Original Research Article

Symptom clusters among the patients with carcinoma lung attending palliative care department: a retrospective analysis

Chaitanya Patil1*, Shrikant Atreya2, Namrata Mestri3

1Department of Pain and Palliative Care, Kolhapur Cancer Center, Kolhapur, Maharashtra, India
2Department of Palliative Care and Psycho oncology, Tata Medical Center, Kolkata, West Bengal, India
3Department of Pathology, D. Y. Patil Medical College, Kolhapur, Maharashtra, India

Received: 06 October 2021
Revised: 01 November 2021
Accepted: 23 November 2021

*Correspondence:
Dr. Chaitanya Patil,
E-mail: doctechaitanya@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: There is growing interest in the symptom cluster of these symptoms rather than single symptoms and has been commonly termed as respiratory distress cluster. So, we conducted this audit review with a goal to explore the prevalence of RDS among lung cancer patients and to find association between RDS and the histological type of lung cancer.

Methods: A retrospective review of records of lung cancer patients referred to palliative care department at Tata medical center, Kolkata, India was done. The records of 6 months (July 2018 to December 2018) were reviewed and relevant details were noted down. Hospital management system of our institution was screened for all the lung cancer patients during the above said period. Demographic details and various symptoms like cough, breathlessness, fatigue and other symptoms were also noted. Histological diagnosis was also noted as per the records.

Results: We found that 20.24% had cough with fatigue, 20.24% had cough with breathlessness, 25% had fatigue with breathlessness and 13.10% had cough, fatigue and breathlessness in the present study. The proportion of fatigue was significantly higher among the small cell type (75%) when compared to non small cell type (p=0.0425) The proportion of SxCl cough with fatigue was significantly higher among the small cell carcinoma (60%) when compared to other subtypes. (p=0.0467)

Conclusions: Among symptom clusters, fatigue with breathlessness was the most common. The proportion of fatigue and fatigue with cough was significantly higher among small cell carcinomas when compared to non small cell carcinoma subtype.

Keywords: Lung Cancer, Symptom clusters, NSCLC, SCLC

INTRODUCTION

Advanced cancer patients experience a multitude of symptoms affecting their quality of life.1,2 One of cancer that usually presents in the advanced stages is lung cancer (LC).3,4 It is the most common cancer and leading cause of mortality due to cancer worldwide.5 Symptomatology of LC patients varies from being asymptomatic to having symptoms of cough, breathlessness, anorexia, fatigue, weight loss, chest pain etc at presentation.6 However, cough, breathlessness and fatigue have been the most common symptoms persistent in lung cancer throughout the cancer trajectory of these patients.6,7 There is growing interest in the symptom cluster (SxCl) of these symptoms rather than single symptoms and has been commonly termed as respiratory distress cluster (RDS).8 Studies suggest that identifying this SxCl may provide benefits in terms of improved prognostication, screening and
treatment optimisation. So, we conducted this audit review with a goal to explore the prevalence of RDS among lung cancer patients and to find association between RDS and the histological type of lung cancer.

METHODS

A retrospective review of records of lung cancer patients referred to palliative care department at Tata medical center, Kolkata, India was done. The records of 6 months (July 2018 to December 2018) were reviewed and relevant details were noted down. Hospital management system of our institution was screened for all the lung cancer patients during the above said period. Our own pilot study on first 20 cases while auditing revealed that the prevalence of RDS clusters was 10%. Using this with 95% confidence interval and 7% absolute error, we found the minimum sample size to be 71. Of total 94 cases screened, we found 84 cases included in this audit. The major inclusion criteria were for histological confirmed cases of carcinoma of lung. Patients who did not have histological diagnosis and missing data of the intended variables were excluded from the analysis. Since this was a retrospective audit, we got a waiver from institutional ethics committee before the start of the study. We used convenience sampling in the present study. Demographic details like age, gender, history of surgery, chemotherapy and associated history of diabetes, hypertension, ischemic heart disease and psychiatric diseases were noted as per the records. Various symptoms like cough, breathlessness, fatigue and other symptoms were also noted. Histological diagnosis was also noted as per the records. Separate groups of cough only, breathlessness only, fatigue only, cough with fatigue, cough with breathlessness, breathlessness with fatigue and cough, breathlessness and fatigue group were done and frequencies were noted.

Statistical analysis

The data was collected, compiled, and analyzed using EPI info (version 7.2). The qualitative variables were expressed in terms of percentages. The quantitative variables were both categorized and expressed in terms of percentages or in terms of mean and standard deviations. The difference between the two proportions was analyzed using Chi-square or Fisher exact test. All analysis was 2 tailed and the significance level was set at 0.05.

RESULTS

Total 84 cases were included in the present study. The mean age of the study subjects was 61.52±9.21 years with male preponderance.

Majority of the cases belonged to adenocarcinoma group (66.67%) followed by small cell (14.29%) and squamous cell carcinoma (14.29%). We found that 27.38% had cough, 38.10% had fatigue, 41.76% had breathlessness, 20.24% had cough with fatigue, 20.24% had cough with breathlessness, 25% had fatigue with breathlessness and 13.10% had cough, fatigue and breathlessness in the present study.

