Original Article

Pattern, Trend and Leading Sites of Cancer Cases in a Rural Area of Maharashtra State, India: A Hospital Based Retrospective Study

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Abstract

Background: It is observed that cancers are increasingly seen in both genders and all the age groups due to a complex interaction of various risk factors. To implement the Public health intervention measures it is essential to have the baseline data regarding frequency, distribution of cancers in the population. **Objective:** To study the magnitude of cancers by obtaining a baseline data regarding the frequency, distribution, leading cancer sites among the patients in a tertiary cancer care hospital of Rural Maharashtra. **Methods**: A hospital based cross sectional study was conducted through case records of cancer patients who reported in the year 2012 to Pravara Rural Hospital Based Cancer Registry (HBCR), Department of Radiotherapy and Oncology, Rural Medical College and Pravara Rural Hospital, Loni, Maharashtra state, India. A predesigned performa (a core form by HBCR programme) was used to collect the data. **Results:** 41 % Males and 59% Females in the age group 35-64 years had cancer. The sex ratio was 1:1.44. Top five Cancer in this study were Tongue, Mouth, Larynx and Lung. Top five Cancer in females were Cervix, Breast, Ovary, Mouth and Oesophagus. 56.8% were TRCs (Tobacco Related Cancers) in males while 13.2% were TRCs in females.

Key-words: Magnitude; Leading sites; Cancer; Hospital based cancer registry; rural Maharashtra.

Introduction

It is observed that cancers are increasingly seen in both genders and all the age groups due to a complex interaction of various risk factors. The prevalence pattern, type of cancers differs in various part of same country1. This is due to interaction between geological, meteorological, nutritional, cultural and behavioural factors2. To implement the Public health intervention measures it is essential to have the baseline data regarding frequency, distribution of cancers in the population. Studying the magnitude and patterns of cancer helps in determining clues to the cause of cancer and undertake studies in disease aetiology. Epidemiologic study based on this help in knowing what is happening and what can be done3. The present study was undertaken at Pravara Rural Hospital Based Cancer Registry (HBCR), Department of Radiotherapy and Oncology, Rural Medical College and Pravara Rural Hospital, Loni, Maharashtra state, India. Another reason to carry out this study is that, the available literature indicates no such study in rural Maharashtra. Thus this study may be considered as a baseline enquiry into the subject.

Material and Methods

The study was conducted at Pravara Rural Hospital Based Cancer Registry (HBCR), Department of Radiotherapy and Oncology, Rural Medical College and Pravara Rural Hospital, Loni, Maharashtra state, India. It is a one of a leading tertiary care institution

for Cancer in rural Maharashtra. It has a significant turnover of patients from Ahmednagar district as well as from adjacent areas.

The present study is a hospital based, cross sectional study carried out for the period of one year from January to December 2012. The case files and registers of all cancer cases were reviewed to collect information of all aged, diagnosed and confirmed by histopathological results and classified by the standard International Classification of Diseases (ICD-10) criterion. The personal and clinical data about sex, age, occupation, marital status, education, socioeconomic status, habits like tobacco chewers, cigarette smoking, site etc. A predesigned performa (a core form by HBCR programme) was used to collect the data. Out of the total 1177 patients were

detected to be malignant and thus included in the study during 1st January to 31st December 2012. Statistical analysis included calculation of percentages and proportions.

Results

Table 1 it is revealed that, out of the 1177 patients the relative proportion of male patients were 41% and female patients were 59% while the sex ratio percent was 69. The minimum age of the patient was 13 years and the maximum age of the patient was 84 years. 60.2% males and 64% females belonged to age group 35-64 years. Almost 2/3rd of cases occurred in this age group. However, the frequency of cancers reduced at the extreme of ages in both the sexes.

