

A CLINICAL STUDY ON VARIOUS TYPES OF CANCER AND ANTICANCER THERAPY IN YOUNGER VERSUS OLDER CANCER PATIENTS; IN A TERTIARY ONCOLOGY HOSPITAL

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ABSTRACT

Objective: This study was undertaken to evaluate the incidence of various types of cancer and anticancer therapy in younger versus older patients in a tertiary care oncology hospital, Trissur, Kerala. **Material and methods:** The medical records of patients diagnosed with cancer in 2011 were retrospectively reviewed. 126 patients with age 18-49 (younger) and 348 with age 50-94 (older) were assessed for difference in the incident rate of different types of cancer, pathological grade at the time of diagnosis and anticancer therapy given. **Results:** 474 patients were enrolled over a period of 5 months for the present study. In the total 474 cases, 40 types of cancer were identified; breast cancer was the commonest type. In the total cases, pathological grade II 245 (51.7%) were predominantly seen; 56.3% of the younger group and 49.7% of the older group. With regard to therapy, in younger group, majority of the patients 59 (46.9%) underwent Surgery+CT+RT; in older group, surgery+CT 78 (22.4%) was mainly given. **Conclusion:** The present study can be concluded that the incident rate of cancer in older age is about 3 times higher than the younger age. Majority of the patients were diagnosed with cancer in pathological grade II and surgery+CT was the most preferred treatment of choice.

KEY WORDS

Cancer, Younger age, Older age, Pathological grade, Anticancer therapy.

INTRODUCTION

Cancer known medically as a malignant neoplasm, is a broad group of various diseases, all involving unregulated cell growth. Cancer however has existed for all of human history. The earliest written record regarding cancer is from 3000 BC in the Egyptian Edwin Smith Papyrus and describes cancer of the breast. There are over 200 different known cancers that afflict humans.

Trends in the risk of cancer with time are an important descriptor to understand changes in cancer incidence over a period of time. Global cancer rates have been increasing primarily due to an aging population and lifestyle changes in the developing world. In the United States, cancer is responsible for 25% of all deaths with 30% of these from lung cancer. The most commonly occurring cancer in men

is prostate cancer (about 25% of new cases) and in women is breast cancer (also about 25%). Cancer can occur in children and adolescents, but it is uncommon (about 150 cases per million in the U.S.), with leukemia the most common.

India's annual incidence of cancer stands at 10 lakhs new cases, but the figure could balloon in the next decade. Trend analysis of cancer incidence data showed that the overall rates of cancer are increasing with greater increase among females. The largest increase among females was seen for cancer of the breast and among males for cancer of the prostate. Increasing trends were noticed for lymphoma, urinary bladder, gall bladder and brain tumours in both sexes. In the last five years, the availability of newer drugs and machines have meant that more cancers are being cured.

Cancers are primarily an environmental disease with 90–95% of cases attributed to environmental factors and 5–10% due to genetics. Environmental, as used by cancer researchers, means any cause that is not inherited genetically, not merely pollution. It is nearly impossible to prove what caused a cancer in any individual, because most cancers have multiple possible causes.

Tumor grading is a system used to classify cancer cells in terms of how abnormal they look under a microscope and how quickly the tumor is likely to grow and spread. Many factors are considered when determining tumor grade, including the structure and growth pattern of the cells. The American Joint Committee on Cancer recommends certain guidelines for grading tumors. Generally, a lower grade indicates a better prognosis (the likely outcome or course of a disease; the chance of recovery or recurrence). The importance of tumor grade in planning treatment and estimating a patient's prognosis is greater for certain types of cancers, such as soft tissue sarcoma, primary brain tumors, lymphomas, and breast and prostate cancer.

