

Research Article

Patterns of cancer occurrence in a tertiary care centre

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ABSTRACT

Background: This study is an attempt to know the incidence of cancer in a tertiary care centre. Statistics for all newly diagnosed cancer cases by correlation with factors like age, gender & organ systems involved with complete histopathological evaluation is presented. Emphasis is given to segregating each cancer and grouping them into their respective order for statistical analysis. Objectives of the study was to conduct a prospective statistical analysis, computing and comparing rates, ratios and percentages of cancer incidence in relation to epidemiological parameters like age, gender, organ system and site involved, etc. and correlating with other national and international studies.

Methods: All newly diagnosed cancer cases from various surgical and medical specialities were consolidated into a core database and various statistical outputs were worked out, like cancer incidence comparative rate, ratios and percentages for parameters like age distribution to gender wise, system wise, organ wise, etc.

Results: Out of total 2278 cancer cases, in males (1003 cases/44.03%), tumors of head and neck (468 cases/20.54 %) were most common, and among which oral cavity cancers (278 cases/59.4 %) were most common. In females (1273 cases/55.9 %), cervical cancers (314 cases/13.7 %) were most common followed by breast cancers (218 cases/9.56 %). In children (69 cases/3.03 %) hematopoietic neoplasms (17 cases/30.3 %) were most common.

Conclusions: The current study mainly summarizes the different patterns of cancer incidence in the tertiary care centre region. Cancer incidence is increasing gradually among the population and there is raise of cancer incidence in females compared to their counterparts.

Keywords: Cancer, Tertiary care centre, Squamous cell carcinomas

INTRODUCTION

In spite of good advancements for diagnosis and treatment, cancer is still a big threat to our society. This is the second most common disease after cardiovascular disorders for maximum deaths in the world.¹ Every year nearly 10 million people are being diagnosed with cancer out of which about 6 million die per year.²

Globally lung, stomach and colorectal cancers are the leading cancers in males, whereas, breast, lungs and stomach cancer constitute top three leading cancers in females.³

In contrary the common sites for cancer in India are oral cavity, lungs, oesophagus and stomach in males and cervix, breast and oral cavity in females. At present, half of the new cancer cases in the world occur in the developing countries.⁴ The population of India in general and that of the areas covered by the registries in particular, have displayed rapid changes in life styles, dietary practices and socio-economic milieu.⁵

McLennan has defined cancer registration as a process of continuing systematic collection of data on the occurrence and characteristics of reportable neoplasms.⁶

The cancer registry is central to any rational programme on cancer control.⁷ There is a need for obtaining more clear information on cancer epidemiology such as prevalence, incidence and decision making to prevent and control the cancer epidemic in this part of country.

Keeping in view the existence of diverse pattern of cancer occurrence, present study was conducted to explore the cancer epidemiological patterns and trend of cancer among the patients that are referred to the Department of Pathology, Andhra Medical College, King George Hospital, Visakhapatnam from the various surgical and non-surgical specialties of this hospital.

METHODS

The present hospital based prospective study was conducted from 2013 to 2015, for a period of three years, at Department of Pathology Andhra Medical College, Visakhapatnam. A summation of all newly diagnosed cancer cases that are referred or sent from various surgical and medical specialties which were recorded for the given period were considered and were included into a core database.

From this database, various statistical outputs were worked out, such as cancer incidence comparative rate, ratios and percentages for parameters such as age distribution to gender wise, system wise, organ wise, etc.

In the present study the entire cancer cases were grouped into thirteen different systems based on the origin of the carcinoma.

The cases identified include all invasive cancers in International Classification of Diseases: ICD-10 categories C00 to C97; Medical records of identified cases were reviewed and information on clinical diagnosis, clinical histories of cases were noted as and when required. We tried to enter the cancer cases in cancer registry as far as possible but for most of the cases, the patient attendants or concerned clinicians used to collect the reports instead of the patient.

Data was entered and analysed using MS Excel 2010 software for computing all totals, percentage, relative frequencies graphs were also plotted as required for an easy thoughtful understanding of the colossal data of this study.

RESULTS

In the present study 2278 cases were diagnosed in which 1003 (44.03%) were male patients and 1273 (55.9%) were female patients. (Table 1) The male to female ratio was 1:0.79. 11.6 % of female preponderance were noted in most of the cancers.

Table 1: Age group and gender distribution of total cancers.

	Age group in years									
	0 - 18		19 - 39		40 - 55		56 - 65		> 65	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Sum	41	28	135	259	423	623	291	278	113	87
Percentages %	59.42	40.58	34.26	65.74	40.44	59.56	51.14	48.86	56.50	43.50
Totals	69		394		1046		569		200	
Percentage %	3.02		17.2		45.9		24.9		8.7	

Table 2: System wise and gender distribution of total cancers.

