9.08	7.49	4.73	1.51	0.53	1.41	0.19	0.56
	Female	6.86	3.64	1.16	1.49	0.86	0.97	0.28	1.02
	Total	8.09	5.66	3.01	1.50	0.69	1.19	0.23	0.78
Colorectal (153-154)	Male	7.85	3.25	1.89	1.51	0.53	0.50	0.31	0.56
	Female	8.60	2.54	1.02	2.18	0.49	0.97	0.35	0.44
	Total	8.18	2.91	1.47	1.82	0.51	0.73	0.33	0.50
Liver (155)	Male	22.98	12.62	7.29	3.53	1.94	5.13	0.50	0.56
	Female	9.52	7.85	5.01	5.84	0.96	4.40	0.21	0.73
	Total	17.00	10.35	6.19	4.61	1.47	4.78	0.36	0.64
Gall Blader (156)	Male	7.28	2.67	1.28	0.60	0.62	2.11	0.19	0.69
	Female	7.78	2.14	1.02	0.80	0.48	3.44	0.21	0.88
	Total	7.50	2.42	1.15	0.70	0.55	2.95	0.20	0.78
Pancreas (157)	Male	3.11	2.10	1.22	0.30	0.53	1.01	0.13	0.56
	Female	4.19	2.42	1.24	0.57	0.77	1.18	0.07	0.59
	Total	3.59	2.25	1.02	0.43	0.64	1.09	0.10	0.57
Lung (162)	Male	14.97	6.81	4.39	1.41	0.62	1.68	0.25	0.97
	Female	1.33	0.35	0.15	0.69	1.25	0.86	0.00	0.44
	Total	8.86	3.74	2.34	1.07	0.92	1.25	0.13	0.71
Breast (174)	Female	19.65	4.97	1.38	2.63	1.34	5.80	0.77	2.34
Cervix Uteri (180)	Female	3.38	2.37	1.53	4.12	0.58	2.15	1.12	1.02
Lymphoma (201-202)	Male	4.66	2.78	1.49	1.92	0.97	3.12	0.69	1.39
	Female	7.88	4.39	2.25	2.98	1.92	4.51	0.42	0.73
	Total	6.09	3.54	1.85	2.41	1.42	3.79	0.56	1.07
Leukemia (204-208)	Male	15.62	11.89	7.49	3.73	2.55	3.69	0.50	0.56
	Female	11.56	4.10	3.05	6.52	1.06	3.76	0.49	1.17
	Total	13.82	8.18	5.35	5.04	1.84	4.10	0.50	0.88

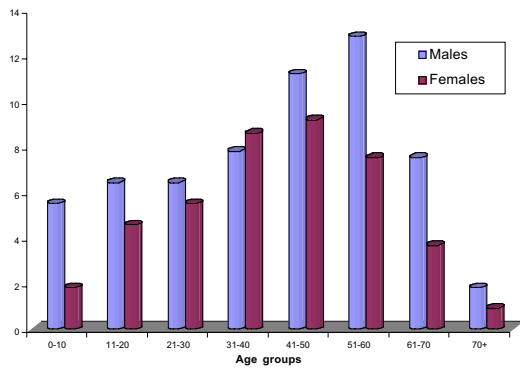


Figure 1. Percentage of Cancer Cases by Age

editorial, 1987) and as a possible tumor promoter (Anonymous, editorial, 1987; Kew 1981). During the last two decades, there had been considerable increase in foreign travel, importation of blood products, intravenous drug abuse and immigration from endemic areas. This perhaps a major contributory factor could be the reasons for spread of the disease. In high-risk areas, transmission of HBV to the child from the mother at birth, before immune competence is fully developed, appears to result in the child becoming a carrier (Blumberg 1985).

In adults factors causing immunospression may possibly play a role (Beasley and Linn). It is however, uncertain whether the virus directly causes hepatomas or chronic antigenaemia, that eventually causes chronic hepatitis and liver cirrhosis which in turn, leads to the development of hepatomas, perhaps in the presence of other carcinogens such as aflatoxins (Thomas 1991). The hepatitis C virus (HCV) has recently (Neuberger et. al. 1986) been linked to the development of HCC in patients with alcoholic or cryptogenic cirrhosis and the virus probably plays a major role in the etiology of those PHC cases not ruled out to hepatitis B (Briux et. Al. 1989; colombo and Kuo 1989). Apart from PHC, we found that primary liver cancer is not rare among the population in these districts. HBV infection has been implicated in the etiology of this cancer but other factors can not be ruled out. From clinical data, the principal type of PHC identified were angiosarcoma, epitheliosarcoma, hepatoblastoma and lymphoma. It has been observed by some authors that HBV-DNA could be integrated in the genome of malignant liver cells without detectable serological markers of past or present HBV infection (Brechot and Naplas 1982). These authors have suggested that HBV could play the role of the initiating factor responsible for causing initial hepatic injuries. Infected hepatocytes could then become more sensitive to promoters. Cellular proliferation accompanying hepatocellular regeneration following hepatocellular necrosis in the cause of cirrhosis or by the direct action of chemical carcinogens. In Kolkata and its neighboring districts men appear to be more affected by liver cancer than their female counter parts. It has been suggested that this uniformly lower prevalence of liver cancer in women compared to men may lie in a