Anticancer therapy should be evaluated for each individual patient, with all peculiarities involved. Many management options for cancer exist with the primary ones including: surgery, chemotherapy, radiation therapy, and palliative care. Surgery is the primary method of treatment of most isolated solid cancers. Surgery has a central role in the management of cancer because it is often the most effective therapy in achieving cure. For some types of cancer this is all that is needed for a good outcome. The role of chemotherapy in the treatment of cancer varies. Chemotherapy can be used alone with curative intent, used as adjuvant therapy with curative intent, used as neo adjuvant therapy, used to palliate symptoms in advanced

disease and also can be used with little or no effect on palliation. . Radiation is typically used in addition to surgery and or chemotherapy but for certain types of cancer such as early head and neck cancer may be used alone. For painful bone metastasis it has been found to be effective in about 70% of people. Most complementary and alternative medicines for cancer have not been rigorously studied or tested. Some alternative treatments have been investigated and shown to be ineffective but still continue to be marketed and promoted. Palliative care is an approach to symptom management that aims to reduce the physical, emotional, spiritual, and psychosocial distress experienced by people with cancer. Unlike treatment that is aimed at directly killing cancer cells, the primary goal of palliative care is to make the person feel better.

The purpose of this study was to compare the incident rate of various types of cancer, pathological grade at the time of diagnosis, and anticancer therapy given in younger and older age.

MATERIALS AND METHODS

The study population included patients with biopsy-proven carcinoma, diagnosed in a tertiary care oncology hospital over a one year period beginning from January 1st 2011. Patients underwent any kind of anticancer therapy in other hospitals are excluded. During the study period, there were, 474 newly diagnosed cases of cancer. Two cohorts were created on the basis of age of diagnosis: younger (<50 years) and older (≥50 years). The study data was obtained from the medical records and pathology reports. Demographic data, including the age at diagnosis, and gender were recorded for each case. Pathological grade of the tumor at the time of diagnosis was noted. Tumor grading was based on the guidelines provided from The American Joint Committee.

Guidelines for grading tumors:

Grade	Definition
GX	Grade cannot be assessed (Undetermined grade)
G1	Well-differentiated (Low grade)
G2	Moderately differentiated (Intermediate grade)
G3	Poorly differentiated (High grade)
G4	Undifferentiated (High grade)

Treatment informations including surgery chemotherapy, and radiotherapy wer also noted from the medical record.

RESULTS

On the basis of inclusion and exclusion criteria, 474 patients were enrolled over a period of 5 months for the present study. 126(26.6%) patients were included in younger group;and 348(73.4%) patients were included in older group.(Table 1). The age varies from 18 to 94 years,with a median age of 58 years.Among the 474 patients, 188(39.7%) were male and 286(60.3%)were female.(Table 1)

Table 1: Distribution of commonly occurring cancer in both the age groups

Factor		Younger age (%) (n =126)	Older age (%) (n =348)
Age		126	348
Gender	Male	13 (10.3)	169 (48..6)
	Female	113 (89.7)	179 (51.4)
Cancer site	Breast	79 (62.7)	81 (23.3)
	Ovary	8 (6.3)	16 (4.6)
	Stomach	6 (4.8)	14 (4.0)
	Cervix	7 (5.6)	11 (3.2)
	Endometrium	4 (3.2)	9 (2.6)

5 types of cancer were seen both in younger and older population; includes Breast cancer 160(33.8%), Ovarian cancer 24(5.1%), Stomach cancer 20(4.2%), Cervical cancer 18(3.8%) and Endometrial cancer13 (2.7%). (Table 1)

Breast cancer appeared to be the commonest type;of these, 79 (62.7%) were in younger group and 81 (50.6%)were in older group. Endometrial cancer was found to be in very less number of patients; 4(3.2%) in younger and 9(2.6%) in older. There was no

significant difference in the incidence of ovarian cancer and stomach cancer in both of the age groups. (Table 1)

9 types of cancer were seen only in younger population. Among these, Thyroid cancer 7(5.5%), Pancreatic cancer 6(4.7%), Mandibular cancer 2(1.6%), and Parotid gland cancer 2(1.6%) were mainly seen (Table 2). 26 types of cancer were seen only in older population. Of these, Lung cancer 47(13.5%), Rectal cancer 20(5.7%) and Colon cancer

19(5.5%) were predominantly seen.(Table 3)