Table 1: Demographic characteristics.

| Demographic characteristics | N | % |
|-----------------------------|---|---|
| Age group (years)           |   |   |
| <40                         | 3 | 3.57 |
| 40 to 50                    | 5 | 5.95 |
| 50 to 60                    | 28| 33.33|
| 61 to 70                    | 37| 44.05|
| >70                        | 11| 13.10|
| Gender                      |   |   |
| Male                       | 68| 80.95|
| Female                     | 16| 19.05|

Figure 2: Distribution of the study subjects based on histological type.

The proportion of fatigue was significantly higher among the small cell type (75%) when compared to non small cell type (p=0.0425) The proportion of SxCl cough with fatigue was significantly higher among the small cell carcinoma (60%) when compared to other subtypes. (p=0.0467) Other symptoms like cough and breathlessness did not differ based on the histology. SxCl of cough with breathlessness, fatigue with breathlessness and cough, fatigue and breathlessness did not differ among the histological types.

Table 2: Prevalence of various clusters of symptoms in the present study.

| Symptoms                        | N   | %   |
|---------------------------------|-----|-----|
| Cough                           | 23  | 27.38|
| Fatigue                         | 32  | 38.10|
| Breathlessness                   | 35  | 41.76|
| Cough with Fatigue              | 17  | 20.24|
| Cough with breathlessness        | 17  | 20.24|
| Fatigue with breathlessness      | 21  | 25.00|
| Cough, Fatigue and breathlessness| 11  | 13.10|
**DISCUSSION**

Lung cancer remains the most leading cause of cancer mortality in men and women across the world. More than 90% of the cases are due to using of tobacco products and smoking.\(^3,4\) There was a study which qualitatively explored the existence of symptom cluster of cough, fatigue and breathlessness in lung cancer patients.\(^8\) This was the basis of planning this retrospective audit. So, major symptoms of the patients with lung cancer attending our institute were extracted from our database and noted down.

The most common symptom that was reported by our study was breathlessness (41.76%) followed by fatigue (38.10%). A recent study with large sample in China reported that the most common symptoms were chronic cough (65%) followed by sputum with blood (33%) as the second most common symptom in their study. Breathlessness and fatigue were the 4\(^{th}\) most common and 8\(^{th}\) most common symptoms reported in their study.\(^9\) A review done by Bradley et al inferred that at a primary care setup, to suspect a patient with lung cancer the three main symptoms should be shortness of breath, fatigue and cough which is chronic.\(^7\) Similar inferences were reported by Walter et al\(^7\) and Hammerschmidt et al in their study.\(^10\) The most common symptoms usually differ according to the geographical locations, the environmental factors, the personal habits of the population and tend to be heterogeneous.

Of particular interest in our study was the prevalence of SxCl reported. About 20.24% had cough with fatigue, 20.24% had cough with breathlessness, 25% had fatigue with breathlessness and 13.10% had cough, fatigue and breathlessness. Wang SY et al\(^11\) reported two SxCl in their study, one pertaining to general symptoms and other related to gastro intestinal (GI) symptoms. Nausea and vomiting were included in GI clusters and rest symptoms into general symptoms. Further analysis in their study revealed that the general symptom cluster was significantly predicting the symptom interference with variance of 59.60%. A study conducted by Chan et al also reported a possibility of symptom cluster with shortness of breath, fatigue and anxiety in their study but the study was under powered with only 27 cases selected by convenience sampling.\(^12\) A cross sectional study conducted by Henoch et al with sample of 400 lung cancer patients reported 3 independent symptom clusters. First was cluster called pain cluster which had bowel, pain, nausea, appetite loss and fatigue in it.\(^13\) Second, was called mood cluster which included mood, outlook, concentration and insomnia. Third, was called respiratory which had dyspnoea and cough in it. Lin S and colleagues reported the most common pattern that interfered with their patients was pain, fatigue, disturbed sleep and distress. On the bottom line, SxCL independently affect the patient’s quality of life and have to manage accordingly.

Another important inference that was drawn through the present study was the interaction of these important symptom clusters with the histology of lung cancer. From the histopathological perspective lung cancer is one of the complex neoplasms. About 85% of the lung cancers are non small cell cancers and rest 15% are small cell cancers.\(^14,15\) We found that fatigue only and fatigue with cough were significantly higher proportion among small cell cancer when compared to non small cell cancers. Depression or low mood has been associated with fatigue and shortness of breath as described in various studies.\(^16–18\) In a study conducted by Hopwood et al,\(^19\) reported that small cell carcinoma of lung patients had 3 fold greater prevalence of depression when compared to non small cell carcinoma. This could be a cue in our clinical approach to differentiate small cell and non small cell cancers of lung during first presentation. But, more precise studies with good power are required to test the hypothesis. Hence, pathophysiology of fatigue among small cell cancer of lung should be revisited.

