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Three Years' Experience of Radiotherapy Treatment Interns of Incidence of Disease and Outcome.

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Abstract: *Cancer has become a major global health problem and remains leading cause of death globally.It is very important to know the actual cancer pattern of the country. That can help the authority for proper utilization of resources. A retrospective, descriptive cross-sectional study was conducted in theNorth East Cancer Hospital, Sylhetduring a 36 months period from January 2016 to December 2018.Present study comprised of 1043 cases of histologically proven cancer patients who received radiotherapy,of which 600 (57.52%) were male, and 443 (42.48%) were female. The male female ratio was 1:1.38. The age range was from 7 to 110 years with an average of 54.67 years. The cases were divided into nine age-groups according to decades, the highest number of patients to be in 5th decade.According to site of involvement,head neck is the commonest site (446 cases, 42.76%) followed by breast (113 cases,10.83%) in case of female and lung (92 cases, 8.8%) in case of male. Most of the patient were treated with 2D (42.3%). followed by 3DCRT (36%).*

Key Words: *Cancer, Radiotherapy, Head neck cancer, Breast cancer, Lung cancer.*

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I. Introduction

Cancer has become a major global health problem and remains leading cause of death globally.[1]The International Agency for Research on Cancer (IARC) recently estimated that 7.6 million deaths worldwide were due to cancer with 12.7 million new cases per year being reported worldwide. A significant proportion of this burden is borne by developing countries; 63% of cancer deaths are reported to be from developing countries. [2, 3, 4]Bangladesh is the 9thmost population country in the world. there are 13 to 14 lakh cancer patients in Bangladesh with about 2 lakh patients newly diagnosed with cancer each year.[5,6] According to Bangladesh Bureau of Statistic caner is the sixth leading cause of death in Bangladesh (BBS,2004). International Agency for Research on cancer (IARC) has estimated cancer related death rate in Bangladesh to be 7.5% in 2005 and it will be increase to 13% in 2030.[7]Cancer is a mutagenic and multicellular disease that can arise from all cell types and organs with a multi-factorial etiology. Hanahan and Weinber have identified six cancer cell phenotypes or hallmarks of cancer: cells with unlimited proliferative potential, environmental independence for growth, evasion of apoptosis, angiogenesis, invasion and metastasis to different parts of body [8]If uncontrolled cell growth or metastatic spread occurs it will result in death of the individual .[9]The past decade has witnessed a considerable progress towards the treatment and understanding of the earlier proposed hallmarks of cancer .[10] Together with advances in early detection and in the various treatment modalities, many cancers have become curable. [11]After the discovery of X-rays in 1895, by Wilhelm Conrad Röntgen from Germany its clinical usefulness, as a means of cancer treatment was first appreciated. It is also one hundred years ago that Marie Curie won a second Nobel Prize for her research into radium, establishing her position as a pioneer in the field of radiation therapy. To mark this, 2011 has been designated the Year of Radiation therapy in the UK, celebrating a century of advances. Since that time, radiation therapy has developed into a recognized medical specialty with Radiation Oncology being a discipline in which various health and science professionals from numerous disciplines work together. Along with surgery and chemotherapy, radiation therapy or radiotherapy remains an important modality used in cancer treatment being a highly cost effective single modality treatment accounting about only 5% of the total cost of cancer care[12] Furthermore, approximately 50% of all cancer patients will receive radiation therapy during their course of illness.[13, 14] With an estimation that radiation therapy contributes to around 40% towards curative treatment.[15] Rapid progress in this field continues to be boosted by advances in imaging techniques, computerized treatment planning systems, radiation treatment machines (with improved X-ray production and treatment delivery) as well as improved understanding of the

radiobiology of radiation therapy.[16]The cancer burden of our country cannot be changed overnight.So it is very important to know the actual cancer pattern of the country. That can help the authority for proper utilization of resources. Therefore this study have been undertaken to evaluate ourthree years experience of radiotherapy treatment interns of incidence of disease and outcome.