Table 2: Types of cancer seen only in younger group

SI No.	Cancer site	Number of patients (%) (n=126)
1	Thyroid	7 (5.5)
2	Pancreas	6 (4.7)
3	Mandible	2 (1.6)
4	Parotid gland	2 (1.6)
5	Others (Scapula,Ureter,Leukemia,Pectoral lymph node,Gluteal region)	5 (4.0)

Table 3: Types of cancer seen only in older group

SI No.	Cancer site	Number of patients (%)
1	Lung	47 (13.5)
2	Rectum	20 (5.7)
3	Colon	19 (5.5)
4	Tongue	17 (4.9)
5	Lymphoma	16 (4.6)
6	Cheek	15 (4.3)
7	Vocal cord	10 (2.9)
8	Brain	9 (2.6)
9	Esophagus	8 (2.3)
10	Prostate	8 (2.3)
11	Alveolus	7 (2.0)
12	Oropharynx	6 (1.8)
13	Gall bladder	5 (1.4)
14	Thigh	4 (1.1)
15	Urinary bladder	4 (1.1)
16	Penis	4 (1.1)
17	Gastro esophageal junction	4 (1.1)
18	Tonsil	3 (0.9)
19	Upper arm	2 (0.6)
20	Skin	2 (0.6)
21	Pyriform fossa	2 (0.6)
22	Others (Nasopharynx,Axillary fold,Nasal cavity,Bile duct,Kidney)	5 (1.4)

Comparison of younger and older patients revealed that both the age groups were more diagnosed with

cancer at pathological grade II 245(51.7%) followed by grade III 30 (23.8%) in younger and grade I in older 76(21.8%).(Figure 1)

Despite these similarities in pathological grade, differences in therapy were noted. Surgery+CT+RT was the most preferred treatment of choice in younger group 59(46.9%) whereas, Surgery + CT in older group 78 (22.4%). (Figure 2). Information

was collected regarding therapy in 5 types of cancer which were commonly seen in both the age groups.

With respect to breast cancer surgery alone, CT alone, Surgery +RT and CT+RT were not given in two age groups. Surgery+CT+RT was the most preferred therapy in younger 45(57%) and Surgery+ CT in older group 44(54.3%).(Table 4)