Systems	Total		Male		Female		M / F
	Sum	%	Sum	%	Sum	%	
Reproductive system	516	22.65	85	8.47	431	33.80	0.20
Head and neck structures	468	20.54	300	29.91	168	13.18	1.79
Gastro intestinal tract system	368	16.15	233	23.23	135	10.59	1.73
Breast	218	9.57	3	0.30	215	16.86	0.01
Musculoskeletal, soft tissue and skin structures	178	7.81	94	9.37	84	6.59	1.12
Secondaries / metastasis lesions	110	4.83	63	6.28	47	3.69	1.34
Central nervous system	81	3.56	42	4.19	39	3.06	1.08
Endocrine structures	74	3.25	18	1.79	56	4.39	0.32
Tumors of lymphoid structures	63	2.77	39	3.89	24	1.88	1.63
Liver & pancreas structures	62	2.72	34	3.39	28	2.20	1.21
Tumors of blood cells	56	2.46	28	2.79	28	2.20	1.00
Kidney and lower urinary tract system	50	2.19	36	3.59	14	1.10	2.57
Tumors of lung and bronchus	34	1.49	28	2.79	6	0.47	4.67
Totals	2278	100	1003	100	1275	100	0.7

Table 3: System wise and age group distribution of total cancers.

System	Age Groups					Total
	0 to 18	19 to 39	40 to 55	56 to 65	>65	
Reproductive structures	4	78	268	138	28	516
Head and neck structures	1	67	204	136	60	468
Gastro intestinal tract	1	46	185	100	36	368
Breast	0	39	127	36	16	218
Musculoskeletal, soft tissue and skin structures	11	22	78	48	19	178
Secondaires / metastasis	4	19	41	37	9	110
Central nervous system	15	27	22	13	4	81
Endocrine structures	4	40	21	8	1	74
Tumour of Lymphoid Structures	11	20	20	7	5	63
Liver and pancreas structures	0	5	33	15	9	62
Tumour of Blood Cells	17	18	16	5	0	56
Kidney and lower urinary tract	1	2	21	19	7	50
Tumors of Lung and Bronchus		6	17	5	6	34
Totals	69	389	1053	567	200	2278
Percentage %	3.03	17.08	46.22	24.89	8.78	

Table 4: Age group distribution of various cancers of female genital tract.

Female genital tract 431 cases			Age groups					Mean Age
Organ / Site	Total	%	0-18	19-39	40-55	56-65	>65	
Cervix	314	72.85		41	172	89	12	50.8
Ovary and adnexa	61	14.15	3	17	28	10	3	43.2
Vaginal structures	31	7.19		3	18	7	3	51
Uterus	25	5.80		5	11	5	4	48.8
Totals	431	100	3	66	229	111	22	
percentages %	18.92(2278)		0.70	15.31	53.13	25.75	5.10	

Table 5: Incidence of histopathologic types of ovarian cancers.

Ovary and adnexal cancers 61 cases	Total	%	FGT %
Surface epithelial tumors 45 cases			
Cystadenocarcinoma	32	52.46	7.42
Endometroid carcinoma	8	11.48	1.62
Clear cell carcinoma	1	1.64	0.23
Brenner tumor inter	4	6.56	0.93
Germ cell tumors 8 cases			
Mixed Germ Cell tumor	3	4.92	0.70
Dysgerminoma	2	3.28	0.46
Cystic tetatoma SCC	1	1.64	0.23
Struma ovarii	1	1.64	0.23
Yolk sac tumor	1	1.64	0.23
Sex cord stromal tumors 5 cases			
Granulosa cell tumor	5	8.20	1.16
Metastatic 3 cases			
Krukenberg tumor	3	4.92	0.70
Totals	61	100	14.15

In the present study the entire cancer cases were grouped into thirteen different systems based on the origin of the

carcinoma (Table 2) and age distribution intervals were 0 to 18 years (children and adolescent), 19 to 39 years

(young adult age group), 40 to 55 years (mid adult age group), 56 to 65 years (older adult age group) (Table 3).

In the present study, the most common cancer noted was cervical cancers (314 cases- 13.7%) followed by oral cavity carcinomas 278 cases (12.2%), Breast cancers 218 cases (9.56%), stomach 147 cases (6.4%), skin 124 cases (5.44%) and secondaries 110 cases (4.8%).

In the present study, female genital tract carcinomas constituted 431 Cases (18.92% of 2278), the mean age at diagnosis was 49.6 years, among these 314 cases (72.85%) were cervix carcinomas, 61 were ovarian carcinomas, 31 were vaginal and 25 were uterine carcinomas (Table 4).

Table 6: Frequency distributions of cancer occurrence in different site / organs in the male genital tract.

