Investigation on the Current Status of Rumination in Lung Cancer Patients Undergoing Radiotherapy and Chemotherapy and Analysis of Influencing Factors

Zhifen Xie

Department of Oncology, Ganzhou People's Hospital, Ganzhou 341000, Jiangxi, China

Abstract: Objective: To understand the current status of rumination in lung cancer patients undergoing radiotherapy and chemotherapy, and analyze its influencing factors. Methods: A total of 240 patients with lung cancer undergoing radiotherapy and chemotherapy were selected from the oncology departments of three tertiary hospitals in Ganzhou City, Jiangxi Province from February 2022 to February 2023. The survey was conducted using a general information questionnaire, a Chinese version of the event-related rumination questionnaire, a psychological flexibility questionnaire, and an anxiety and depression scale. Results: The study shows that women have higher invasive rumination than men, and those aged 65+ have lower purposeful rumination than those under 65. Invasive rumination correlates with anxiety, depression, pain, and economic stress. Conclusion: Factors like anxiety scores, psychological flexibility, social support, and TNM staging significantly influence rumination.

***Keywords*:** lung cancer, chemotherapy and radiotherapy, ruminative contemplation, influence factor

1. Introduction

Lung cancer is a common malignant tumor, with surgery and chemotherapy as main treatments[1]. It has one of China's highest cancer incidence rates, with low 5-year survival rates. Its pathogenesis remains unclear[2], linked to genetics, environment, lifestyle, and individualized factors like gender, age, and geography[3]. Treatment (especially radiotherapy/chemotherapy) imposes significant physical/mental burdens. Rumination on disease-related events has become an academic focus, correlated with psychological resilience, cancer-related fatigue, and quality of life—with negative/positive effects differing[4]. However, systematic studies on rumination in lung cancer patients undergoing radiotherapy/chemotherapy are scarce, particularly regarding individualized factor analysis. This study investigated 240 such patients from three Ganzhou tertiary hospital oncology departments (Feb 2022–Feb 2023) to analyze their rumination levels.

2. Data and methods

2.1 General information

Among the 240 patients, 109 were female and 111 were male, aged 55 to 79 years, with an average age of (63.54±3.42) years.

Inclusion criteria: Patients diagnosed with lung cancer based on imaging data; Sign the informed consent form; Obtain approval from the ethics committee;

Exclusion criteria: Presence of cognitive impairment or mental disorder; It is complicated with serious diseases of the cardiovascular and cerebrovascular system, liver and kidneys

2.2 Methods

The questionnaire survey method was adopted to conduct a questionnaire survey among the patients. The general information part covered age, gender, pathological type, TNM stage, treatment plan, etc.

2.3 Observation indicators

Rumination was assessed using the Chinese Event-related Rumination Questionnaire (C-ERRI) translated by Dong Chaoqun et al[5]. The questionnaire includes two subscales: invasive rumination (passive, symptom-focused negative thinking after stress/trauma) and purposeful rumination (active self-analysis to explore event meaning/solutions). It contains 20 items scored 0–3 (total 0–60), with higher scores indicating more frequent/severe rumination[6].

Psychological Flexibility Scale (CFQ-7): There are 7 questions in total, with a full score of 49 points. The higher the score, the stronger the patient's cognitive level.

Hospital Anxiety and Depression Scale (HADS): 14-item screening for mood disorders (Anxiety Cronbach'sα=0.86, Depression Cronbach'sα=0.83)

Face-to-face interviews were conducted by trained nurses during the intervals of patients' chemotherapy, and the data quality was ensured by the methods of double-person entry and logical verification.

2.4 Statistical methods

The statistical software is SPSS21.0. Measurement data were analyzed by t-test and expressed as mean±standard deviation ($\bar{x} \pm s$).Counting data were tested by $\chi 2$ and expressed as rates (%) $P < 0.05$ indicates a statistically significant difference.

3. Results

From the results of the table analysis, it can be seen that the invasive rumination of female patients is higher than that of male patients, and the purposeful rumination of patients over 65 years old is significantly lower than that of patients under 65 years old.

Table 1. Statistical Results of Rumination Levels and Influencing Factors (n=240)

Variable	Category/Indicator	Value	P
Total Rumination	Intrusive Rumination	23.5±6.2	-
	Deliberate Rumination	18.7±5.8	-
Psychological Flexibility	CFQ-7 Total Score	15.3±4.1	0.001
Emotional Status	HADS Anxiety Score	8.9±3.7	0.012
	HADS Depression Score	7.6±3.2	0.003
Demographic Differences	Female	-	0.020
	Male	-	
Age group	≥65 years	15.7±4.5	0.046
	<65 years	22.2±4.1	0.001
Treatment Phase	Palliative Care Group	26.1±5.9	0.008

Invasive rumination of patients is significantly correlated with the degree of pain and economic stress.