The present study was a record based retrospective audit which revealed the above inferences. It was a single center study. There always exists a bias in selecting the data in such studies. Future studies should be targeted to involve prospective data involving different centers into consideration. Longitudinal data in overall cancer trajectory of lung cancer patients will provide us the real time changes and precise inferences. Unfortunately, we could not include factor analysis as a statistical procedure in the present study. Nonetheless, we did cluster formation based on the clinical symptoms directly. Involving the correlation of histological type with the

---

**Table 4: Prevalence of various clusters of symptoms in different types of lung carcinoma.**

| Symptoms                              | Adeno     | Others    | Small cell | Squamous  | P value |
|---------------------------------------|-----------|-----------|------------|-----------|---------|
|                                       | N  %      | N  %      | N  %       | N  %      |         |
| Cough                                 | 13 23.21  | 2 50.00   | 6 50.00    | 2 16.67   | 0.1512  |
| Fatigue                               | 18 32.14  | 1 25.00   | 9 75.00    | 4 33.33   | 0.0425  |
| Breathlessness                        | 23 41.07  | 2 50.00   | 6 60.00    | 4 33.33   | 0.8475  |
| Cough with fatigue                    | 8 14.29   | 1 25.00   | 6 50.00    | 2 16.67   | 0.0467  |
| Cough with breathlessness             | 11 19.64  | 2 50.00   | 3 25.00    | 1 8.33    | 0.3300  |
| Fatigue with breathlessness           | 14 25.00  | 1 25.00   | 4 33.33    | 2 16.67   | 0.8281  |
| Cough, fatigue and breathlessness     | 6 10.71   | 1 25.00   | 3 25.00    | 1 8.33    | 0.4734  |

---

\(P\) values were calculated using Chi square test with Yates correction.
symptom clusters can form a future set of hypothesis that can be tested.

**CONCLUSION**

Sixth decade with male preponderance was the most common demographic presentation of lung cancers in our study. Adenocarcinoma was the most common histological subtype. Among single symptoms, breathlessness and fatigue were the most common symptoms. Among symptom clusters, fatigue with breathlessness was the most common. The proportion of fatigue and fatigue with cough was significantly higher among small cell carcinomas when compared to non small cell carcinoma subtype.

**Funding:** No funding sources  
**Conflict of interest:** None declared  
**Ethical approval:** The study was approved by the Institutional Ethics Committee

**REFERENCES**

1. Curtis EB, Krech R, Walsh TD. Common symptoms in patients with advanced cancer. J Palliat Care. 1991;7(2):25-9.  
2. Donnelly S, Walsh D. The symptoms of advanced cancer. Semin Oncol. 1995;22(3):67-72.  
3. Torre LA, Siegel RL, Jemal A. Lung Cancer Statistics. Adv Exp Med Biol. 2016;893:1-19.  
4. de Groot PM, Wu CC, Carter BW, Munden RF. The epidemiology of lung cancer. Transl lung cancer Res. 2018;7(3):220-33.  
5. Dela Cruz CS, Tanoue LT, Matthay RA. Lung cancer: epidemiology, etiology, and prevention. Clin Chest Med. 2011;32(4):605-44.  
6. Xing P-Y, Zhu Y-X, Wang L, Hui Z-G, Liu S-M, Ren J-S, et al. What are the clinical symptoms and physical signs for non-small lung cancer before diagnosis is made? A nation-wide multicenter 10-year retrospective study in China. Cancer Med. 2019;8(8):4055-69.  
7. Bradley SH, Kennedy MPT, Neal RD. Recognising Lung Cancer in Primary Care. Adv Ther. 2019;36(1):19-30.  
8. Molassiotis A, Lowe M, Blackhall F, Lorigan P. A qualitative exploration of a respiratory distress symptom cluster in lung cancer: cough, breathlessness and fatigue. Lung Cancer. 2011;71(1):94-102.  
9. Walter FM, Rubin G, Bankhead C, Morris HC, Hall N, Mills K, et al. Symptoms and other factors associated with time to diagnosis and stage of lung cancer: a prospective cohort study. Br J Cancer. 2015;112 Suppl 1(1):S6-13.  
10. Hammerschmidt S, Wirtz H. Lung cancer: current diagnosis and treatment. Dtsch Arztebl Int. 2009;106(49):809-20.  
11. Wang S-Y, Tsai C-M, Chen B-C, Lin C-H, Lin C-C. Symptom Clusters and Relationships to Symptom Interference with Daily Life in Taiwanese Lung Cancer Patients. J Pain Symptom Manage. 2008;35(3):258-66.  
12. Chan CWH, Richardson A, Richardson J. A study to assess the existence of the symptom cluster of breathlessness, fatigue and anxiety in patients with advanced lung cancer. Eur J Oncol Nurs. 2005;9(4):325-33.

Cite this article as: Patil C, Atreya S, Mestri N. Symptom clusters among the patients with carcinoma lung attending palliative care department: a retrospective analysis. Int J Res Med Sci 2021;9:3617-20.

International Journal of Research in Medical Sciences | December 2021 | Vol 9 | Issue 12  | Page 3620