Male genital tract 85 cases			Age group in years					Mean Age
Organ / Site	Total	%	0-18	19-39	40-55	56-65	>65	
Penis	62	72.9		4	32	25	1	51.3
Prostate	10	11.7			3	2	5	63.9
Testis	13	15.2	1	9	3			32.6
Totals	85	100	1	13	38	27	6	
Percentage %	3.73		1.2	15.3	44.7	31.8	7.1	

Table 7: The distribution of cancers in head and neck system.

Head and Neck cancers 468 cases			Age group in years							Mean age
Organ / site	Total	%	M	F	0-18	19-39	40-55	56-65	>65	
Oral cavity	278	59.4	177	101		41	117	75	45	52.8
Larynx	76	16.2	66	10		3	34	34	5	55.3
Laryngo pharynx	62	13.	29	33		14	30	13	5	53.9
Salivary gland	20	4.2	8	12		6	7	5	2	48.4
Nasopharynx related	17	3.6	12	5	1	4	8	4		45.4
Eye related	8	1.7	5	3			5	1	2	55.1
Maxilla	7	1.5	3	4			4	3		53.4
Totals	468	100	300	168	1	68	205	135	59	
Percentage %	20.5		64.1	35.9	0.21	14.53	43.80	28.85	12.61	

Table 8: Cancer distribution in various site or organ of gastro intestinal tract.

Gastro intestinal tract 368 cases			Age groups in years							Mean age
Organ / site	Total	%	M	F	0-18	19-39	40-55	56-65	>65	
Stomach	147	39.95	97	50		19	80	35	13	51.4
Oesophagus	83	22.55	49	34		5	37	33	8	54.5
Rectum	52	14.13	28	24		10	24	12	6	50.9
Colon	45	12.23	32	13		8	21	9	7	51
Anal canal	19	5.16	11	8		1	12	5	1	49.2
GE junction	13	3.53	10	3		1	6	6	0	52.8
Illeum	4	1.09	2	2	1	1	1	0	1	36.7
Duodenum	3	0.82	2	1		1	2	0	0	46
Jejunum	2	0.54	2	0		0	2	0	0	56
Totals	368	100	233	135	1	46	185	100	36	
Percentages %	16.1		63.32	36.7	0.27	12.5	50.3	27.17	9.783	

The commonest age group involved was 40 to 55 years, with 230 cases (53.4%). Out of 314 case diagnosed in cervix, large cell non-keratinizing squamous cell

carcinoma (71%) (Figure 1) and large cell keratinizing squamous cell carcinoma (21%) (Figure 2) combined constituted 92% of the cancers, the remaining carcinomas

were adenosquamous (7 cases), basaloid (3), small cell non-keratinizing squamous cell carcinoma (1 case). Out of 61 cases diagnosed as ovarian tumors (14.15%), surface epithelial tumors were 45 cases (73.7%) (Figure 3), germ

cell tumors were 8 cases (13%), sex cord stromal tumors were 5 cases (8%), metastatic were 3 cases (5%) (Table 5).

Table 9: Frequency of different variants of breast carcinomas along with age and gender distributions.

Breast cancer 218 cases Variants	Age group in years									
	Total	%	M	F	0-18	19-39	40-55	56-65	>65	Mean Age
Infltduct cell carcinoma NST	187	85.8	3	184		34	110	29	14	47.8
Infltduct cell carcinoma with special type	11	5.05		11		3	6	2		47.1
Medullary carcinoma	5	2.29		5		1	3		1	45.6
Mucinous carcinoma	4	1.83		4		1	2	1		43.75
Invasive secretory carcinoma	3	1.38		3			3			55
Invasive papillary carcinoma	2	0.92		2			1	1		58
Metaplastic carcinoma	2	0.92		2				2		60
Neuro endocrine carcinoma	2	0.92		2			1	1		55
Apocrine carcinoma	1	0.46		1				1		65
Malignant phylloid's tumour	1	0.46		1		1				33
Totals	218	100	3	215		40	126	37	15	
Percentage %		9.57		1	99		18.3	57.8	17	6.8

Table 10: Distribution of different structures / sites where the lesions of musculoskeletal, soft tissue and skin structures were diagnosed along with distributions of age and gender.

Musculoskeletal, soft tissue and skin structures 178 cases Organs / structures	Age group in years									
	Total	%	M	F	0-18	19-39	40-55	56-65	>65	Mean Age
Skin and adnexa structures	124	69.66	64	60	1	10	56	40	17	52.9
Soft tissue	44	24.7	24	20	6	9	21	6	2	40.4
Skeletal structures	10	5.61	4	6	4		3	2	1	26
Totals	178	100	92	86	11	19	80	48	20	
Percentages %		7.81		51.6	48	6.1	10.7	44.9	27	11

Table 11: Frequency allocations of different secondary's reported in the study with gender and age group relations.