Table 1: Cancers by Broad Age Groups				
Broad Age Groups	**Males**		**Females**	
	No.	**%**	**No.**	**%**
00-14	5	1.0	6	0.9
15-34	48	10.0	48	6.9
35-64	290	60.2	445	64.0
65+	139	28.8	196	28.2
All Ages	**482**	**100.0**	**695**	**100.0**

Table 2 and 3 depict that in males tongue (14.1%) was the leading site of cancer followed by oral cavity (11.2%), larynx (8.99%), lung (8.3%) and Oesophagus (6.2%). Top five male cancers accounted for 235 cases from total male cases of 315. The proportions of these cancers were 74.60%. In females cervix (33.2%) was the leading site of cancer followed by breast (13.1%),

ovary (7.2%), oral cavity (3.9%) and Oesophagus (3.2%). Top five cancers in females accounted for 497 cases from total female cases of 567. The proportions of these cancer were 87.65%. It's worthwhile to take a note that from 15-34 years age group onwards Cervix and Breast predominates the leading sites in females.

Table 2: Distribution according to Top 10 leading sites of cancer (Males)		
Sites (ICD-10)	**Number**	**Percentage (%)**
Tongue	68	14.1
Oral cavity	54	11.2
Larynx	43	8.9
Lung	40	8.3
Oesophagus	30	6.2
Brain, nervous system	29	6.0
Liver	14	2.9
Bladder	13	2.7
Oropharynx	12	2.5
Stomach	12	2.5
Total	**315**	**65.4**
All sites	**482**	**100**

Table 3: Distribution according to Top 10 leading sites of cancer (Females)

Sites (ICD-10)	Number	Percentage (%)
Cervix Uteri	231	33.2
Breast	167	24.0
Ovary	50	7.2
Oral cavity	27	3.9
Oesophagus	22	3.2
Tongue	15	2.2
Skin	15	2.2
Vagina	14	2.0
Corpus Uteri	13	1.9
Brain, nervous system	13	1.9
Total	**567**	**81.6**
All sites	**695**	**100.0**

Table 4 represents Tobacco Related Cancers (TRC). Out of 274 males, tongue (24.8%), was the highest site followed by oral cavity (19.7%), larynx (15.7%), lung (14.6%) and oesophagus (10.9%). The leading site in females was oral cavity (29.3%), followed by oesophagus (23.9%), tongue (16.3%), and lung (12%).

Table 4: Distribution of cancer cases according to specific sites: Tobacco Related Cancers (TRC)

Site of cancer	Male (%)	Female (%)	Total (%)
Lip	1(0.4%)	1(1.1%)	**2(0.55%)**
Tongue	68(24.8%)	15(16.3%)	**83(22.68%)**
Oral cavity	54(19.7%)	27(29.3%)	**81(22.13%)**
Oropharynx	12(4.4%)	1(1.1%)	**13(35.52%)**
Hypopharynx	10(3.6%)	5(5.4%)	**15(4.1%)**
Pharynx	3(1.1%)	2(2.2%)	**5(1.37%)**
Oesophagus	30(10.9%)	22(23.9%)	**52(14.21%)**
Larynx	43(15.7%)	6(6.5%)	**49(13.39%)**
Lung	40(14.6%)	11(12.0%)	**51(13.93%)**
Urinary bladder	13(4.7%)	2(2.2%)	**15(4.1%)**
TRC	**274(100%)**	**92(100%)**	**366(100%)**

Table no. 5 showed the relative proportion of cancer patients according to clinical extent of disease. The localized (98%) and combination of localized and regional (99%) clinical extent is commonest in males and females.

Table 5: Distribution of Relative proportion of cancer patients according to clinical extent of disease		
Clinical extent	**Males (%)**	**Females (%)**
Localized (L)	374(97.4%)	514(99%)
Regional (R)	6(1.6%)	4(0.8%)
L+R	380 (99%)	518(99.8%)
Distant (D)	1(0.3%)	-
Others (O)	2(0.5%)	1(0.2%)
Unknown (Unk)	1(0.3%)	-

Table 6 represents the distribution of relative proportion of cancer patients based on different types of Microscopic diagnosis. Out of 482 males, primary histology (95%) followed by cytology (3.7%) is the leading method of microscopic diagnosis. Whereas, out of 695 females, primary histology (97.1%) followed by cytology (1.9%) is the leading method of microscopic diagnosis.

