

Pattern of Malignant Tumors in a Teaching Hospital of Western India

Jignasa N Bhalodia¹, Haren V Oza², Palak J Modi³

¹Associate Professor, Department of Pathology, Gujarat Medical Education and Research Society Medical College, Sola, Ahmedabad, Gujarat, India, ²Professor, Department of Pathology, BJ Medical College, Ahmedabad, Gujarat, India, ³Tutor, Department of Pathology, Gujarat Medical Education and Research Society Medical College, Sola, Ahmedabad, Gujarat, India

Abstract

Background: Diseases such as cancer and other non-communicable diseases are fast replacing communicable diseases in India and other developing countries. The burden of cancer is still increasing worldwide despite advances for diagnosis and treatment.

Purpose: To study pattern and histopathological subtypes of the different malignant tumors operated in a medical college associated hospital of western India.

Materials and Methods: All biopsies submitted for histopathology to pathology department Gujarat Medical Education and Research Society Medical College, Sola, Ahmedabad from April 2010 to March 2015, included in study. All biopsies were reviewed. Analysis was performed for age, site and diagnosis in patients with malignant lesions.

Results: Total 7209 biopsies were received. Out of it 229 cases were diagnosed as malignant lesions. 125 (54.59%) cases were female patients in which most common malignancy was breast carcinoma, followed by squamous cell carcinoma of oral cavity and carcinoma of cervix. 104 (45.41%) cases were male patients and most common malignancy was squamous cell carcinoma of oral cavity followed by carcinoma of penis and gastrointestinal adenocarcinoma.

Conclusion: Site-specific data in this study can augment the National Cancer Registry Program and is an essential indicator for the magnitude and pattern of the cancer problem in India.

Key words: Histopathology, Malignancy, Pattern of cancer, Prevalence, Site

INTRODUCTION

Cancer has become one of the leading causes of deaths worldwide. An epidemic of cancer has transited beyond the geographical boundaries of countries. Our Earth is under the effect of cancer that is spreading rapidly, and the burden of cancer is still increasing daily even though there is a lot improvement in methods of diagnosis and treatments.^{1,2} It has become a challenge for any healthcare system. Every year nearly 10 million people are being diagnosed as having some type of cancer out of which

about 6 million people dies.² Apart from cancers due to genetic defect, around 80-90% of cancers develop due to lifestyle and environment factors.¹

In our country prevalence of cancer is less compared to developed countries, it has increased during past few decades. Every year on an average 0.7 million new cases are being diagnosed. It adds to the prevalence of 2.5 million, out of which nearly half of the patient dies within few years. Over 70% of the cases report for diagnosis and treatment in advanced stages of the disease. It is one important cause of poor survival and high mortality rates in cancer patients.^{2,3} There is variation in ethnicity and socioeconomic status in different people in our country. It has a major influence on lifestyle and beliefs and leads to differences in cancer incidence and mortality.⁴

Globally in the male lung, stomach and colorectal cancers are the leading cancers, whereas breast, lungs, and stomach

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Corresponding Author: Dr. Jignasa Bhalodia, B-37, Marutinandan Vihar Bunglows, Nr. Aarohi Villa, 200 Feet S.P. Ring Road, Bopal, Ahmedabad - 380 058, Gujarat, India. Phone: +91-9925594684. E-mail: jignasanb@yahoo.co.in

cancer constitute top three leading cancers in female.³ In contrary the common sites for cancer in Indian male are an oral cavity, lungs, esophagus and stomach and cervix, breast, and oral cavity among Indian female. Even within India, there are variations in the prevalence and pattern of different cancers.² In Southern India, the common cancers among male were of stomach, oral cavity, esophagus, and leukemia whereas in females leading causes of cancers were of cervix, breast, oral, and esophageal. Similarly, a study from West Bengal, an Eastern state of India has showed head and neck, lungs, and oral cancers are predominant in males, whereas among female breast cancer was leading cause of cancer followed by cervical and stomach cancers. In contrast, among North India male major cases of cancer are of gastro-intestinal tract (GIT), larynx and lung. In North Indian female breast, cervix and lung were leading causes of malignancies.²

There is need of obtaining more information on cancer epidemiology such as prevalence, incidence, and risk factors to generate evidence, which will help in taking effective measures to prevent and control the cancer epidemic in the country. There is limited published cancer data available in the state of Gujarat. Due to existence of diverse pattern of cancer occurrence, we conducted the present study to explore the pattern and trend of cancer among patients of Gujarat the West Indian state.²

MATERIALS AND METHODS

We conducted a retrospective study in Gujarat Medical Education and Research Society Medical College, Sola, Ahmedabad in Gujarat. This hospital-based study was conducted for the period April 1st, 2010 to March 31st, 2015. The study subjects consisted of all cases diagnosed as cancer. Tissue biopsies received in histopathology section of the pathology department. They fixed in buffered formalin. Thorough gross examination of specimen was done. Appropriate sections taken as per the standard guideline mentioned in the textbook. After processing in tissue processor, sections were cut and stained with H and E stain. Special stains and immunohistochemistry were done wherever needed. The diagnosis offered on histological evaluation. Tumor, node, metastasis staging and classification of the tumor done in specimens with radical surgery.