Secondaires / Metastasis 110 cases Cancers	Age group in years									
	Total	%	M	F	0-18	19-39	40-55	56-65	>65	Meanage
Adenocarcinoma deposits	44	40	26	18		4	22	15	3	52.7
Meta carcinomatous deposits	25	22	14	11		4	9	9	3	53.2
Squcell carcinoma deposits	12	10	8	4		3	2	6	1	50.7
Metastatic follicular and papillary ca of thyroid	8	7	5	3		2	3	1	2	43.5
Met deposits adenoid cystic and mucoepidermoidca of salivary gland	5	4		5		2	1	2		45
Mets germ cell tumor	5	4	3	2	3	2				18.8
Poorly diff ca deposits	5	4	2	3		1	2	2		52.5
Misc.	6	5	5	1	1	1	2	2		49.87
Totals	110		63	47	4	19	41	37	9	
Percentages %		4.83		57	42	3.6	17	37	33	8

Out of 25 cases of uterine tumors, well differentiated endometrial carcinoma 20 cases (80%) was the commonest lesion, followed by 3 cases of choriocarcinoma (Figure 4), 2 cases of low grade stromal sarcomas of the uterus.

Male genital tract constituted 3.7% (85 cases) of cancers out of 2278 cases, with a mean age of 51.1 yrs. Most of the cases were seen under 40-55 years 44.7 % (38 cases) then followed by 56-65 years 31.8 % (27 cases) and 16.5 % below 39 years in which testis tumors the main ones (Table 6).

Table 12: Distribution of all histopathological variants of CNS cancers in relation to age and gender allocations.

Central nervous system 81 cases					Age group in years					Mean age
Variants	Total	R%	M	F	0-18	19-39	40-55	56-65	>65	
Astrocytoma G2	23	28.4	12	11	4	7	5	6	1	48
Glioblastomamultiforme	15	18.52	8	7		6	6	2	1	45.8
Medulloblastoma	7	8.64	3	4	4	3				17.4
Mixed glioma	7	8.64	4	3	1	3	2	1		33.4
Astrocytoma G3	6	7.41	6		1	2	3			34.5
Low grade glioma	6	7.41	2	4	1	1	3		1	16.5
Anaplastic ependynoma	5	6.17	3	2	4				1	22.2
Anaplastic meningioma	5	6.17	1	4	1	2	1		1	35.6
Oligodendroglioma	4	4.94	1	3		2	1		1	40
Hemangioblastoma	2	2.47	1	1			1	1		58
Neurocytoma	1	1.23	1	0		1				24
Totals	81	100	42	39	16	27	22	10	6	
Percentages %	3.56		51	48.15	19.75	33.33	27.16	12.35	7.41	

Table 13: Frequency distribution of various types of thyroid carcinomas along with age and gender relations.

Thyroid Carcinomas 73 Cases					Age Group In Years					Mean age
Variants	Total	%	M	F	0-18	19-39	40-55	56-65	>65	
Papillary carcinoma	46	63.01	12	34	1	28	14	3		36.2
Follicular variant of papillary carcinoma	10	13.70	1	9	1	5	2	2		39
Papillary micro carcinoma	6	8.22	1	5		2	2	1	1	49
Medullary carcinoma	5	6.85	1	4	1	3	1			30.4
Mixed follicular & papillary carcinoma	2	2.74		2		2				36
Follicular carcinoma	1	1.37	1					1		60
Insular carcinoma	1	1.37	1				1			45
Poorly diff carcinoma	1	1.37		1			1			40
Undifferentiated carcinoma	1	1.37		1				1		65
Totals	73	100	17	56	3	40	21	8	1	
Percentages %	3.21		23.2	76.7	4.1	54	28.7	10	1.3	

Table 14: Frequency distribution of all malignancies in the haemopoetic system.

Tumors of blood cells 56 cases					Age group in years					Mean Age
Cancers	Total	%	M	F	0-18	19-39	40-55	56-65	>65	
AML	25	42.86	11	13	5	11	6	3		36.8
CML	17	30.36	10	7		7	9	1		39
ALL	14	25.00	7	7	12		1	1		18
Totals	56	100	28	28	17	18	16	5	0	
Percentages %	2.46		50	50	30.36	32.14	28.57	8.93	0	

Cancers of head and neck structures constituted second highest number of malignancies in the present study with 468 cases (20.5%). Out of which 300 were males and 168 were females. The mean age at diagnosis was 52.2 years (Table 7). The most common cancer was moderately differentiated squamous cell carcinoma (78% of oral cancer cases).