Table 2. Multivariate Regression Analysis of Rumination Types and Clinical Features

Dependent Variable	Influencing Factor	β	Standardized β	p-value	95% CI
Intrusive Rumination	Anxiety Score	0.32	0.29	0.003	[0.11, 0.53]
	Psychological Flexibility	-0.41	-0.37	<0.001	[-0.62, -0.20]
Deliberate Rumination	Social Support	0.28	0.25	0.012	[0.06, 0.50]
	TNM Stage (III-IV)	-0.19	-0.18	0.038	[-0.37, -0.01]

4. Discussion

For patients with invasive rumination, nurses should use cognitive reconstruction for mindfulness training to increase negative thought awareness and correct ruminations via group activities. Research shows female lung cancer patients have 20% more invasive rumination than males[7]. Guiding patients to accept current experiences and applying combined psychological interventions can break the rumination cycle and improve positive perception. The nursing team should establish a comprehensive social support network to promote purposeful rumination. This includes integrating interdisciplinary medical support (e.g. professional teams, family, patient groups) into nursing care. Through collaborative social support across groups, a safe emotional expression space can be created for patients to share experiences, form connections, gain collective strength, and experience positive feelings during self-acceptance and mutual acceptance[8]. This support demands that nursing staff establish a standardized operation framework to offer patients ample emotional support, foster communication among them, encourage self-reflection on living conditions, and cultivate positive internal motivation. Throughout the support process, nurses should be dynamically flexible, focus on stage - specific intervention priorities, and provide timely and effective psychological support. Cultivate patients' communication and problem-solving skills to promote active self-regulation, strengthen technical support for emotional stability, and manage psychological

symptoms effectively. Use cross-team continuous assessment to guide patients to maintain good developmental states and enhance self-regulation abilities.

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References

[1] Zhang Wanqiu, Ma Zuchang, Wang Lijun, et al.The influence of postoperative spiritual health in lung cancer patients on compliance with rehabilitation exercises: The chain mediating effect of benefit discovery and purposeful rumination[J]. Journal of Bengbu Medical College, 2023, 48 (09): 1319-1324.

[2] Yang Kai, Liu Nana, Liu Yan.The relationship between depression and rumination thinking and perceived social support in patients with lung cancer[J].Chinese Journal of Clinical Oncology and Rehabilitation, 2023, 30 (04): 257-261.

[3] Mu Jie, Shi Mingming, Xu Shiqin, et al.Observation on the Effect of Multi-angle Nursing under the Guidance of MP-NFS Theory in the Treatment of Lung Cancer Patients undergoing Chemotherapy[J] Naval Medical Journal, 2025, 46 (04): 410-414.

[4] Wu Zhengzheng, Liu Yanxia, Liu Jing.A Study on the Correlation between Self-Management Level of Arteriovenous Fistula and Hope and Rumination in Maintenance Hemodialysis Patients with Chronic Renal Failure[J] Psychological Monthly, 2025, 20 (07): 70-72+76.

[5] Lu Meihong, Xia You, Yu Yizhi, et al.Research progress on rumination in HIV-Infected individuals /AIDS patients[J]. Occupational and Health, 2025, 41 (06): 854-859.

[6] Du Songmei, Wu Xiaolin, He Dan et al.Rumination rumination level and its influencing factors in inpatients with advanced cancer: A multicenter cross-sectional study[J].Sichuan Mental Health, 2025, 38 (01): 41-45.

[7] Zhang Tingting, Gulisumuhan Abulaiti, Ayiguli Abbas, et al.The chain mediating effect of purposeful rumination and perceptual vulnerability between the perceived social support and family function of parents of children with epilepsy[J].Journal of Xinjiang Medical University, 2024, 47 (12): 1670-1675.

[8] Tong Lulu, Huang Suifeng, Lou Lingdi.Analysis of the current situation and influencing factors of rumination rumination in young and middle-aged stroke patients[J].Health Research, 2024, 44 (06): 658-663.

Author Bio

Xie Zhifen (1991.03-), female, Han nationality, from Ganzhou City, Jiangxi Province.She holds a master's degree, and her research direction is oncology nursing.