IMPACT OF PSYCHOLOGICAL INTERVENTION ON IMMUNITY FUNCTIONS AMONG PATIENTS WHO UNDERWENT LUNG CANCER SURGERY

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Abstract:
Objective: The purpose of this study is to examine the impact of psychological intervention on immunity system, pain and adrenocortical functions in the patients getting the lung cancer surgery.
Methodology: We recruited one hundred and twenty-four patients who underwent surgery for the treatment of Stage-1 or Stage-2 lungs cancer and we separated the patients into control and experimental groups. We gave the comprehensive psychological intervention to the patients of experimental group whereas the patients of control group obtained the conventional intervention. We evaluated the pain in the patients of two groups with the use of VAS (Visual Analog Scale). Prior and post intervention, we measured the levels of free cortisol, CD3+, CD4+, CD8+ and CD4+ / CD8+ in serum. We also used the QLQ-C30 which is a scale for the measurement of life quality by the EORTC (European Organization for Research and Treatment of Cancer).
Results: In comparison with the patients of control group, pain scores of experimental group reduced before application of anesthesia, six hours, twelve hours, twenty-four hour and two days after surgical intervention (P < 0.05), and moreover the scores of QLQ-C30 in the patients of experimental group were very high (P < 0.05). We found no significant disparity immune index among the patients of both groups prior surgery (P > 0.05). The disparities of CD3+, CD4+ and level of free cortisol prior and post-surgical intervention were significant in both groups (P < 0.05).
Conclusion: Broad psychological intervention can effectually give relieve from pain, provide improvement in the immunity functions and increases the QoL (Quality of Life) for the patients who were facing surgery for lung cancer.
KEY WORDS: Surgical Intervention, Immunity, Anesthesia, Psychological, Lung Cancer, Significant Disparity.

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INTRODUCTION:

The most preferred treatment method for lung cancer is surgery; fear from surgical intervention, lack of understanding about the primary disease and more tension about the complications after surgery are the cause of depression and anxiety among patients [1, 2]. There is no clear acknowledgement about the impact of the mechanisms of psychological features on prognosis of patients suffering from lung cancer. It is proved from authentic works that the stimulation of stress resulted by the wrong emotions can make the immune functions worse through neuroimmuno-endocrine network [3, 4]. Additionally, majority of the patients of lung cancer have to suffer intensive pain after surgical intervention [5].

A research work discovered that pain after surgical intervention has correlation with the psychological condition present before surgery [6]. So, this is very important to give full attention to the psychological situation in the lung cancer treatment. The rationale of this research work was to examine the impact of psychological intervention on immunity functions and pain after surgery in the patients of lung cancer in perioperative duration.

METHODOLOGY:

one hundred and twenty-four patients who were suffering from lung cancer and got admission in Cardiothoracic Surgery Department of Mayo Hospital Lahore from October 2018 to October 2019 were the participants of this research work. Following criteria was necessary for the inclusion of the patients,

1. Patients with confirm Stage-1 or Stage-2 cancer,
2. Patients having age from eighteen to seventy years,
3. Patients with no past history of endocrine or immunity diseases,
4. Patients where show unwillingness to participate in the study,
5. Patients suffering from other serious complications or diseases.

We separated the patients into control and experimental group. There were sixty-two patients in each group. Experimental group consisted forty-six males and sixteen females with an average age of 52.63 ± 10.65 years. In the group of controls, thirty-eight patients were male and twenty-four patients were females with an average age of 51.96 ± 13.19 years. The mean duration of hospitalization of the patients was 21.5 days. Difference of age, sex, education status, clinical presentation of patients of both groups was not much significant $(P > 0.05)$.

We gave the conventional intervention to the patients of control group. The nurse informed the patients about the reasons of lung cancer, method of treatment, impact of treatment, prognosis and other matters [7]. One-day prior surgery, the nurse of the operating room informed the patients about the duration of surgery, method of anesthesia, bleeding and pain and other matters of surgery. For the comprehensive psychological intervention, we taught the related staff about the complete method and content as well as about the methods of evaluation of pain. We gave the following intervention measures [8, 9]. Family was the first source for psychological support for the patients. We used the family members to encourage the patients. Other support was from the patients who had gone through complete procedure before them. We got help from recovered patients. The most important support was attention from the professional staff. We also gave the imagery therapy to our patients. We urged the patients to recall their happy moments of life.

We collected the fasting blood from patients on 2nd day after admission and one day before their discharge. We sent the samples for the detection of CD3+, CD4+, CD8+ and CD4+ / CD8+ within thirty minutes. We put the two millimeter blood anti-coagulation tube and then centrifuged it at a speed of 3000 r per minutes. We preserved the isolated plasma at -84°C. We used the Bayer Centaur immunity analyzer for the measurement of the level of free cortisol.