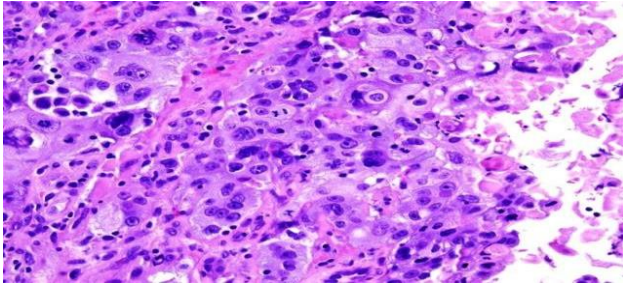


Figure 1: Photomicrograph of large cell non-keratinizing squamous cell carcinoma. H & E stain (400x).

Out of 2278 cancer case, 368 malignancies of gastrointestinal tract were diagnosed. accounting to 16.16%, in which males constituted 63.2% (233 cases), females 36.6% (135 cases) and the mean age of incidence is 51.7 years, 4th to 6th decade of life carries 77% (285 cases), 19 to 39 years 12% (46 cases), in older age group (> 65years) 9% (36 cases) and 1 case in paediatric age were recorded in this system (Table 8).

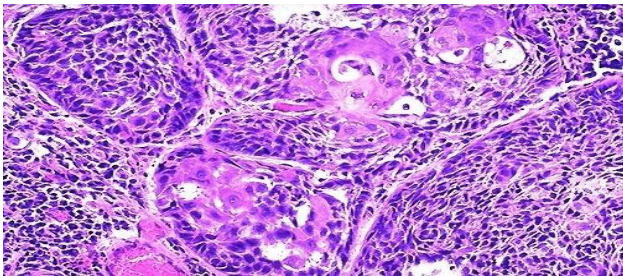


Figure 2: Photomicrograph of large cell keratinizing squamous cell carcinoma. H & E stain (100x).

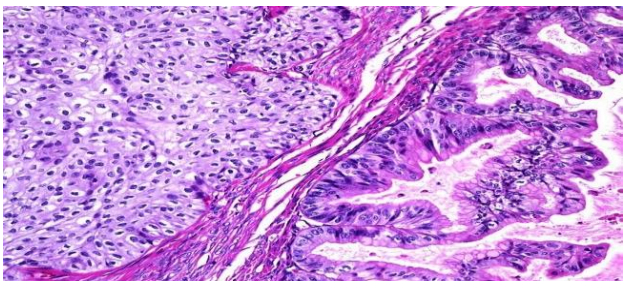


Figure 3: Photomicrograph of ovarian intermediate grade Brenner tumor with mucinous cyst adenocarcinoma. H & E stain (100x).

Stomach 147 cases(39.95%), oesophagus 83 cases (22.55%), Rectum 52 cases (14.13%), Colon 45

(12.23%), Anal canal 19 cases (5.16%), GE junction 13 cases (3.53%), Ileum 4 cases (1.09%), Duodenum 3 cases (0.82%), Jejunum 2 cases (0.54%) were diagnosed.

In the study 218 breast carcinomas were diagnosed, which accounted for 9.57 % of total cancer cases, the mean age at diagnosis was 48.08 years, among these 215 cases (99%) were diagnosed in females and 3 case (1%) in males, and the M:F ratio was 1:0.01 (Table 9).

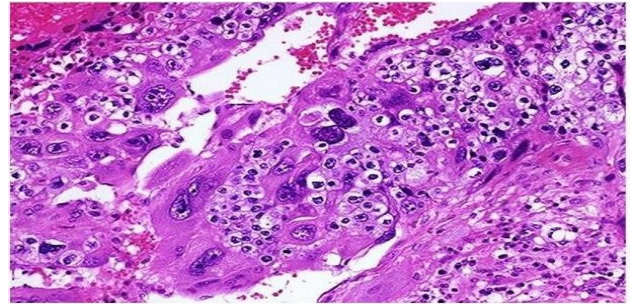


Figure 4: photomicrograph of female genital tract tumors - choriocarcinoma. H and E stain (100x).

Eight variants of breast carcinomas were diagnosed by HPE, Infiltrating Duct Cell Carcinoma NST 187(85.7%) cases (figure 5), Infiltrating Duct Cell Carcinoma with Special Type 11(5.05%) cases, Medullary Carcinoma 5(2.29%) cases, Invasive Secretory Carcinoma 3 cases, Mucinous Adenocarcinoma (figure 6) and Neuro Endocrine Carcinoma 2 cases each and 1 case Malignant Phylloid's Tumour (figure 7) and 1 case of Invasive papillary carcinoma.

