IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

Human Journals
Review Article
February 2016 Vol.:5, Issue:3

Lung Cancer -The Nutritional Implications

IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

K. Sushmitha*, SK. Shafiya, Rama rao Nadendla

Department of pharmacy practice, Chalapathi Institute of Pharmaceutical Sciences, Lam, Guntur, Andhra Pradesh, India.

Submission: 10 January 2016
Accepted: 15 February 2016
Published: 25 February 2016

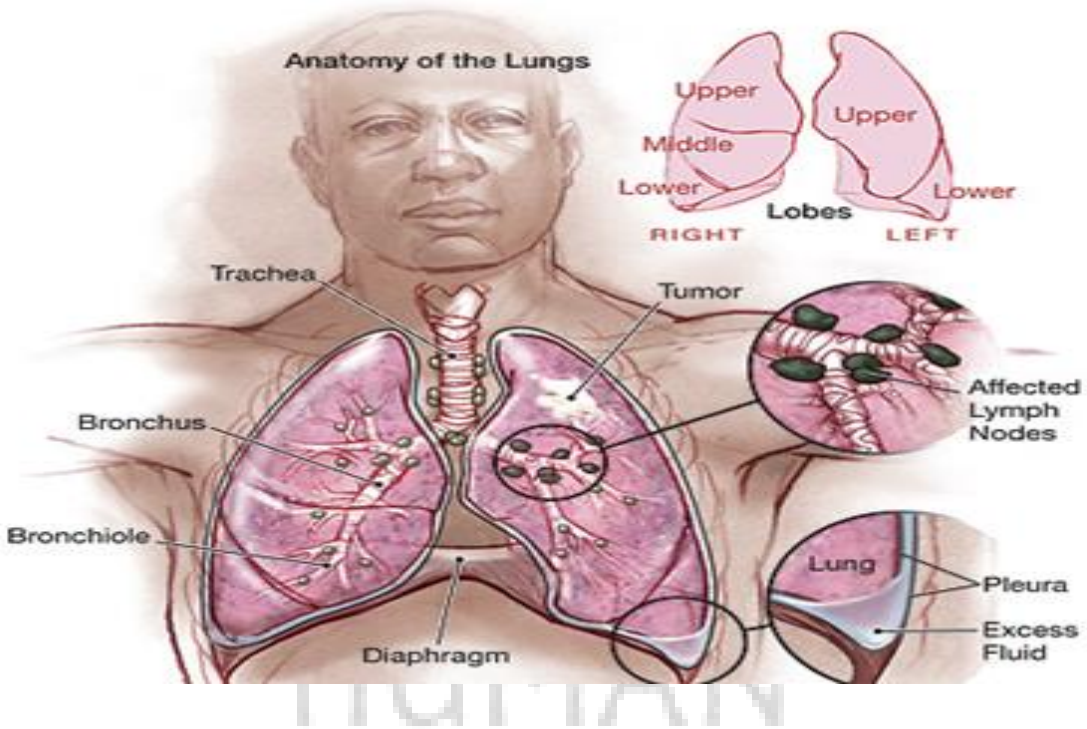
Keywords: GI tract in ingestion, nutritional status, severity of cancer

ABSTRACT

Cancers are likely to produce an immediate and noticeable effect on nutrition due to the role of the GI tract in ingestion, digestion, and absorption of food. Malnutrition in lung cancer may take a relatively longer period to become noticeable although the implications are no less significant. Assessing nutritional status and the presence and severity of cancer cachexia requires a multi-modal approach which should include body composition, functional measures and biochemical results and not just weight in isolation.

