



A STUDY ON CT EVALUATION OF BRONCHOGENIC CARCINOMA

Radiology

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ABSTRACT

Bronchogenic carcinoma most common cause of cancer death worldwide. It's difficult to diagnose clinically so radiological examination by CECT plays important role in detection, staging, and post treatment follow-up. Treatment options, prognosis were directly related to stage at presentation to reach a diagnosis. Our study emphasizes the radiological findings for proper staging of bronchogenic carcinoma based upon the revised international system classification scheme-TNM. An emphasizes will be placed on computed tomography, standard imaging.

KEYWORDS

MATERIAL AND METHODS

This study was performed in the Department of Radio Diagnosis, New Civil Hospital, Surat, on patients who were referred from pulmonary medicine and lions cancer hospital on 100 patients with clinical symptoms suspicious of bronchial carcinoma were sent from were evaluated on otorhinolaryngology department over a period of fourteen months from February 2016 to July 2017.

INCLUSION CRITERIA

1. No Age restrictions have been implied
2. No Sex restrictions have been implied
3. All patients suspected of having bronchial mass lesion referred from pulmonary medicine and lion's cancer department for CT scan
4. Patient with sufficient clinical data for correlation

EXCLUSION CRITERIA

1. Patient not willing to participate in the study
2. Patient having contraindication for contrast enhanced CT (pregnant women, claustrophobia)
3. Patient with allergic response to contrast

OBSERVATION DISCUSSION ANALYSIS:-1. Age incidence

sr.no	age group	no of cases	percentage of cases
1	30-39 yrs	01	01%
2	40-49yrs	12	12%
3	50-59yrs	29	29%
4	60-69yrs	45	45%
5	70-79yrs	08	08%
6	>89yrs	05	05%

Maximum patient lies in 60 to 69 years age group

2. Histological cell type of bronchogenic carcinoma in relation to age

sr.no	types of tumor	Range	mean age
1	squamous cell carcinoma	37-83	60
2	adeno carcinoma	41-75	58
3	small cell carcinoma	50-80	65
4	large cell carcinoma	-	-
5	broncho alveolar carcinoma	65-70	67

3. sex incidence

sr.no	Sex	no.	percentage
1	male	84	84%
2	Female	16	16%

Bronchogenic carcinoma in male 84%, 16% were females.

4. Smoking index

sr.no	smoking index	no.	Percentage
1	0	19	19%

2	1-150	-	-
3	150-300	-	-
4	>300	81	81%

81% patient chronic smoker high association with bronchial carcinoma.

5. Histological type of the lung cancer affected by smoking habits.

sr no	type	cigarette smoker	percentage% of cigarette smoker
1	squamous cell carcinoma	57	70.3
2	adeno carcinoma	18	22.22
3	small cell carcinoma	05	6.17
4	large cell carcinoma	-	-
5	Broncho alveolar carcinoma	1	1.23

Most common cell type in smokers was squamous cell carcinoma (70.3%) adenocarcinoma (22.2%), small cell carcinoma.

6. Associated clinical signs

sr no	clinical findings	no.	Percentage
1	Clubbing	67	67%
2	Pallor	58	58%
3	rib erosion	09	09%

Sign, clubbing most common 67% followed by pallor 58%

7. Clinical symptoms v/s percentage of cases

sr.no	symptoms on presentation	no	Percentage
1	cough	92	92%
2	expectoration	86	86%
3	dyspnea on exertion	27	27%
4	chest pain	62	62%
5	anorexia	79	79%
6	weight loss	75	75%
7	haemoptysis	13	13%
8	low grade fever	28	28%
9	hoarseness of voice	18	18%
10	dysphagia	12	12%
11	bone pain	07	07%

Commonest symptom, cough 92% followed by expectoration, anorexia, weight loss, pain.