Figure 1: Pathological grade distribution

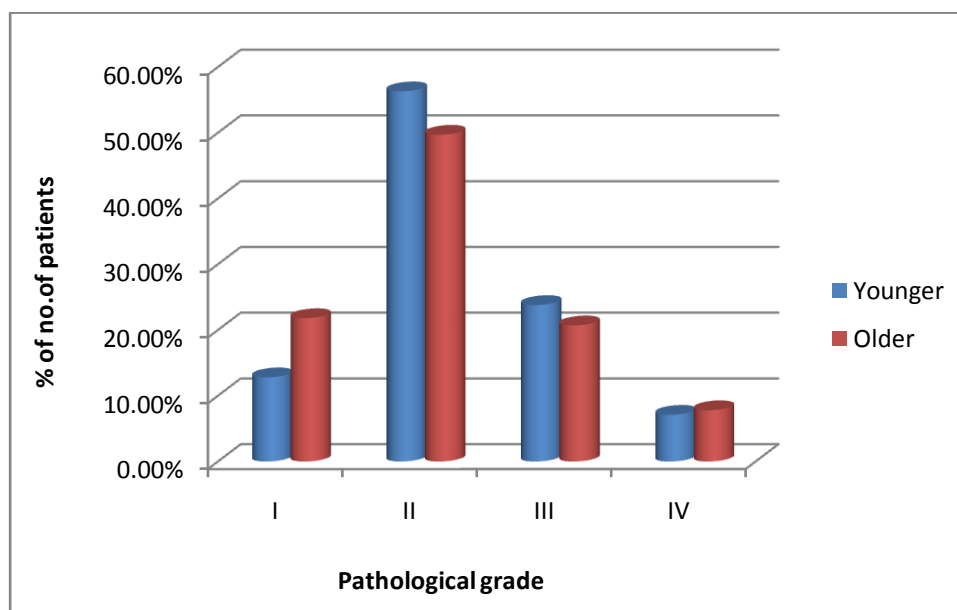


Figure 2: Therapy distribution

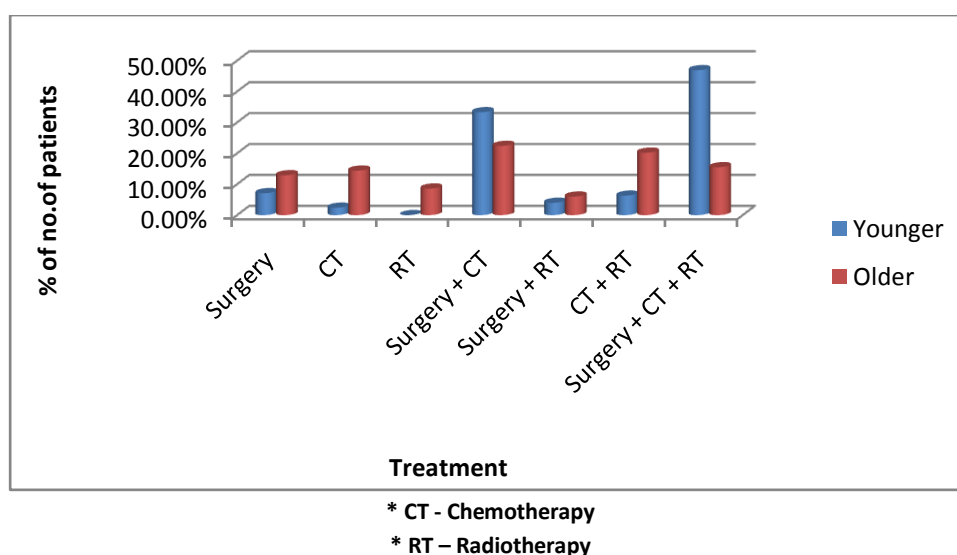


Table 4: Treatment distribution regarding commonly occurring cancer

Cancer site	Treatment	Younger age (%) (n =126)	Older age (%) (n =348)
Breast	Surgery	0 (0)	8 (9.9)
	CT	0(0)	0(0)
	RT	0(0)	0(0)
	Surgery+ CT	34 (43.0)	44 (54.3)
	Surgery+RT	0(0)	0(0)
	CT+RT	0(0)	0(0)
	Surgery+CT+RT	45 (57)	29 (35.8)
Ovary	Surgery	1 (12.5)	1 (6.2)
	CT	1 (12.5)	7 (43.8)
	RT	0(0)	0(0)
	Surgery+ CT	6 (75)	8 (50)
	Surgery+RT	0(0)	0(0)
	CT+RT	0(0)	0(0)
	Surgery+CT+RT	0(0)	0(0)
Stomach	Surgery	1 (16.7)	5 (35.7)
	CT	1 (16.7)	4 (28.6)
	RT	0(0)	0(0)
	Surgery+ CT	2 (33.3)	3 (21.5)
	Surgery+RT	0(0)	0(0)
	CT+RT	0(0)	1 (7.1)
	Surgery+CT+RT	2 (33.3)	1 (7.1)
Cervix	Surgery	1 (14.3)	3 (27.3)
	CT	0(0)	2 (18.2)
	RT	0(0)	0(0)
	Surgery+ CT	1 (14.3)	1 (9.1)
	Surgery+RT	0(0)	0(0)
	CT+RT	3 (42.9)	5 (45.4)
	Surgery+CT+RT	2 (28.5)	0(0)
Endometrium	Surgery	0(0)	0(0)
	CT	0(0)	0(0)
	RT	0(0)	0(0)
	Surgery+ CT	0(0)	1 (11.1)
	Surgery+RT	1 (25)	2 (22.2)
	CT+RT	0(0)	0(0)
	Surgery+CT+RT	3 (75)	6 (66.7)

Regarding the ovarian cancer, Surgery alone, CT alone and Surgery+CT were only given in two age groups, with most preference to Surgery+ CT (**Table 4**). In case of stomach cancer, surgery alone and surgery + CT were given with equal importance in

younger group 2(33.3%) whereas, surgery alone mainly given in older group 5(35.7%).(**Table 4**)

It is also found that, in cervical cancer and endometrial cancer, CT alone and RT alone were not given in younger group and RT alone not in older

group. In cervical cancer, CT+RT was the most preferred therapy. In case of endometrial cancer, surgery+CT+RT was predominantly given (**Table 4**).

