

Original Research Article

Cancer in Geriatric patients: A single center observational study**Dr Laxmi Kant Goyal¹, Dr. Sandeep K Jasuja², Hardayal Meena³, Dr Leenu Hooda⁴, Dr. I Hasan⁵, Dr Dinesh Agrawal⁶**¹Assistant Professor, Department of Medicine, SMS MC & Attached Hospitals, Jaipur, Rajasthan, India²Assoc. Professor and Head, ³⁻⁶Medical Officer, Department of Medical Oncology, SMS MC & Attached Hospitals, Jaipur, Rajasthan, India***Corresponding author**

Dr. Sandeep K Jasuja

Email: sandeepjasuja@gmail.com

Abstract: This hospital based observational, analytic study was conducted at a tertiary care cancer center in Western India during November 2015 to April 2016, after obtaining due permission from appropriate authority. Patients above 60 years of age who had histologically proven cancers (both newly diagnosed and previously diagnosed) and visited cancer OPD were included in this study. Total 1800 patients attended cancer OPD during the study period, out of them 489 patient were >60 years old (age range 61-91 years). The male: female ratio was 5:3. Ca lung was the most prevalent malignancy in our study population with prevalence of 30.9% (151/489). Ca breast and ca ovary were next common malignancy with prevalence of 9.4% (46/489) each. Ca gall bladder, ca oral cavity and ca colon were 7%, 5.5% and 3.5 prevalent respectively. In male cancer patients, Ca lung was the most prevalent (41.3%) and Ca oral cavity (7.4%) was second most common malignancy. Ca gall bladder was third common malignancy with prevalence of 6.8 %. In female cancer patients, Ca breast was the most frequent malignancy with prevalence of 25.2% (45 /179). Ca ovary was the second prevalent malignancy (prevalence 24%) and Ca lung was the third common (12.8%).**Keywords:** Geriatric population, Cancer, Western India

INTRODUCTION:

In the modern era life expectancy has increased resulting in a demographic transformation of population from younger to geriatric society. In western world 60% of malignancy is diagnosed in persons above 65 years with the age adjusted cancer incidence rate of 2151/1, 00,000 populations [1, 2]. Also, the risk of cancer is 11 times more in geriatric age group compared to younger persons [3]. In India, 11% of its population will include geriatric population (>60 years age) by 2020 [4]. The incidence of cancer is also increasing with this increase in age and more than 12-23% of all cancers occur in geriatric patients [5, 6]. It is estimated that by 2020 prevalence of cancer will be more than one million in Indian geriatric population [7, 8].

The increased risk of cancer in this age can be explained by telomere shortening, defective DNA repair mechanism, immune-system alteration, hormonal alteration, variable expression of oncogenes and exposure to carcinogens in early life [9].

Despite increasing prevalence of cancer in this age group, these patients received less attention in terms of investigation and appropriate treatment. In view of paucity of information available on cancers in geriatric population in Western India, we endeavor the present study to find out the pattern of cancer in geriatric patients attending cancer OPD.

MATERIAL AND METHOD:

This hospital based observational, analytic study was conducted at a cancer care tertiary center in Western India during November 2015 to April 2016, after obtaining due permission from appropriate authority. Patients above 60 years of age who had histologically proven cancers (both newly diagnosed and previously diagnosed) and visited cancer OPD were included in this study. Patient data were collected from hospital records and stored in Microsoft Excel[®]. These data were analysed using SPSS[®] 20 for Windows[®].

OBSERVATIONS:

Total 1800 patients attended cancer OPD during the study period, out of them 489 patient were >60 years old (age range 61-91 years). The male:

female ratio was 5:3. The maximum patients (263/489, 53.7) were in age group of 61-65 years. Majority of the patients were Hindu as the general population at study

site was mostly Hindu population. Rural (238/489, 48.6%) and urban population (251/489, 51.4%) was almost equal in our study. (Table No.1)

Table-1: Epidemiological profile of study subjects

Age (years)	Total n(%)	Male n(%)	Female n(%)
	489 (100)	310 (63.4)	179 (36.6)
60-65	263 (53.7)	157 (50.6)	106 (59.0)
66-70	122 (25.0)	89 (28.7)	33 (18.5)
71-75	63 (12.9)	44 (14.2)	19 (10.7)
76-80	29 (5.9)	16 (5.2)	13 (7.3)
>80	12 (2.5)	4 (1.3)	8 (4.5)
Religion			
Hindu	449 (91.8)	285 (91.9)	164 (91.6)
Muslim	34 (7.0)	20 (6.5)	14 (7.8)
Sikh	5 (1.0)	4 (1.3)	1 (0.6)
Christian	1 (0.2)	1 (0.3)	0 (0.0)
Inhabitant			
Rural	238 (48.6)	157 (50.6)	81 (45.3)
Urban	251 (51.4)	153 (49.4)	98 (54.7)