RESULTS

Total 7209 biopsies received from April 2010 to March 2015. Out of that, 229 patients were diagnosed as having cancer. In present study, 104 (45.41%) were males and

125 (54.59%) were females diagnosed as having cancer with the male:female ratio of 1:1.2.

Table 1 shows age distribution of these patients. The incidence of cancer was highest 34.93% in age group 41-50 years. It was very low in the age group below 30 years.

Table 2 shows the most common type of malignancy was squamous cell carcinoma affecting 118 (51.52%) patients. In females most common type of malignancy were breast carcinoma 43 (23.14%) followed by squamous cell carcinoma of oral cavity 18 (8.69%), cervical cancers 14 (6.11%) and GIT malignancies 12 (5.24%). In males most common type of malignancy was squamous cell carcinoma of oral cavity 67 (29.25%) followed by squamous

Table 1: Age distribution of patients in cancer patients

Age (years)	Number of cases	Percentage
≤20	3	1.31
21-30	13	5.67
31-40	41	17.90
41-50	80	34.93
51-60	45	19.65
61-70	32	13.97
71-80	15	6.55
Total	229	100

Table 2: Different types of malignancies in males and females

Organ/site	Type of malignancy	Male (%)	Female (%)
Oral cavity	SCC	67 (29.25)	18 (7.86)
Penis skin	SCC	10 (4.36)	-
Cervix and vulva	SCC	-	14 (6.11)
Lymphnode (metastasis)	Metastatic SCC	5 (2.18)	1 (0.43)
Foot	SCC	2 (0.87)	-
Rectum anal canal	SCC	1 (0.43)	-
Breast	Invasive ductal carcinoma	0	53 (23.14)
GIT	Adenocarcinoma	6 (2.6)	12 (5.24)
Ovary	carcinoma	-	5 (2.18)
Thyroid gland	carcinoma	1 (0.43)	6 (2.62)
Skin	BCC	2 (0.87)	3 (1.31)
Skin	Malignant melanoma	2 (0.87)	3 (1.31)
Uterus	Endometrial carcinoma	-	4 (1.74)
Testis	Testicular carcinoma	2 (0.87)	-
Lymph node	Lymphoma	2 (0.87)	1 (0.43)
Kidney	Renal cell carcinoma of kidney	2 (0.87)	1 (0.43)
Salivary gland	Mucoepidermoid carcinoma of salivary gland	1 (0.43)	1 (0.48)
	Others	1 (0.43)	3 (1.31)
	Total	104 (45.41)	125 (54.59)

SCC: Squamous cell carcinoma, BCC: Basal cell carcinoma

cell carcinoma of penis 10 (4.83%) and carcinomas of GIT 6 (2.6%).

DISCUSSION

Contributing factors such as modern civilization, industrialization, urbanization, changes in daily lifestyle, population growth, and aging, are responsible for epidemiological changes in many diseases, including cancers, in India as well as other countries.⁵ Data of occurrence of cancer in different areas are very important. Cancer is an endemic disease as it affects every nation. However, it has considerable variation in frequency according to the site incidence. The geographical differences in incidences help us to get an idea of causative factors. It also helps us in separating environmental and ethnic factors from intrinsic factors. The total world incidence shows that cancer is an enormous health problem, and it is the second killer disease in humans. The burden of cancer is increased globally, and it has shifted from high to low and medium-resource countries. It is both due to demographic changes and by temporal and geographic shifts in the distribution of the major risk factors. The most important factors that contribute to these change in trends are growth and aging of populations, the entrenchment of modifiable risk factors particularly cigarette smoking, western diet and physical inactivity in developing countries and the slower decline in cancers related to infectious etiologies.³

Cancer can cause both social and economic consequences for Indian people, often leading to family impoverishment and societal inequity. Age-adjusted incidence rates for cancer are still quite low in the demographically young country. More than 1 million new cancer cases are diagnosed every year in a population of 1.2 billion. In age-adjusted terms, this represents a combined male and female incidence of about a quarter of that recorded in Western Europe. However, an estimated 600,000-700,000 deaths in India were caused by cancer in 2012. In age-standardized terms, this figure is very close to the burden of mortality seen in high-income countries. These figures are partly indicative of low rates of early-stage detection and poor treatment outcomes. Etiology of many cancer cases in India are tobacco use, infections, and other avoidable causes. Social factor, like inequalities determines India's cancer burden, with poorer people more likely to die from cancer before the age of 70 due to lack of money for proper treatment.⁵