DISCUSSION

The patients in this study may not be representative of all cancer patients in India. Patients with cancer, at either end of the age spectrum, have significant alterations in cancer incidence, pathological grade and anticancer therapy. Although the exact reasons for these differences remain unclear, several trends have become evident based on our data and a review of the literature.

Out of the total 474 patients enrolled, 26.6% patients were included younger group and 73.4% patients were in older group. Similar findings were noted in a study conducted in Taiwan with respect to colorectal cancer.⁴ The age varies from 18 to 94 years. Among the 474 patients, 39.7% were male and 60.3% were female. Females are more affected by cancer in younger group, but males are more affected in older age.⁴

Type of cancer which are seen commonly in younger and older age are breast cancer,^{5,7,10} ovarian cancer,²¹ stomach cancer,¹⁵ cervical cancer⁸ and endometrial cancer¹².

Both the age groups were more diagnosed with cancer at pathological grade II 245(51.7%); followed by grade III 30 (23.8%) in younger and grade I in older 76(21.8%). Similar data were obtained from a retrospective study by Pietro Sanpaolo, Viviana Barbieri et al. in Italy.¹⁰

9 types of cancer were seen only in younger age but 20 types were belongs to older age only. This indicate that, probability of the occurrence of cancer increases with increase in age.

With respect to the treatment variables assessed in our study, surgery+CT+RT was the most preferred treatment of choice in younger group 46.9% whereas, Surgery+CT in older group 22.4%. We could not correctly evaluate the effect of pathological grade on treatment decision. Because, choice of therapy depends upon patient's preference too.

CONCLUSION

It's time people stopped living in the illusion that they

can't be afflicted with cancer. Cancer is climbing the Indian graph due to rapid lifestyle changes, adding nearly a million new cases every year.

The present study can be concluded that the incident rate of cancer in older age is about 3 times higher than the younger age. Majority of the patients were diagnosed with cancer in pathological grade II. Also, surgery + CT was the most preferred treatment of choice.

Cancer is the second leading cause of death in the United States. About one-half of all men and one-third of all women in the US will develop cancer during their lifetimes. There is a gradual rise in the prevalence of cancer in India even as it has taken several steps for prevention of the deadly disease. While cancer of the breast and cervix are most common among women, men suffer from neck, throat and prostate cancer. In India, the number of new breast cancer cases is about 115,000 per year and this is expected to rise to 250,000 new cases per year by 2015.

The substantial variation in cancer rates in India suggests other risk factors or causative agents that remain to be discovered. There is a tremendous amount of research being conducted on all areas of oncology, ranging from cancer cell biology to chemotherapy treatment regimens and optimal palliative care and pain relief. This makes oncology a continuously changing and developing field.

While the ministry of health has a National Cancer Control Programme (NCCP) and a National Cancer Registry Programme (NCRP) that maps the prevalence of the disease, experts feel the fight against cancer is still too far from reaching the goals of awareness and prevention. Under the NCCP, there are currently 28 regional cancer centres country-wide that are tertiary cancer care centres, providing all facilities of diagnosis and treatment. The country should not fall weak on awareness and prevention methods for cancer of any type.

When a patient is diagnosed with cancer, he or she goes into shock. If we have a little knowledge about screening methods, awareness about causes and report to the doctor even on observing the slightest of change in physicality, then we can at least diagnose the disease early.