Table-2: Type of cancer in geriatric study population

	Total n(%)	Male n(%)	Female n(%)
	489 (100)	310 (63.4)	179 (36.6)
Ca Lung	151 (30.9)	128 (41.3)	23 (12.8)
Breast Ca	46 (9.4)	1 (0.3)	45 (25.2)
Ca Ovary	46 (9.4)	3 (1.0)	43 (24.0)
Ca GB	34 (7.0)	21 (6.8)	13 (7.3)
Ca Oral cavity	27 (5.5)	23 (7.4)	4 (2.2)
Lymphoma	22 (4.3)	15 (4.5)	7 (3.9)
Ca Colon	17 (3.5)	12 (3.9)	5 (2.8)
Ca Prostate	16 (3.3)	16 (5.2)	0 (0.0)
CLL	16 (3.3)	13 (4.2)	3 (1.7)
Multiple myeloma	15 (3.1)	11 (3.5)	4 (2.2)
CML	15 (3.1)	10 (3.2)	5 (2.8)
Secondary in Liver	12 (2.5)	8 (2.6)	4 (2.2)
Ca Oesophagus	11 (2.2)	9 (2.9)	2 (1.1)
Ca larynx	9 (1.8)	9 (2.9)	0 (0.0)
Ca Stomach	8 (1.6)	7 (2.3)	1 (0.6)
Ca Pancreas	7 (1.4)	1 (0.3)	6 (3.4)
Ca Urinary bladder	6 (1.2)	5 (1.6)	1 (0.6)
HCC	5 (1.0)	4 (1.3)	1 (0.6)
Ca Cervix	4 (0.8)	0 (0.0)	4 (2.2)
Sarcoma	4 (0.8)	4(1.2)	0 (0.0)
AML	3 (0.6)	3 (0.9)	0 (0.0)
Polycythemia	3 (0.6)	1 (0.3)	2 (1.1)
RCC	3 (0.6)	3 (0.9)	0 (1.0)
Thymoma	3 (0.6)	0 (0.0)	3 (1.7)
ALL	2 (0.4)	1 (0.3)	1 (0.6)
Aplastic Anemia	1 (0.2)	1 (0.3)	0 (0.0)
Ca Mandible	1 (0.2)	0 (0.0)	1 (0.6)
Ca Penis	1 (0.2)	1 (0.3)	0 (0.0)
Ca uterus	1 (0.2)	0 (0.0)	1 (0.6)

Ca lung was the most prevalent malignancy in our study population with prevalence of 30.9% (151/489). Ca breast and ca ovary were next common malignancy with prevalence of 9.4% (46/489) each. Ca gall bladder, ca oral cavity and ca colon were 7%, 5.5% and 3.5 prevalent respectively. (Table No. 2)

In male cancer patients, Ca lung was the most prevalent (41.3%) and Ca oral cavity (7.4%) was second most common malignancy. Ca gall bladder was third common malignancy with prevalence of 6.8 %. (Table No. 2). In female cancer patients, Ca breast was the most frequent malignancy with prevalence of 25.2% (45 /179). Ca ovary was the second prevalent malignancy (prevalence 24%) and Ca lung was the third common (12.8%). (Table No. 2)

DISCUSSION:

In India geriatric population is increasing due to longer life expectancy and cancer burden is also increasing in this population. Because of the paucity of data regarding cancer in geriatric population in Western Indian sub-continent, this study was endeavor to assess cancer patients in our cancer treatment center. In our study prevalence of malignancy in geriatric population was 27.17% which is equivalent to previous Indian studies and few international references [10- 19].