II. Material and Methods:

A retrospective, descriptive cross-sectional study was conducted in theNorth East Cancer Hospital, Sylhetduring a 36 months period from January 2016 to December 2018. Patients of different age group and both sex were selected for this study according to inclusion and exclusion criteria. Inclusion criteria were,the entire radiotherapy patient was histologically proven & staging was done before giving radiotherapy. The exclusion criteria were patient with palliative care and chemotherapy alone. Variables were chosen according to investigators choice of interest. Age, sex type, disease type, location were taken as key variables. A total of 1043cases who met the enrolment criteria were included in this study. All the cancer patients attended in the cancer institute of NEMC were study population. Statistical analysis of the results was obtained by (SPSS-21). The results were presented in tables, figures, charts and diagrams.

III. Results

Present study comprised of 1043 cases of histologically proven cancer patient who received radiotherapy,of which 600 (57.52%) were male, and 443 (42.48%) were female. The male female ratio was 1:1.38.

The age range was from 7 to 110 years with an average of 54.67 years. The cases were divided into nine age-groups according to decades, the highest number of patients to be in 5th decade

According to site of involvement,head neck is the commonest site (446 cases, 42.76%) followed by breast (113 cases,10.83%)incase of female and lung (92 cases, 8.8%) in case of male.

In this study most of the patient were treated with 2D (42.3%). followed by 3DCRT (36%),IMRT (intensity modulated radiation therapy, 14.8%), Rapid Arc/VMAT (Volumetric intensity modulated radiotherapy, 5.8%) and minority (0.4%) weretreated with Brachytherapy.

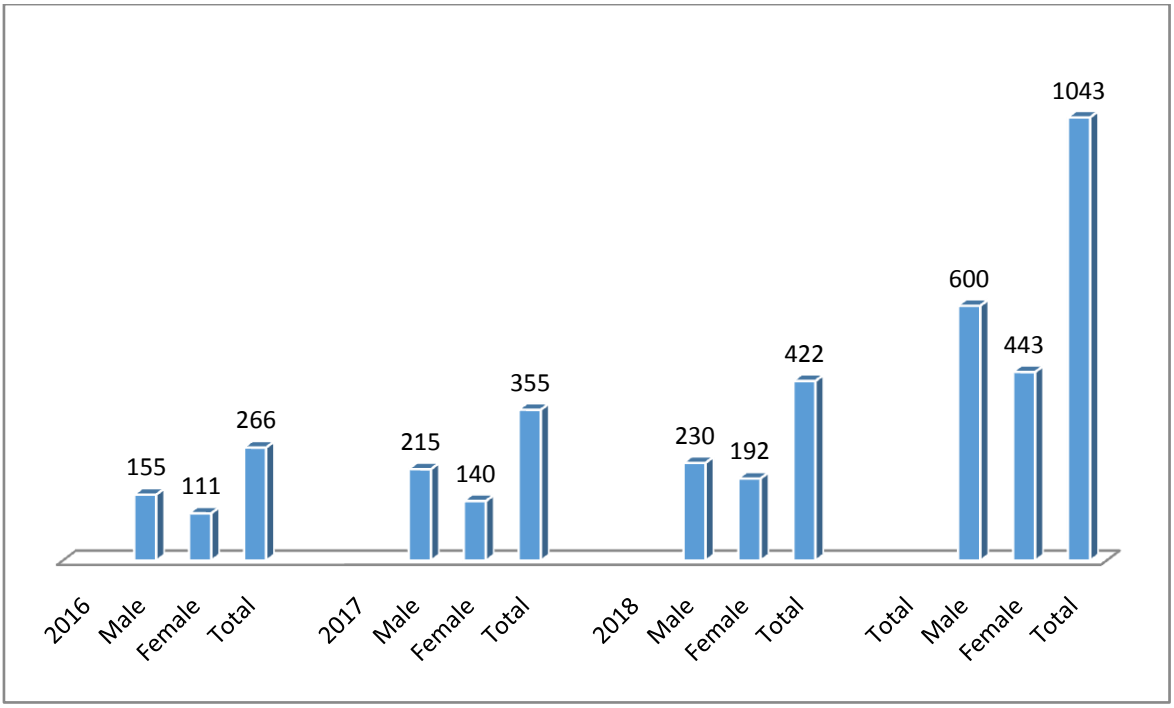

Fig 1: Bar diagramshowing distribution of patients by sex and years (n =1043).