8. Abnormal radiographic pattern of carcinoma of lung as related to histological cell type

sr.no	radiological findings	squamous %	adeno %	small %	large %
1	hilar peri hilar mass hilar prominence	22.05	16	33.33	-

2	pulmonary lesion >4cm.	85.29	76	83.33	-
3	pulmonary lesion <4cm	11.76	24	16.66	-
4	apical mass	8.82	04	-	-
5	multiple mass	8.82	12	16.66	-
6	pneumonitis, collapse or consolidation	27.94	24	16.66	-
7	intra thoracic ,extra pulmonary , mediastinal widening	33.82	20	16.66	-
8	chest wall lesion	11.76	4	-	-
9	pleural effusion	25	16	16.66	-

Scs presents hilar mass in 22%, lesion>4cm in 85.3%lesion<4cmsize in11.8%of cases.

9. for histopathological diagnosis individual method of biopsy performed

sr.no	modality	no.	percentage %
1	usg guided	53	53%
2	bronchoscopy	13	13%
3	ct guided	34	34%

10. Location of the lung cancer

sr no	Type	central no.	central percentage	peripheral no	peripheral percentage
1	squamous cell carcinoma	14	77.77	54	65.85
2	adeno carcinoma	03	16.66	22	26.82
3	small cell carcinoma	01	5.56	05	6.10
4	large cell carcinoma	-	-	-	-
5	Broncho alveolar carcinoma	-	-	01	1.26

Most central masses SCC 77.8%, however 66%peripheral carcinoma SCC.

11. CT findings in primary bronchogenic carcinoma

sr no.	Findings	no.	%
1	pattern of enhancement	100	100%
2	Calcification	08	08%
3	Necrosis	14	14%
4	Cavitation	09	09%
5	hilar enlargement	27	27%
6	distal collapse	17	17%
7	pleural effusion	22	22%
8	mediastinal lymphadenopathy	56	56%
9	mediastinal invasion	12	12%
10	rib ,chest wall, pleural invasion	18	18%
11	vertebral invasion	05	05%

Heterogeneous enhancement, mediastinal lymphadenopathy, hilar enlargement, pleural effusion, most associated symptoms.

12. Location of mass according to the side and lobe

sr.no	Lobe	right	Left
1	upper lobe	34	23
2	middle lobe	02	02
3	lower lobe	07	14
4	Hilum	10	08

Right upper lobe most common followed by left upper lobe.

13. Site of origin of lung cancer

sr.no	Type	upper lobe	middle lobe	lower lobe	hila
1	Squamous cell carcinoma	37(64.9%)	03 (75%)	15 (71.4%)	13(72.2%)
2	Adeno carcinoma	18(31.5%)	-	05 (23.8%)	02(11.1%)
3	Small cell carcinoma	01(1.7%)	01 (25%)	01(4.7%)	03(16.6%)

4	Large cell carcinoma	-	-	-	-
5	Broncho alveolar carcinoma	01(1.7%)	-	-	-

All types of Peripheral cancers predominantly involves upper lobes scs was most prevalent cell type .

14. Histopathological classification of primary lung cancer and frequency of occurrence

sr.no	Type	no.	%
1	Squamous cell carcinoma	68	68
2	Adeno carcinoma	25	25
3	Small cell carcinoma	06	06
4	Large cell carcinoma	-	-
5	Broncho alveolar carcinoma	01	01

Squamous cell carcinoma most prevalent cell types.

15. Distribution of cell type v/s sex

sr.no	cell type	Male	Female
1	squamous cell carcinoma	59 (70.2%)	09(56.2%)
2	adeno carcinoma	20 (23.8%)	06(37.5%)
3	small cell carcinoma	05(05.9%)	01(6.2%)
4	large cell carcinoma	-	-
5	broncho alveolar carcinoma	01(1.1%)	-

Bronchogenic carcinoma most common in males then females and scs most common cell type in both sex.

16. Distribution of metastasis in bronchogenic carcinoma

sr.no	Site	no.of patients
1	Lungs	22
2	pleura	01
3	Liver	12
4	adrenal	07
5	Brain	01
6	Bone	08

Lungs most common site of metastasis in bronchogenic carcinoma, 22% followed by liver, bones, adrenal.

17. Contiguous bone involvement

sr.no	Type	no.	percentage
1	Ribs	09	09%
2	Vertebra	05	05%
3	intra spinal extension	-	-

Out of 100 patient only 9%pts shows rib invasion and 5% shows vertebral invasion.