We used the VAS for the evaluation of pain, the numbers from one to ten shows the different grades of pain strength [10]. Zero point shows presence of no pain and ten points show pain out of tolerance. We recorded the VAS scores before applying anesthesia as well as six hours, twelve hours, twenty-four hours and forty-eight hours after surgical intervention. SPSS V. 22 was in use for the statistical analysis of he collected information. Chi square method was in use for the analysis of enumeration data. Average and standard deviations were in use for the expression of measurement data. We considered the disparity as significant if P value was less than 0.05.

RESULTS:

In comparison with the patients of control group, VAS scores in the patients of experimental group were present with remarkable reduction before anesthesia, six hours, twelve hours, twenty-four hours and forty-eight hours after surgical intervention $(P < 0.05)$. The associated data is present in Table-1. 48 hours after surgery, we discovered that amount of the patients with high VAS scores were much low as compared to

the patients of control group. In the patients of experimental group, there was increase in the levels of CD3+, CD4+ and CD4+ / CD8+ after the psychological intervention, but there was decline in CD8+; but the disparity was not important prior and after nursing in the group, but this disparity was much significant in the patients of both groups (P < 0.05).

Table-I: Comparison of VAS Between Two Groups at Different Time Point (Mean ± SD) N = 62, 62)

Group	Before anesthesia		6 h after surgery		12 h after surgery		24 h after surgery		48 h after surgery	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Control group	5.43	1.26	6.24	1.03	6.82	1.64	7.26	1.26	5.08	1.02
Experimental group	2.68	1.93	3.22	1.84	3.84	1.95	4.24	1.43	3.02	1.28

In the patients of control group, CD3+, CD4+ and CD4+ / CD8+ increases a little bit after nursing, whereas there was decline in CD8+ but the difference was not much significant prior and post-intervention. There was reduction in the content of free cortisol in the patients of both groups after the intervention, but there was no significant difference within the both groups (P > 0.05), but the difference was significant between both groups (P < 0.05). The elaborate data is present in Table-2.

Table-II: Comparison Of Immune Index and Free Cortisol Before and After Intervention in Two Groups

Group		Exp. Group 62		Cont. Group 62	
Intervention		Before	After	Before	After
CD3+ (%)	Mean	64.19	67.19	65.35	69.28
	SD	9.42	8.84	11.26	11.12
CD4+(%)	Mean	35.81	39.93	39.22	42.06
	SD	7.93	8.09	7.61	10.00
CD8+(%)	Mean	27.17	25.95	24.30	25.29
	SD	8.89	8.12	8.60	8.15
CD4+/CD8+ (%)	Mean	1.48	1.70	1.87	1.83
	SD	0.69	0.73	0.99	0.70
Free cortisol (µmol/L)	Mean	576.67	507.97	494.68	471.26
	SD	125.11	131.90	153.58	91.67

Except the physical symptoms, disparity of the other factors prior and post-intervention was much significant between the patients of both groups (P < 0.05). The related information is present in Table-3.

Table-III: Comparison of QLQ-C30 Scale Score Between Two Groups (point, Mean ± SD)

Factors	Group Status	Exp Group		Control Group	
		Before intervention	After intervention	Before intervention	After intervention
Social role	Mean	7.01	8.19	6.76	6.87
	SD	2.18	2.10	2.39	2.24
Body	Mean	7.85	8.47	14.00	8.25
	SD	2.02	2.47	2.22	2.74
Recognition	Mean	2.76	3.29	2.98	3.24
	SD	1.02	1.21	0.91	0.98
Emotion	Mean	5.41	7.91	7.24	7.81
	SD	1.79	2.24	2.31	1.95
Symptoms	Mean	16.35	18.76	17.57	19.59
	SD	3.08	3.78	3.51	4.43
Whole	Mean	7.85	10.65	8.75	8.22
	SD	2.52	2.02	2.38	2.07

DISCUSSION:

There is very rate of morbidity as well as rate of mortality because of lung cancer. There are reported that the rank of the lung cancer among malignant tumors in the countries which are developed is first [11]. Once there is confirmation of the lung cancer, there will be influence on patients mentally as well as physically [12]. There are also severe reactions of the treatments of lung cancer as surgery [13]. The most common symptom of the lung cancer is the very severe pain [14]. The pain after surgical intervention leads to the injury of the tissues as well as anxiety and depression. There is very large influence of the psychological condition on the curative effect, so detailed psychological intervention is very important. It was confirmed through reports that the patients of lung cancer who had to undergo lung surgery, were present with psychological issues and suitable psychological intervention can decrease the severe negative emotion and encourage the patients to tolerate their disease positively [15].