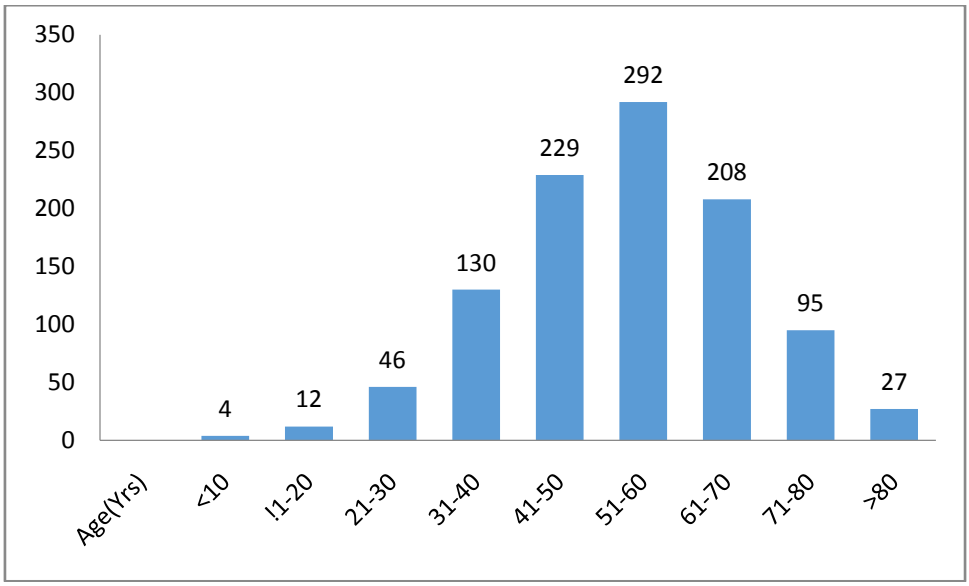

Fig 2: Bar diagram showing distribution of patients by age (n =1043).

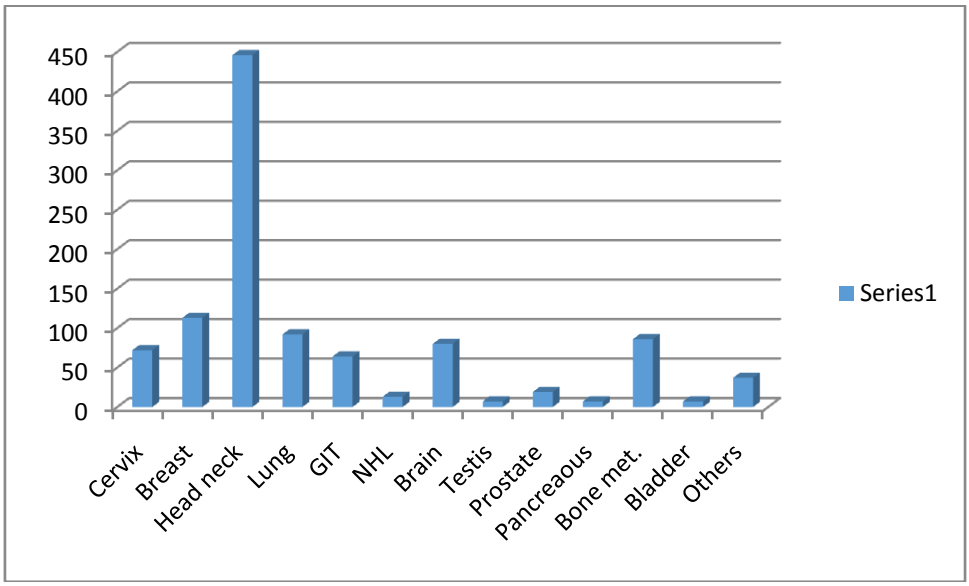

Fig 3: Bar diagram showing distribution of patients by site of cancer (n =1043).

Table 1 Distribution patients by site and years: (n=1043)

	2016	2017	2018	all
Cervix	14	26	32	72
Breast	26	43	44	113
Head neck	124	158	164	446
Lung	25	38	29	92
GIT	22	24	18	64
NHL	1	5	7	13
Brain	15	17	48	80
Testis	3	2	2	7
Prostate	7	8	4	19
Pancreas	3	2	2	7
Bone met.	16	20	50	86
Bladder	2	3	2	7