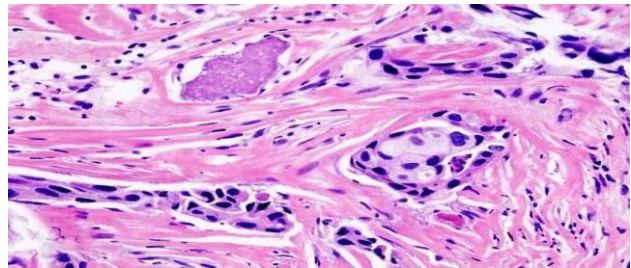


Figure 5: Photomicrograph of invasive ductal carcinoma. H & e stain (100x).

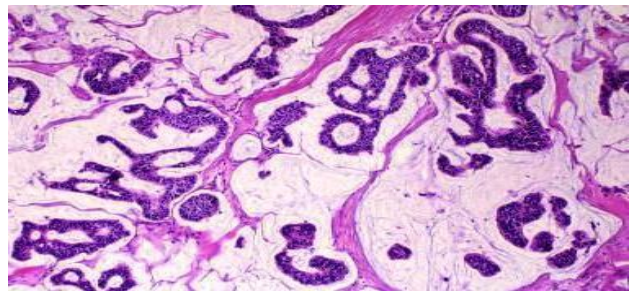


Figure 6: Photomicrograph of mucinous adenocarcinoma of the breast. H & E stain (100x).

In musculoskeletal, soft tissue and skin structures system 178 case 7.81% (for 2278 cases), were reported of which 51.6 % were male and 48.3% were female, with a compiled average age of incidence 48.5 yrs and M to F ratio is 1:1.12 (Table 10).

Out of 124 cancer cases a total of 6 different types of Skin and adnexal structural malignancies were reported in the study. 63 cases (50% out of 124 cases) were squamous cell carcinoma 44 cases were male and 19 cases were female, then followed by Basal cell carcinoma 34 cases (27.4%), 9 cases (26.4%) were male and 25 cases (73%) were females, malignant melanoma 12 cases (9.68% out of 124 cases) were reported among these 66% were females, 9 cases (7.26%) of poorly differentiated carcinoma were seen with 66.6% incidence in females, 4 cases of verrucous carcinoma and 2 cases of malignant adnexal tumor of eccrine origin were reported. Malignant fibrous histiocytoma was commonest cancer among soft tissue tumors with 25% of cases.

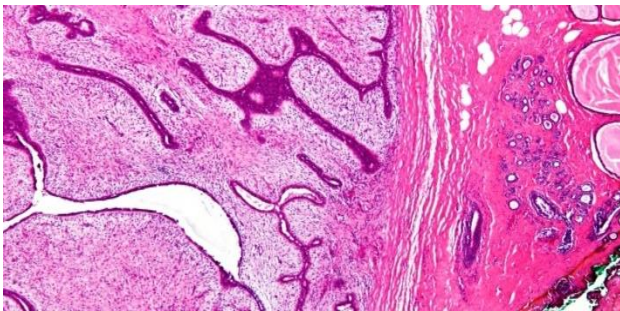


Figure 7: Photomicrograph of malignant phylloides tumor H & E stain (100x).

Secondaries or metastasis carried 4.83 % (110 out of 2278 case) of cancers in the current study, with 63(57.3%) male cases and 47(42.73%) female cases and with an average age at diagnosis of 49.7 years (Table 11). The common site where secondary were diagnosed were lymph node 38%, Omentum and peritoneum 17.27%, Lung & pleural cavity 11%, Brain 9.09%, Abdominal wall and chest wall 8%, Misc. 5%.

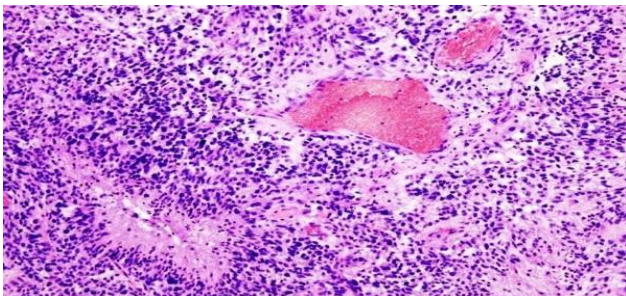
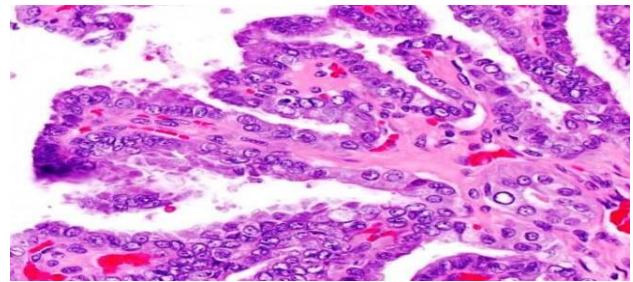


Figure 8: Photomicrograph of glioblastoma - grade IV astrocytoma. H and E stain (100x).