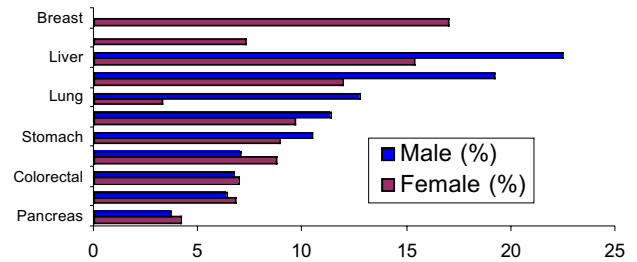


Figure 2. Percentage of Cancer Cases by Sex

differential genetic susceptibility to some hepatic carcinogens (Zaman 1985; Kew and Kassianides 1986). Leukemia, ranks second only to liver cancer, in this study. Leukemia mostly affects children of the age group 0-14. Oral cavity third in the cancer hierarchy. Oral cancer is prevalent both among males and females, mostly due to the high intake of tobacco. Crushed tobacco leaves are frequently consumed raw or in combination with betel leaf and nut. People here are habituated to use Zarda or Dokta (tobacco leaf with some flavoring agents). Mortality and prevalence rates of lung cancer are higher in urban than in rural areas (Goldsmith 1980; Levin 1960; Mancusso 1955). Air pollution may be the cause if lung cancer in urban area and difference in smoking could also be the reason.

Emissions from certain industries are known to increase lung cancer risk among the people (Magrath, and Litvak, 1993). The principal types of lung cancer prevalent are squamous cell carcinoma, small cell carcinoma, large cell carcinoma, adenocarcinoma and other histologic types. High particulate and SO₂ pollution from iron foundry and general air pollution from incinerators might have been contributed to the spread of the disease.

However, it can be said with certainty, that tobacco use is responsible for the development of more neoplasms than all other known causes of cancer combined (Alink and Smith 1983). The association between lung cancer and smoking has been substantiated by innumerable studies, some of which have already established a dose-response relationship, in terms of number of cigarettes smoked per day and risk of developing lung cancer (Ernest et. al. 1976; Wynder and Munskski 1977).

Cancer of the Cervix uteri, stands first in females. The elevated frequency of cervical cancer may be attributed to the young age at marriage and due to the large number of issues born to these young mothers. Another possible explanation for the large number cervical cancer cases may be due to the human papilloma virus or due to a mutation in the P⁵³ tumor suppressor gene (Vogelstein and Kiwzler 1992). Cervical cancer is four times more common in developing nations than in developed nations (Tomatis et al. 1990).

Closely following cancer of Cervix of uteri, is breast

cancer, which affects millions of women. Reviews of numerous case control studies have shown that there is possible association between the use of oral contraceptives and breast cancer (Renaud and Gairavk 1988; Prentice and Thomas 1987; Clavel and Benhamou 1985; Pike and Krailo 1983). Most of the breast cancer types range from galactophoric adenocarcinomas to lobular carcinomas.

From this study cancer prevalence in Kalkata and its neighbouring villages have shown that change in lifestyle patterns among the people have added to the understanding of how certain cancer may be related too environmental differences. High prevalence rates of neoplasms of the liver, breast, colon, rectum etc. due to population that have increasingly adopted westernized life style. Prominent characteristics of this type of life style includes high intake of fat and total calories, both of which had been implicated in the development of these cancers by animal studies (Carrol and Braden 1986). The current increase in cancer incidence is probably due to large dietary intake of fats and pesticide residues in food, which are presently hypothesized to be a ubiquitous tumor promoter. Nitrates and chormothandes in drinking water, residing near the vicinity of industrial power plants are also considered as risk factors of cancer. A wide variety of occupations have led many people to believe that our success in discovering avoidable causes and in improving treatment is out weight by the spread of new hazards. There could be unobserved cases which is not covered in this study, Therefore the calculated rates may be slightly under estimated but there is no chance for over estimation.

We may conclude that consumption of manufactured cigarettes for lung cancer (Doll and Peto 1981), positivity of plasma hepatitis B surface antigen (HbsAg) for liver cancer (Blumberg 1985), age at menarche for breast cancer and age at first pregnancy for cervical cancer (Zaman 1985) are very vital in studying the etiology for cancer prevalence.

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