Others 8 9 20 37
266 355 422 1043

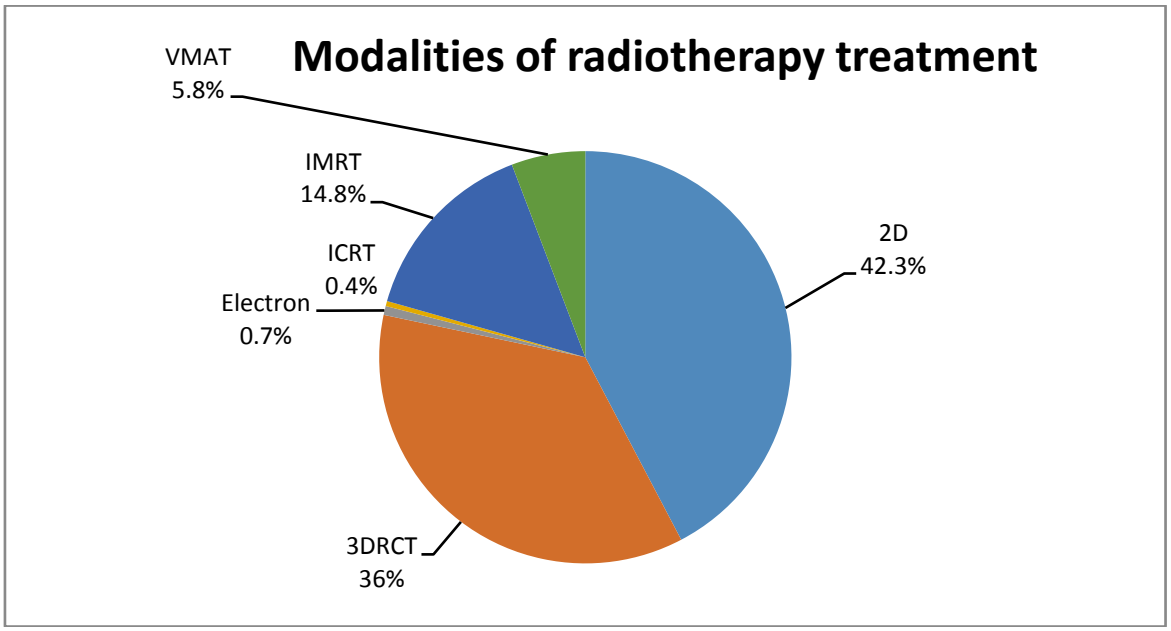

Fig 4: Pie chart showing modalities of radiotherapy treatment (n =1043).

Table 2 Distribution patients by outcomes: (n=1043)

Modalities of radiotherapy	Alive	Dead	Unknown	Total
2D	164 (37.20%)	134 (30.38%)	143 (32.42%)	441 (100%)
3DCRT	191 (50.93%)	121 (32.26%)	63 (16.91%)	375 (100%)
BT	2 (50%)	1 (25%)	1 (25%)	04 (100%)
IMRT	97 (62.58%)	30 (19.35%)	28 (18.07%)	155 (100%)
VMAT	34 (55.74%)	12 (19.67%)	15 (24.59%)	61 (100%)
Electron	5 (71.42%)	1 (14.29%)	1 (14.29%)	7 (100%)
	493 (47.26%)	299(28.66%)	251 (24.08%)	1043 (100%)

IV. Discussion

This study was conducted among1043 cases of histologically proven cancer patient who were treated by radiotherapy,

Of those 1043, 600 (57.52%) were male, and 443 (42.48%) were female. The male female ratio was 1:1.38. Study in Ghana found 339(29.8%) male and 797 (70.2%) female and another study in Malaysia found 53.2% female .[17, 18]

In our study the age range was from 7 to 110 years with an average of 54.67 years. The cases were divided into nine age-groups according to decades, the highest number of patients to be in 5th decade.Study conducted in Ghana also found the highest number of patients were in 5th decade and study in Malaysia found majority werein 4th decade.[17, 18]

According to site of involvement, in this study,head and neck is the commonest site (446 cases, 42.76%) followed by breast (113 cases,10.83%) in case of female and lung (92 cases, 8.8%) in case of male.Study conducted inMalaysia found 55.6%head and neck cancer.[18]

V. Conclusion

In this study, the patient number was increasing alarmingly in this region per year in both case of male and female. In both sex, majority were presented with the cancer of head and neck region. Among male, lung and among female, breast cancer was the 2nd prevalent. Awareness, regular screening and avoidance of risk factors can reduced the incidence of the cancer.

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