In the study we have come across 11 types of malignant lesions of central nervous system tumors (3.56% -

81cases). 74% (61 cases) were to be Gliomas (mean age 35 years) and the rest of the bulk were Medullo blastoma (mean age 17.4 years) 8.64% (7 cases), Anaplastic Ependymoma (mean age 22.2 years) 6.17% (5 cases), Anaplastic Meningioma (mean age 35.6 years) 6.17% (5 cases), Hemangioblastoma (mean age 58 years) 2.4% (2 cases), Neurocytoma (24 yrs) 1 case, further the Gliomas can be segregated into Astrocytoma grade 2 and 3 29 cases (35%), Glioblastoma multiformis 15 cases (18.5%) (Figure 8), mixed glioma 7 cases (8.6%), low grade glioma 6 cases (7.4%), Oligodendroglioma 4 cases (4.9%) (Table 12).



**Figure 9: Photomicrograph of papillary carcinoma thyroid. H and E stain (100x)
E stain (100x).**

In the study, mainly cancers of two endocrine structures were seen, the first one was thyroid and the second was adrenal gland with 73 and 1 case respectively (table 13). 9 types of thyroid cancers were diagnosed, papillary carcinoma (Figure 9) and medullary carcinoma alone account for 94% (69 cases) of the cancers that have been diagnosed in the thyroid gland.

In this study out of 2278 malignancies, 56 cases (2.46%) constituted hematopoietic neoplasms, with M:F ratio is 1:1. with a lowest mean age of diagnosis (32.7 years) relative to most of the cancers (Table 14).

Tumors of lymphoreticular system had 62/2278 cases (2.72%) with 39 cancers appeared in males and 24 cases in females (M:F = 1:1.63) and with an average age at diagnosis was 38.5 years.

In the category of cancers of Liver and pancreatic related structures 62 cases (2.72% out of 2278 cancer cases) were diagnosed, out of which 54.84% (34 cases) and 45.16% (28 cases) were male and female cases respectively with a mean age of incidence of cancer 53.3 year.

Malignant lesions of kidney and lower urinary tract constituted 2.33% (53 cases) of total cancer cases, among these 68% (36 cases) were male and 26% (14 cases) were female patients, with Male to female ratio of 1: 2.57.

The category of malignant lesion of lungs and bronchus constituted 34 case (1.49%), among which 28(82.35%)

were males and 6(17.85%) females, with a mean age of 53.6 years with a M:F ratios of 1:4.67 were diagnosed.

DISCUSSION

Cancer registration and epidemiologic principles lay the foundation and are the very intelligence for evidence based scientific cancer research, be that of determining risk factors, assessing control measures or evaluating patterns of clinical care.⁸

The present study was carried in the department of pathology Andhra medical college/ King George hospital from January 2013 to August 2015, we have received tissue specimens from various surgical and medical specialties and super specialties. The specimens were subjected to histopathological, cytological and haematological examinations.

In the results, we observed 2278 cancers in the received cases / specimens. Out these 2278 cases, 1003 cases (44.03%) were male and 1275 (55.97%), were female patients, it was clearly reprehensive that there was female preponderance in the study, there was 11.94% raise of cancer incidence in female in comparison to males, the fact that cancer occurrence in the female genital tract was the highest in comparison to any of the cancers effect the systems or organs or structures, in the body in either of the genders, 1 : 0.78 was the male to female ratio we found.

The mean age at diagnosis of cancer for the present study was 47.8 years for males and 50.7 years for females which were similar comparing with the study of Mohammad akhtar hussain et al which were 47.20 for males and 52.8 for females.⁹

In the present study, the most common cancer noted was cervical cancers 314 cases followed by oral cavity carcinomas 278 cases, Breast cancers 218 cases, stomach 147 cases, skin 124 cases, secondary's 110 cases.

Sambasivaiah K et al, studied Cancer patterns in Rayalaseema region of Andhra Pradesh revealed that, most common cancer in their study to be lung cancer (9.9%) followed by stomach (9.7%), cervix (9.4%), breast (9.3%), head and neck(8.1%), primary unknown origin (4.4%), ovary (4.3%), liver cancer (4.2%), non-hodgkin's lymphoma (4.2%), esophagus (3.5%) and chronic myeloid leukemia (3.4%).¹⁰

According to one population based cancer registry, pune 2009-2010, found that breast is leading site of cancer followed by cervix and ovary for females and mouth is the leading site of cancer followed by prostate and lung amongst males in 2009.¹¹

In the present study out of 2278 cancer cases, 22.65 % of all cancers were reproductive system followed by head and neck system 20.54%, digestive organ cancers

16.15%. Among females, 33.8% cancers were related to reproductive system, 13.18% to head and neck system and 10.59 % to digestive organs.