The present study represents that more number of females reported in comparison to males with the ratio of 1:1.2. It is comparable with that of cancer incidence in Murthy and Mathew study and Deshpande *et al.* study.^{1,6} Trend analysis of cancer incidence in India for the period from

1964 to 1996 showed that the overall rates of cancer are increasing with greater increase among females. The trend is reverse to global trend (IARC, 2008). It may be due to the fact that Indian females are at a higher of risk of getting cancer as compared to males (IARC, 2008; ICMR, 2010) and main cause of it is reproductive risk factors among Indian females and recent lifestyle changes in Indian communities.^{2,7,8} The largest increase among females was seen in cases of breast cancer and among males cases of the prostate cancers. Increasing trends noticed in cases of lymphoma, urinary bladder, gall bladder and brain tumors in both sexes. There is also increase in cancer of the colon in females and kidney cancer in males. Esophageal and stomach cancers were decreasing in both. Cervical cancer showed a decreasing trend,^{1,5} and this could be due to reproductive risk factors among Indian females have changed and recent lifestyle changes in Indian communities.

In our study, mouth is the leading site of cancer among males (31.4%) followed by squamous cell carcinoma of penis and GIT carcinoma. Head and neck neoplasia constitute one of the commonest cancers in India. Consumption of tobacco is one of the most important avoidable cancer risk factor for development of this neoplasia. Between 25% and 30% of all cancers in developed countries is tobacco-related.¹ Our country is the third largest producer and consumer of tobacco. History of our country shows that there is a variety of ways of using tobacco like chewing and smoking. The habits of use vary from area to area. Data show a habit of chewing tobacco is 15-70% and smoking is 23-77% in different part of India.¹ It has been estimated that in 1996, 184 million persons used tobacco in the country in one or other form.¹ The risk of having cancer due to tobacco use is investigated extensively. There is higher incidence of cancers of the lung, larynx, esophagus, pancreas and bladder due to tobacco consumption. Bidi smoking is cause of cancer of oropharynx as well as larynx.^{9,10} Tobacco-related cancers account for nearly 50% of all cancer cases among men and 25% of all cancers among women.^{1,11} Oral and pharyngeal cancers have a high incidence in South Asia, even among women. In this area, people use of smokeless tobacco orally which is considered the predominant risk factor for oral cancers.⁶ The trend show rise in mouth cancer in Mumbai and Delhi Population-Based Cancer Registry among male, whereas among female there is reverse trend. This cancer could be attributed to increase in tobacco consumption among males in any form.¹

Breast cancer is the leading site of cancer followed by squamous cell carcinoma of oral cavity, cancers of cervix uteri and GIT adenocarcinomas cancers, in females. Breast cancer is most common and leading cancer among female around the world. The incidence of breast cancer is increasing in India. There are estimated 80,000 new

cases diagnosed annually. The rise of incidence of breast cancer increased by approximately 50% between the years 1965 and 1985. Much of this increase is due to greater urbanization and improved life expectancy. The incidence rate is higher in urban areas compared with rural areas. Furthermore, age at puberty and pregnancy-related factors such as parity, age at giving birth to first child, and a number of children are factors possibly related to breast cancer.¹²

Cancer prevention includes primary and secondary prevention methods. Primary prevention refers to avoiding carcinogens in the environment or dietary elements and dietary supplementation with putative protective agents. Secondary prevention aims at early detection and treatment of premalignant conditions of oral, cervical, and breast cancers.¹

Non-communicable diseases including cancer are emerging as public health problems in India. The major risk factors for these diseases are tobacco, dietary habits, inadequate physical activity, alcohol consumption, and infections due to viruses. Primary prevention is the most important cause to reduce the burden of cancer. Extensive health education is required to be directed to control/reduce the use of tobacco. Education about proper nutrition, safe sexual practices and attention to personal and genital hygiene is needed for increasing public awareness. Prophylactic vaccinations against human papilloma virus and hepatitis B virus infection are useful strategies for the prevention of carcinoma of the cervix and in the control of liver cancer. Further, screening for uterine cervix, oral and breast cancers could have a significant effect on reducing mortality from cancer.

CONCLUSION

Cancer is emerging as an important health problem in developing country. It is the second leading cause of death in the world. Half of all men and one-third of all women will develop cancer during their lifetime. Millions of

people are either living with cancer or had cancer. This work is just a brief insight in the broad and complicated field of cancer. This presented epidemiological data on cancer provides valuable information on patterns of cancer prevalence and incidence. By knowing the type and occurrence of different tumors, we can plan preventive measures such as eradication of tobacco use, vaccination, and genetic screening. We can also prepare strategies for early diagnosis and treatment of patients to increase their 5-year survival rate.

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