Lung cancer was the most prevalent malignancy in our study. Similar to our finding, many previous Indian studies also reported lung cancer as the most prevalent malignancy in geriatric patients [20, 21]. This finding is also in echo with meta-analysis of various cancer registries [22]. The oral cancer was the next common cancer in geriatric patients in current study. This observation is also matches with meta-analysis of various cancer registries [22]. In a meta-analysis of various cancer registries, it was predicted that in 2016, in Indian geriatric population cancer incidence will be about 3, 20,000 in men and 2, 60,000 in women. In men most common cancer will be of lung (20%) followed by prostate (13%), while in women highest cancer incidence will be of breast (28%), followed by cervix (9%) and ovary (6.5%).²⁰ The results of the current study also show lung cancer as the most common malignancy in man and breast cancer in women. For predicting these cancer incidence cases for the year 2016, Balkrishna *et al.*; [20] used population estimated by Registrar General and Mumbai registry data of 1971-2001 duration. These time and geographic difference might be the reason for some difference of their prediction and our study results. We found ca ovary as second most common malignancy and ca cervix as third most common. This difference might be explained by the short study duration (6 months) and a single center study; we need large sample size for validation of our results.

So lung carcinoma and oral cancer are the most frequent malignancy among male population in current study making them major public health issues from oncology side and suggesting the priority of tobacco control for cancer control in India. In fact tobacco control will reduce many other chronic diseases along with tobacco-related cancers [23, 24].

In current study, among female cancer patients, Ca breast was the most frequent malignancy with prevalence of 25.2% (45 /179). Ca ovary was the second prevalent malignancy (prevalence 24%). Cervical cancer was seen in 2.2% females only. Result of previous studies and meta-analysis of various cancer registries also matches with our study [22, 25, 26]. Rajendra *et al.*; [22] observed an increase in breast cancer and a decrease in cervical cancer in Indian populations. The increase in breast cancer might be explained by redistribution of risk factors including late marriage and life style changes occurring as a result of socio-economic improvement [27]. The decline in cervical cancer might be due to family planning, greater awareness for genital hygiene, and visiting clinicians at pre-clinical stage.

Whatever be the reason, the highest prevalence of breast cancer highlights needs for the control of female breast cancer at the primary, secondary and tertiary level within India. The breast cancer can be detected at an early stage via self-breast examination or clinical breast examination after the age of 50 [28].

Geriatric Cancer patients (≥ 60 years) deserves a special attention for early detection, pre-treatment evaluation, treatment and post treatment care. Also it is very crucial to take care of coexisting diseases besides cancer as they might compete for care and treatment with a newly diagnoses tumor in geriatric patient [29].

LIMITATIONS:

Our study had some limitations. This study was done at a tertiary care centre with in a limited time period of 6 months resulting in a limited sample size, thus the results may not imply on general population, and further studies with a larger sample size and longer duration time frame are needed.

CONCLUSION:

Ca lung was the most prevalent malignancy in our study population with prevalence of 30.9%. Ca breast and ca ovary were next common malignancy with equal prevalence of 9.4%. In male, Ca lung was the most prevalent (41.3%) and Ca oral cavity (7.4%) was second most common. Ca gall bladder was third common malignancy with prevalence of 6.8 %. In female, Ca breast was the most frequent malignancy with prevalence of 25.2%. Ca ovary was the second

prevalent malignancy (24%) and Ca lung was the third common (12.8%).

CONFLICT OF INTEREST:

None of the authors have a Conflict of Interest.

REFERENCES:

1. Ries LAG, Eisner MP, Kosary CL, Hankey BF, Miller BA, Clegg LX; Edwards. SEER Cancer Statistics Review, 1973–1998. National Institute of Health 2000; NIH publication 00-2789.
2. Yancik R, Holmes ME; NIA/NCI Report of the Cancer Center Workshop (June 13–15, 2001). Exploring the Role of Cancer Centers for Integrating Aging and Cancer Research; 2002: <http://www.nia.nih.gov/Research> Information/Conferences And Meetings/ Workshop Report
3. Ries LAG, Eisner MP, Kosary CL, Hankey BF, Miller BA, Clegg LX, *et al.*; editors. SEER cancer statistics review. In: National Cancer Institute. Bethesda, MD; 1975-2000.
4. Sarkar A, Shahi UP; Assessment of cancer care in Indian elderly cancer patients: A single center study. South Asian J Cancer 2013; 2:202-8.
5. Agarwal SP, Rao YN, Gupta S; Fifty years of cancer control in India. 1st ed. National Cancer Control Program (NCCP); 2002; 41-7.
6. Nandakumar A; National Cancer Registry Programme (NCRP), Indian Council of Medical Research. August 2001.
7. National cancer registry Program, ICMR Population based cancer registry reports - 2 year report 2004-2005.
8. Cancer Incidence and mortality in Dindigul district, Tamil Nadu -2003; Dindigul ambilikkai Cancer registry, Cancer Institute (W.I.A) Chennai.
9. Vijaykumar DK, Anupama R, Gorasia TK, Haleema Beegum TR, Gangadharan P; Geriatric oncology: The need for a separate subspecialty. Indian J Med Paediatr Oncol 2012; 33:134-6.
10. Nandakumar A; National Cancer Registry Programme (NCRP), Indian Council of Medical Research. August 2001.
11. O'Connell J B, Maggard MA, Ko CY; Cancer directed surgery for localized disease: Decreased use in the elderly. Ann Surg Oncol 2004; 11:962-9.
12. Okamoto I, Moriyama E, Fujii S, Kishi H, Nomura M, Goto E, *et al.*; Phase II study of carboplatin–Paclitaxel combination chemotherapy in elderly patients with advanced non small cell lung cancer. Jpn J Clin Oncol 2005; 35:188-94.
13. Makrantonakis PD, Galani E, Harper GP; Non-small cell lung cancer in the elderly. Oncologist 2004;9:556-60
14. Rama R; Statistical Assistant, PBCR. Population based cancer registry, Chennai Cancer Institute (wia), Adyar, Chennai: Individual Registry Data: 1990-1996.
15. Repetto L, Mammoliti SC; Life expectancy, comorbidity and quality of life: The treatment equation in the older cancer patients. Crit Rev Oncol Hematol 2001; 37:147-52.
16. Goldberg RM, Fisch TI, Bleiberg H, De Gramont A, Tournigand C; Pooled analysis of safety and efficacy of oxaliplatin plus fluorouracil/leucovorin administered bimonthly in elderly patients with colorectal cancer. J Clin Oncol 2006; 24:4085-91.
17. Yancik R; Cancer burden in the aged: An epidemiologic and demographic overview. Cancer 1997; 80:1273-83.
18. SEER Cancer Statistics Review, 1975-2003.
19. Sharma RG, Kumar R, Jain S, Jhahria S, Gupta N, Gupta S.K *et al.*; Distribution of malignant neoplasms reported at different pathology centers and hospitals in Jaipur, Rajasthan. Indian Journal of Cancer 2009; 46 (4):323-330.
20. Balkrishna B Yeole, Arun P Kurkure, SS Koyande; Geriatric Cancers in India: An Epidemiological and Demographic Overview. Asian Pacific Journal of Cancer Prevention 2008;1 9:271-274
21. Advani SH; Decreasing trend in the incidence of stomach cancer in Mumbai, India, during 1988 to 1999. Asian Pacific Journal of Cancer Prevention, 2004; 5:169-174.
22. Badwe RA, Rajesh Dikshit M; Laversanne and Freddie Bray. Cancer Incidence Trends in India. Japanese J Clinical Oncology 2014;44(5)401–407
23. Jha P; Avoidable global cancer deaths and deaths from smoking. Nat Rev Cancer 2009; 9:655–64.
24. Moodie R, Stuckler D, Monteiro C, Sheron, N., Neal, B., Thamarangsi, T *et al.*; Lancet NCD action group: profits and pandemics: prevention of harmful effects of tobacco, alcohol and ultraprocessed food and drink industries. Lancet 2013; 381(9867):670–9.
25. Dikshit RP, Yeole BB, Nagrani R, Dhillon P, Badwe R, Bray F; Increase in breast cancer incidence among older women in Mumbai: 30-year trends and predictions to 2025. Cancer Epidemiol 2012; 36:e215–20.
26. Dhillon PK, Yeole BB, Dikshit R, Kurkure AP, Bray F; Trends in breast, ovarian and cervical cancer incidence in Mumbai, India over a 30-year period, 1976–2005: an age-period-cohort analysis. Br J Cancer 2011; 105:723–30.
27. Singh RB, Beegom R, Mehta AS, Niaz M.A, De Amit K, Mitra R.K *et al.*; Social class, coronary risk factors and under nutrition, a double burden of diseases in women during transition, in five Indian cities. Int J Cardiol 1999; 69(2):139–47.
28. Shapiro S, Coleman EA, Broeders M, Codd M, de Koning H, Fracheboud J *et al.*; Breast cancer screening programme in 22 countries: current

policies, administration and guidelines: International breast cancer screening network (IBSN) and the European network of pilot projects for breast cancer screening. *Int J Epidemiol* 1998; 27(5):735-42.

29. Yancik R; Cancer burden in the aged. An epidemiologic and demographic overview. *Cancer* 1997; 80: 1273-83.