18. Extent of the disease in small cell carcinoma

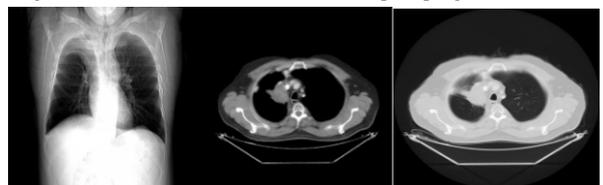
sr.no	small cell stage	no.	%
1	early stage	02	33.3
2	advance stage	04	66.6

Most small cell carcinoma present with metastasis in advance stage.

19. Extent of disease in bronchogenic carcinoma

sr.no.	stage	no.	%
1	I	22	22
2	li	5	5
3	iiia	26	26
4	iiib	3	3
5	iv	44	44

In most of patient bronchogenic carcinoma 73% present in advance stage. With metastasis non resect able shows poor prognosis.



Chest x-ray showing right side hilar mass, in CECT and lung window

shows right side heterogeneously enhancing mass infiltrating invading right bronchus.

DISCUSSION

In our present 100 cases study analysis Maximum patient of bronchogenic carcinoma were lies in 60to 69yrs bronchogenic carcinoma more common in males as compared to females. Squamous cell carcinoma adenocarcinoma were present at the same age group. Small cell carcinoma present in later age group 50to 80yrs. Broncho alveolar carcinoma presents at a later age group 65to 70yrs of age.

Incidences were more common in males compared to females. More than 80%, patient of bronchogenic carcinoma of lung were chronic smokers. Smoking, proves to be major iteological factor of bronchogenic carcinoma. Most common cell type in smoker is squamous cell carcinoma.

Commonest presenting symptom are cough, expectoration, chest pain, anorexia, and weight loss, and clubbing most common symptom followed by pallor.

Heterogeneous enhancement present in all cases most specific finding followed by necrosis, mediastinal lymphadenopathy, mediastinal invasion, hilar enlargement, distal collapse with pleural effusion characteristics, imaging findings.

For biopsy, ultrasonography used to guide peripheral and assessable mass, CT used in mass which not assess by usg. For central hilar mass bronchoscope guided biopsy or Broncho alveolar lavage was done.

Squamous cell carcinoma mostly in peripheral location and Adeno carcinoma also presents as a central mass without peripheral involvement, resembling squamous cell carcinoma.

Right upper lobe most commonly involved and left upper lobe 2nd most common site. Peripherally cancers predominantly involve the upper lobes SCC most prevalent cell types.

SCC was most prevalent cell types followed by adeno carcinoma and small cell carcinoma.

In bronchogenic carcinoma lungs were most common site of metastasis followed by liver, bone and adrenal. And most of bronchogenic carcinoma present in advance stage with metastasis when the disease was non respectable and prognosis was poor.

CONCLUSION

Bronchogenic carcinoma most common cause of cancer death worldwide. It's difficult to diagnose clinically so radiological examination by CECT plays important role in detection, staging, and post treatment follow-up. Treatment options, prognosis were directly related to stage at presentation to reach a diagnosis. Our study emphasizes the radiological findings for proper staging of bronchogenic carcinoma based upon the revised international system classification scheme-TNM. An emphasizes will be placed on computed tomography, standard imaging.

Bronchogenic carcinoma present in 6to 7 decade males most common affected mainly associated with chronic smoking >80% present with most common symptom cough, expectoration, weight loss, most common sign clubbing followed by pallor, bronchogenic carcinoma either central or peripheral location Scc most common cell type followed by adeno carcinoma and small cell carcinoma right upper lobe most commonly affected followed by left upper lobe.

SCC most common cell type to cavitate .small cell carcinoma presents as central mass lesion obstructs bronchi causes distal collapse and consolidation. CT picks up the cut of bronchus, mediastinal lymphadenopathy, occlusion of svc, invasion ribs pleura chest wall, vertebra intra spinal extension of tumor, pretreatment assessment of metastasis and lymphadenopathy.

CT remains first line investigation for diagnosing and evaluation of bronchogenic carcinoma with a reasonable degree of diagnostic accuracy.

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