This intervention can easily relieve the pain induced because of psychological situation. One research work discovered that psychological treatment can adjust the emotions of the patients, relieve the patients from symptoms, increase the immune function and provide improvement to QoL, make prognosis better and increases the total time of survival. This research work stated that the disparity of the immune index between the patients of both groups was much significant, showing psychological intervention has the ability to improve the immune-regulation competence of the patients.

CONCLUSION:

The findings of this research work conclude that detailed psychological intervention can effectually relieve the pain after surgery, provide improvement to the immune function, increases the psychological health and enhance the QoL in the patients suffering from lung cancer.

REFERENCES:

1. Chen WL, Yu ZN. Influence of psychological nursing intervention and health education on pain degree and life quality of patients with lung cancer. China Med Herald. 2013;10(30):4-7.
2. Yu JL, Zhang CM, Zhang Y, Zhao HK, Wang HJ. Effect of intrathecal butorphanol on serum IL-6/IL-10 in acute painful rats. China Med. 2009;4(2):84-86. doi:10.3760/cma. j. issn.1673-4777.2009.02.003
3. Zhang YB, Yang SH, Zhang L, Zhang SF. Effects of relaxation on eeg, the personality and behavior pattern of medical students. Chin Mental Health J. 2004;18(1):21-24. doi: 10.3321/j.issn:1000-6729.2004.01.007
4. Ma Z, Faber A, Dubé L. Exploring women's psychoneuroendocrine responses to cancer threat: insights from a computer-based guided imagery task. Can J Nurs Res. 2007;39(1):98-115. doi:10.1007/s00247-008-0885-y
5. Torres A, Torres K, Paszkowski T, Staśkiewicz GJ, Maciejewski R. Cytokine response in the postoperative period after surgical treatment of benign adnexal masses: comparison between laparoscopy and laparotomy. Surg Endosc.

2007;21(10):1841-1848.   doi:10.1007/s00464-007-9260-6

6. Mai TX, Wu NY, Xie CM, Tang XY. Investigation of pain and social psychological condition of lung cancer patients. J Pract Med. 2008;24(1):133-135. doi: 10.3969/j.issn.1006-5725.2008.01.059

7. Kuechler T, Bestmann B, Rappat S, Henne-Bruns D, Wood- Dauphinee S. Impact of psychotherapeutic support for patients with gastrointestinal cancer undergoing surgery: 10-year survival results of a randomized trial. J Clin Oncol.   2007;25(19):2702-2708. doi:10.1200/JCO.2006.08.2883

8. Mitomycin, ifosfamide and cisplatin in unresecta bal nonsmall cell lung cancer: effects on survival and quality of life. J Clin Oncol. 1999;17(10):3188-3194.

9. Yang LZ, Mao WK, Hou AZ, Xie CG, He Y, Cao CS. A comparative study of group mental interference on cancer patients in recovery period. China J Cancer Prev Treatment. 2002;9(5):452-453. doi: 10.3969/j.issn.1673-5269.2002.05.002

10. Wang MJ, Huang HL, Sun MY, Xu XR, Chen QZ, Huang SR, et al. Investigation on pain and the quality of life in patients with advanced cancer. J Nurs Sci. 2004;19(15):62.

11. Zhao XJ, Wang GE, Tasia. Clinical study in using subanesthetic doses of ketamine to antihyperalgeisc for postoperative pain. Chin J Clin Rehabi. 2002;6(10):1458- 1459. doi: 10.3321/j.issn:1673-8225.2002.10.054

12. Cullen MH, Billingham LJ, Woodroffe CM, Chetiyawardana AD, Gower NH, Joshi R, et al

13. Bodey B, Siegel SE. Mechanisms and markers of carcinogenesis andneoplastic progression. Expert Opin Ther. 2005;5(10):1317-1332. doi:10.1517/14712598.5.10.1317

14. Wang BS, Liu N, Song W, Zhang CM, Wang JH. Psychological effects of music therapy on cancer patients during radiotherapy. J Med Forum. 2005;26(18):76. doi: 10.3969/j.issn.1672-3422.2005.18.055

15. Godino C, Jodar L, Duran A, Martinez I, Schiaffino A. Nursing education as an interventionto decrease fatigue perception in oncology patients. Eur J Oncol Nurs. 2006;(10)2:150-155. doi: 10.1016/j.ejon.2005.03.004

16. Ma Bo, Li ZQ, Ma ZM. Research on depression and cellular immunity of patients with cancer in digestive system. Chinese J Behav Med Sci. 2002;11(1):49-50.

17. Li JZ, Wu AQ, Wu CY. Psychosocial factors and immune function of patients with malignant tumors. Chin Mental Health J. 2002;16(6):386-389. doi: 10.3321/j.issn:1000- 6729.2002.06.007

18. Cullen MH, Billingham LJ, Woodroffe CM, Chetiyawardana AD, Gower NH, Joshi R, et al.