Binu VS, Chandrashekar TS, Subha SH et al have studied 957 cancer patients at Manipal Hospital, Pokhara, Nepal.¹² They found among males, 33.1% of all cancers were in respiratory system followed by digestive organ cancers (23.2%). Among females, 28.4% cancers were related to reproductive system and 14.1% to digestive organs.

In the present study, out of 278 oral cancer cases 177 were male and 101 were female, the mean age group being 53 years. The ratio of male and female was 1.75:1.

Khandekar SP et al, have found 80 oral cancer cases at Government dental college and hospital, Nagpur. Out of them 49 cases were male and 31 cases were female. The ratio of male and female was 1.5:1.¹³

In the present study, out of 147 cases of stomach cancers 97 were male and 50 were female. The male and female female ratio was 1.94:1.

According to Phukan R K et al, studies 329 stomach cancer patients at Aizawl civil hospital, Aizawl, Mizoram from august 2001 to august 2004. The study included 253 men and 76 women.¹⁴ The male and female ratio was 3.3:1.

Five variants of cancers were diagnosed in stomach, first moderately differentiated adenocarcinoma 61 cases, then well differentiated adenocarcinoma 56 cases, poorly differentiated adenocarcinoma 17, well and moderately differentiated squamous cell carcinoma 14 case.

Similar results were cited in the study by krishnapparashmi et al, histological patterns of stomach cancers reported were the majority of the cases of gastric carcinoma were poorly differentiated adenocarcinoma (56%) followed by moderately differentiated adenocarcinoma (44%).¹⁵

In gastro-oesophageal junction 13 malignancies(3.53%) were diagnosed with 10(76.92%) male cases, 3(23.08%) female cases, with a mean age of 52.8 years. 92 % of cases were diagnosed in 40 to.65 years aged patients. 3 histopathological types of GE junction cancer were reported, they were squamous cell carcinoma 9 cases (69.23%), moderately differentiated adenocarcinoma 2 cases (32.1%).

According to Bilal A Sheikh et al found that out of 15 biopsies from gastro oesophageal junction 11 (73.3%) were adenocarcinoma GE junction and the rest were Barrett's oesophagus and reflux esophagitis.¹⁶

In the present study, cervical cancer was the most common cancer in females constituting 24.6 % of the

female cancer cases. It is followed by breast cancer 16.8% and oral cancer 7.9%.

Bhurgri Y et al, have found breast cancer, the most common cancer in females in their study. It constitutes 22.4% of the female cancer population. It is followed by oral cancer, gall bladder cancer and esophageal cancer. Sen U et al found breast cancer (22.7%) as the most common cancer in females in their study. It is followed by uterine cervix (17.5%) gallbladder (6.4%) and ovary (5.8%).^{17,18}

In the present study, out of 34 cases of lung cancers 28 were male and 6 were female. Male and female ratio was 4.6:1.

Radzikowska E et al, studied 20,561 lung cancer patients in Poland from 1995 to 1998 period. Out of 20,561 patients 17,686 were men and 2,875 women. Male and Female ratio was 6.1:1.¹⁹

In the present study, carcinomas occurring in female patients (1273 cases -55.9%), tumors of female genital tract (431 cases - 33.8%) were the most common, i.e. among which cervical carcinomas (314 cases - 72.85%) was the commonest. Large cell non-keratinizing (223 cases - 51.4%) was the commonest variant followed by large cell keratinizing squamous cell carcinoma (66 cases - 15.31 %).

In the present study, carcinomas occurring in male patients (1003 cases - 44.03%), tumors of head and neck (468 cases - 20.54%) were the most common, and among which oral cavity cancers (278 cases - 59.4%) were the most common.

In the present study, carcinomas occurring in pediatric cancers (69 cases - 3.03%), tumors of the hematopoietic system (17 cases - 30.3%) were the most common followed by tumors of central nervous system (15 cases - 21.7%).

CONCLUSION

The current study mainly summarizes the different patterns of cancer incidence in the tertiary care centre region. In males, the most common cancers are oral cavity cancers. In females, cervical cancers and in children, tumors of the haematological system.

The accurate incidence of individual cancers cannot be accessed as our study is an hospital based study, which cannot cover the entire population of the particular region, primarily due to the inaccessibility of the patient to the health care services, lack of compliance of patients, lack of follow-up of OP based cases and inadequate referral channels by the primary care centres.

To conclude, cancer incidence is increasing gradually among the population and there is raise of cancer

incidence in females compared to their counterparts. There is need for strengthening and augmenting the existing diagnostic and treatment facilities, complete follow-up, strengthen the referral channels and conducting campaigns under National Programs to increase awareness among the population.

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