REFERENCES

- Sanjeev Kumar, MD, Jay P. Shah, MD et al. A comparison of younger vs older Women with vulvar cancer in the United States. *American Journal of Obstetrics & Gynecology*.(2009).869.
- Mongi Maalej, Karima Mrad et al. Cervical cancer in Tunisia: an epidemiological, clinical and pathological study. *European Journal of Obstetrics & Gynecology and Reproductive Biology*.113 (2004). 226–228.
- B.S.M.S. Siriwardena , A. Tilakaratne et al. Demographic, aetiological and survival differences of oral squamous cell carcinoma in the young and the old in Sri Lanka. *Oral Oncology* 42(2006).831– 836
- Chia-Lin Chou, M.D., Shih-Ching Chang, M.D., Ph.D. et al. Differences in clinicopathological characteristics of colorectal cancer between younger and elderly patients: an analysis of 322 patients from a single institution. *The American Journal of Surgery* 202 (2011). 574–582.
- Thomas E. Merchant, D.O., PH.D., Beryl McCormick, M.D., et al. The influence of older age on breast cancer treatment decisions and outcome. *International Journal of Radiation Oncology Biology Physics*. Vol. 34. No. 3.(1996). 15-570.
- Ming Li, M.D. Ph.D., Ji-You Li, M.D., et al. Do young patients with colorectal cancer have a poorer prognosis than old patients?. *Journal of Surgical Research*, (2009) 1–5.
- Nakul Saxena, Mikael Hartman, et al. Impact of older age on presentation, management and outcome of breast cancer in the multi-ethnic Asian population of Singapore. *Journal Of Geriatric Oncology* 2(2011)50–57
- Katrina V. Fox, Chirag A. Shah, et al. An evaluation of cervical cancer in women age sixty and over. *Gynecologic Oncology* 109(2008). 53–58
- A. Benmoussa , S. Zamiati, et al. Colorectal cancer: Comparison of clinicopathologic features between Moroccan patients less than 50 years old and older. *Pathologie Biologie* (2012)
- Pietro Sanpaolo, Viviana Barbieri, et al. Patients younger than 40 years old and older than 70 years old affected by ER(-)/PR(-)/HER2(-) breast cancer have low survival rates: Results of a mono-institutional retrospective analysis. *Journal Of Geriatric Oncology*(2012).
- Minsig Choi , Peter Q. Jiang, et al. Retrospective review of cancer patients ≥ 80 years old treated with chemotherapy at a comprehensive cancer center. *Critical Reviews in Oncology/Hematology* 67 (2008).268–272.
- J.A. Lachance , E.N. Everett , et al. The effect of age on clinical/pathologic features, surgical morbidity, and outcome in patients with endometrial cancer. *Gynecologic Oncology* 101 (2006).470 – 475.
- Nasser Hanna, Jo Ann Brooks, et al. A retrospective analysis comparing patients 70 years or older to patients younger than 70 years with non-small-cell lung cancer treated with surgery at Indiana University: 1989-1999. *Clinical Lung Cancer*, Vol.3, No.3,(2002) 200-204.
- Marcus Horstmann, MDI, Ralf Witthuhn, MD2, et al. Gender-specific differences in bladder cancer: A retrospective analysis. *Gender Medicine/Vol.5, No.4*,(2008).
- Teruo Eguchi, MD, Yasuo Takahashi, MD, et al. Gastric cancer in young patients. *American College of Surgeons 83rd Annual Clinical Congress*, Chicago, Vol. 188, No. 1, (1999).
- Charles P. Theuer, MD, Christian de Virgilio, MD, et al. Gastric adenocarcinoma in patients 40 years of age or younger. *Inc. Am J Surg*.172 (1996).473-477.
- Arthur T. Skarin, Roy S. Herbst, et al. Lung cancer in patients under age 40. *Lung Cancer* 32 (2001) 255–264.
- Jean Adams, Riccardo A. Audisio, et al. Age-related variations in progression of cancer at diagnosis and completeness of cancer registry data. *Surgical Oncology* 13 (2004)175–179.
- Kenneth G. Nepple, Liu Yang, et al. Population Based Analysis of the Increasing Incidence of Kidney Cancer in the United States: Evaluation of Age Specific Trends From 1975 to 2006. *The Journal Of Urology*. Vol. 187, (2012)32-38.
- L. Livi , I. Meattini, et al. The impact of young age on breast cancer outcome. *EJSO* 36 (2010).639-645.
- Joyce F. Liu, Michelle S. Hirsch et al. Prognosis and hormone receptor status in older and younger patients with advanced-stage papillary serous ovarian carcinoma. *Gynecologic Oncology* 115 (2009) 401–406.



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