Table 6: Distribution of Relative proportion of cancer patients based on different types of Microscopic diagnosis		
Methods of Microscopic diagnosis	**Males (%)**	**Females (%)**
Primary histology	458(95%)	675(97.1%)
Secondary histology	-	-
Cytology	18(3.7%)	13(1.9%)
Blood film (PBS)	-	1(0.1%)
Bone marrow	-	1(0.1%)
Others	2(0.4%)	-
Unknown	4(0.8%)	5(0.7%)
Total	482(100%)	695(100%)

Discussion

Cancer is predominantly a disease of middle and old age5. Almost 2/3rd of all cases among males and females in present study occurred in the age group 35-64 years, comparable to the findings at all the Hospital Based Cancer Registries for 2004-2006 in India6. The male female ratio found to be 1:1.44.

In the present study top 5 cancer sites in males were tongue, oral cavity, larynx, lung and Oesophagus. Based on IARC cancer monographs, 1987 Oral Cavity, Oesophagus, Lung and Larynx are Tobacco Related Cancers. In this study it constitutes 48.7% of all cancer in males. Tobacco use is a major cause of cancers of tongue, mouth, larynx, and oesophagus7-11. In 2004, IARC a newer monographs states that, there is a sufficient evidence to establish the causal association between cigarette smoking and cancers of the nasal cavities and nasal sinuses, stomach, liver, kidney, uterine cervix and myeloid leukaemia apart from the sites in earlier monograph of 19876. It represents the most preventable form of cancer in our society.

The top 5 cancer sites in females were cervix, breast, ovary, oral cavity and oesophagus. Cervix together with breast constituted 1/3rd of all cases among the females. Cancer of cervix is more common in developing countries5. Early marriage, age of 1st pregnancy, multiple pregnancies, decreased genital hygiene, sexual behaviour influence the cancer of cervix12,13.WHO has recommended screening of every woman between 35-49 years of age for cancer cervix14. Breast cancers also find place in top 5 sites in Mumbai HBCR and Barshi PBCR. The survey of literature reveals that development of breast cancer in many women appears to be related to female

reproductive hormones. Many Epidemiological studies have consistently identified a number of risk factors, each of which is associated with increased exposure to endogenous estrogens15-17.

Tobacco Related Cancers in females (oral cavity and oesophagus) were 9.30 % of all the cancers among them. Leukaemias were leading among childhood cancers (0-14) among males and females. It also occupies the 1st place among the childhood cancers at all the HBCR's 6 (2004-2006).

Cancer in general is multi-factorial in origin and several environmental interactions are possible. Age, gender, illiteracy or low education level, occupation; working in agriculture sector, income; low monthly household income, marital status and married people resulting in smoking, chewing, drinking and dietary habits can be considered as significant contributing factors modifying the multistage process of carcinogenesis.

Conclusion

The Tobacco Related Cancers represent the most preventable form of cancer in our society. It was 40.7% in males and 9.3% in females. This study also reinforces the fact that about 1/3rd of all cancers are preventable and further 1/3rd is potentially curable if diagnosed sufficiently early. The social awareness through the education programs about the risk of cancer in India is highly warranted. The comprehensive cancer control program emphasizing on the rural and remote places is the need of the hour. This can definitely decrease the incidence and also can help in presentation of cancer at an early stage at which they can be curable.

Limitations of the Study

This being the first study of its kind in the central Maharashtra, it was imperative that a cross sectional study was done than going for in-depth probing of any specified parameter.

Acknowledgement

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