

Cancer patterns in Nainital and adjoining districts of Uttarakhand: A one year survey

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Abstract

A survey was conducted to determine the cancer profile in Nainital and adjoining districts of Uttarakhand. Epidemiological information was collected from the records of patients with confirmed cancer cases. A total of 354 cases were studied for the year 2010. Lung cancer was found to be leading cancer type (17.23%) overall. Breast cancer was most prevalent in females (22.29%) followed by cervical (14.86%) and ovarian cancers (13.51%). Men were mainly suffering from tobacco- and alcohol-related cancers, e.g., lungs (26.21%), larynx (11.16%), oropharynx (9.7%), oral cavity (6.79%), and esophagus (6.79%). Cancers of unknown primary site (1.41%) were also detected.

Key words: Breast cancer, Kumaun region, lung cancer, tobacco, alcohol

INTRODUCTION

In general, large variations exist in the cancer profile among different geographical regions, between countries even within the country depending on environmental and genetic factors, dietary and addiction habits, infection load and different socio- economic factors. Patterns observed in a referral cancer institution mostly reflect leading cancer types in specific regions.^[1] In this study, we surveyed a cancer pattern among patients admitted for treatment at Swami Ram Cancer Hospital and Research Center, Haldwani, a referral center for cancer patients of the Kumaun region of Uttarakhand. This hospital caters patients from hill, foothill, and also from adjoining areas of neighboring state, Uttar Pradesh.

MATERIALS AND METHODS

The study included cancer patients confirmed by tissue diagnosis and admitted at the hospital from January 2010 to December 2010. Information regarding age, sex, and residential area was retrieved from the patient case sheets maintained in the record section.

RESULTS

A total of 354 confirmed cases were identified in this period of which 206 were males (58.19%) and 148 were females (41.80%). Among all the cancer cases lung cancer was the most prevalent type (17.23%) overall. Separately in females leading cancer type was breast cancer (22.29%) followed by cervix cancer (14.86%) and ovarian cancer (13.51%). Endometrial cancer was rarer one (2.02%). In males lung cancer was most common type (26.21%) followed by larynx cancer (11.16%) and cancer of oropharynx (9.7%). All seven laryngopharynx cancers were found in males. Distribution of major cancer types between males and females are presented in Table 1. Other cancer types with comparatively lower frequencies are not shown in the table. Such types include prostate cancer (2.82%), stomach cancer (2.54%); laryngopharynx and cancer of

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urinogenital system (each with 1.97%); cancer of pancreas ($n = 5$), liver cancer ($n = 3$), cancer of nervous system ($n = 3$); cancer of intestine, nasopharynx, skin, anal canal, and uterus (each with two cases). A single case was reported for each of testis, penis cancer, male breast cancer, soft tissue sarcoma, extraskeletal myxoid chondro-sarcoma, osteogenic sarcoma, thymoma, gastroesophageal junction, lacrimal gland, salivary gland, and inguinal node cancer. Five cases of cancer of unknown primary site were detected. The lymphoid and hematopoietic malignancies collectively constituted 7.62% of the incidences.

Overall half of the cases (49.71%) were in age group of 41–60 years followed by the age group of 61–80 years (32.20%). Rest were in between 21 and 40 years, and few cases ($n = 7$) were below 21 years and above 80 years ($n = 7$). Table 2 represents the age distribution of patients for major cancer types.

The majority of patients were from Nainital (46.89%), US Nagar (40.96%), and Pithoragarh (8.75%) districts. It was noted that 10.16% of the patients came from adjacent parts of Uttar Pradesh.

DISCUSSION

This study although is a brief one (354 patients), it clearly indicates that in this region of Uttarakhand, lung cancer had much higher preponderance. In addition, the majority (88.52%) of lung cancer patients were males (male: female ratio 7.7:1). This data corroborate with that of Rawat *et al.*^[2] In their retrospective study including 203 lung cancer patients at Dehradun, another district of Uttarakhand, they reported that 89.16% patients were males. Smoking tobacco (active or passive) is an established risk factor for lung cancer. According to a survey conducted by Indian Council of Medical Research involving 4932 households in urban and rural area of Uttarakhand and 5443 individuals,^[3] a considerable portion of male population (35%) was smokers and the mean age of initiation of smoking was 19 years of age. Other than lung cancer, smoking is an undoubtedly most important etiological factor and accounts for male preponderance in cancer of larynx and esophagus.^[4] In our study, a high male over female ratio was found for cancer of larynx (11.5:1). For esophageal cancer the male:female ratio was 2:1. Chewing tobacco is an important risk factor for oral and oropharyngeal cancer. In

Table 1: Distribution of major cancer types

Cancer type	Cases (n)	Overall % age	Number of males	Number of females
Lung	61	17.23	54	7
Breast	33	9.32	–	33
Larynx	25	7.06	23	2
Oropharynx	23	6.49	20	3
Cervix	22	6.21	–	22
Oral cavity	21	5.93	14	7
Esophagus	21	5.93	14	7
Ovary	20	5.64	–	20
Colorectum	14	3.95	10	4
Gall bladder	14	3.95	3	11
Non-Hodgkin lymphoma	14	3.95	10	4

Table 2: Distribution of age in major cancer types

Cancer type	Average age (years)	21–40 years	41–60 years	61–80 years
Lung	59.77	3	27	30
Breast	48	11	16	4
Larynx	61.84	1	11	12
Oropharynx	58.17	2	12	9
Cervix	51.59	2	18	2
Oral cavity	49.57	4	13	4
Esophagus	63.57	–	8	11
Ovary	46.85	5	13	1
Colorectum	51.71	2	9	3
Gall bladder	52.35	1	11	2
Non-Hodgkin lymphoma	57.64	2	5	7

Uttarakhand, 21% of males were found to use smokeless tobacco while 2% of females were addicted to it.^[3] For oropharyngeal cancer the male to female ratio was 6.66:1 in this study and for oral cavity the ratio was 2:1. Alcohol consumption enhances the risk of mouth, tongue, pharynx, larynx, esophagus, and liver cancer. Except in liver cancer, in all these alcohol-related cancers smoking may cause a multiplicative effect.^[5] A considerable portion of male population of this state (32%) was found to be addicted to alcohol intake,^[3] which possibly contributed in part to a high number of pharynx cancer cases ($n = 32$, including oropharynx, laryngopharynx, and nasopharynx), and larynx cancer cases in the present piece of work. In an earlier study Gaur *et al.*^[6] also observed that tobacco- and alcohol- related cancers were predominated in males at Dehradun.

Breast cancer is the commonest cancer among women worldwide (26% of all female cancers).^[7] Although this is the leading female-type cancer in developed countries, developing country like India is experiencing a steady increase in breast cancers over the years.^[8] In present analysis breast cancer had highest prevalence in females followed by cervical and ovarian cancers, respectively. One study from North India^[9] reported that majority of breast cancer patients (83.9%) were in the fourth to sixth decade of their life. In our study, one-third of the patients were between 21 and 40 years of age and approximately half of them were between 41 and 60 years of age. Average age of breast cancer patients was 48 years which corroborates with a Delhi-based study (47.73 years).^[8]

CONCLUSION

In this study, an attempt was made to observe major cancer types in Nainital and its adjoining districts of Uttarakhand, which may be useful to develop a cancer prevention program for prevalent types in this region as well as to plan research strategies. However, a larger study spanning more years is required to get more clear idea about the cancer pattern in the state.

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