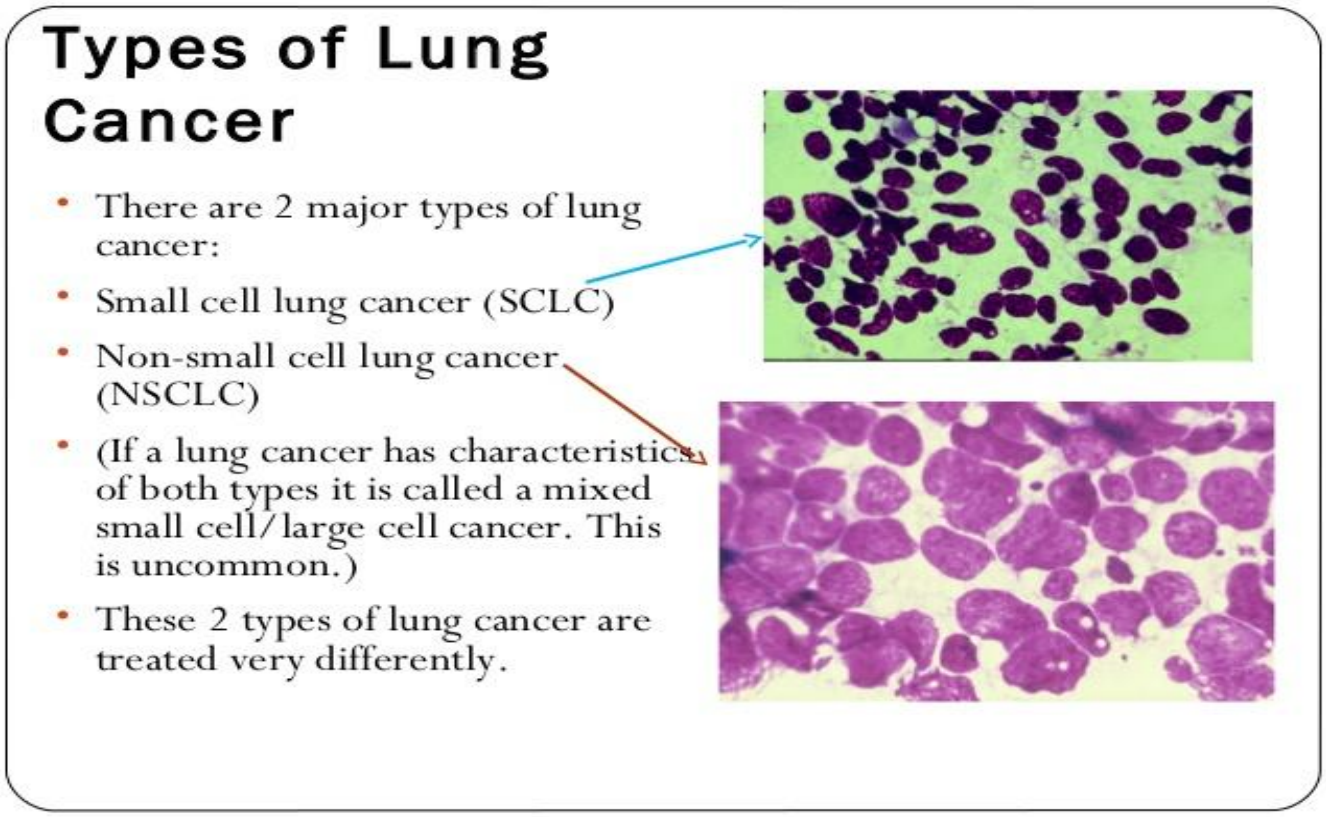
INTRODUCTION

Lung cancer, also known as carcinoma of the lung or pulmonary carcinoma, is a malignant lung tumor characterized by uncontrolled cell growth in tissues of the lung. If left untreated, this growth can spread beyond the lung by process of metastasis into nearby tissue or other parts of the body. Most cancers that start in the lung, known as primary lung cancers, are carcinomas that derive from epithelial cells.



Survival rates from lung cancer are poor with a five years survival rate of less than 10% for both men and women. Approximately only 30% of patients are alive at one year post-diagnosis. Rates of weight loss and cachexia are high in lung cancer patients resulting from the disease and its treatments; however the role of a specialist dietitian is much less established in thoracic oncology when compared to head and neck and upper gastrointestinal (GI) oncology. These cancers are likely to produce an immediate and noticeable effect on nutrition due to the role of the GI tract in ingestion, digestion, and absorption of food. Malnutrition in lung cancer may take a relatively longer period to become noticeable although the implications are not less significant.

Lung cancer types



Treatment

NICE guidelines provide recommendations on the treatment of lung cancer. Choice of treatment is dependent on histology and stage of disease as well as factors such as performance status and co-morbidities. More recently, molecular genetics analysis may also influence the choice of treatment.

Lung cancer – the nutritional implications

Surgery with curative intent is the preferred treatment for early stage NSCLC and SCLC. Radiotherapy with curative intent is indicated in early stage NSCLC and SCLC when surgery is not suitable. Concurrent chemotherapy is often used which has demonstrated an improved outcome. Palliative chemotherapy is indicated in patients with advanced lung cancers to improve survival, disease control and quality of life. Newer targeted cancer drugs such as Erlotinib (Tarceva®) and Gefitinib (Iressa®) that interfere with specific molecular targets on cancer cells are used for treatment of some types NSCLC.

Nutritional implications

Weight loss is common in lung cancer and is often present at diagnosis. 40- 60% of lung cancer patients experience unintentional weight loss. Weight loss and depleted nutritional status have been identified as negative prognostic variables for survival and have a direct impact on the effectiveness of cancer treatments. Poor nutritional status is also linked to a reduced quality of life. Cancer cachexia is multi-factorial syndrome characterized by an ongoing loss of skeletal muscle mass (with or without loss of fat mass) that cannot be fully reversed by conventional nutritional support and leads to progressive functional impairment. It occurs in approximately 50% of cancer patients and 80% of those in the terminal phase and is most common in solid tumour cancers, in particular in those of the lung. Assessing nutritional status and the presence and severity of cancer cachexia requires a multi-modal approach which should include body composition, functional measures and biochemical results and not just weight in isolation.

Dysphagia is known to impact nutritional status and there are multiple causes including compression of the oesophagus or pharynx from the tumour or affected nodes. Dysphagia is also a common side effect of radical radiotherapy due to oesophagitis. Long-term side effects of radiotherapy although rare, include oesophageal strictures which can significantly impact nutritional intake. It is well established that pre-operative nutritional status has an impact on postoperative recovery and morbidity with a poor nutritional status resulting in more frequent post-operative complications and slower wound healing. It is important to ensure adequate nutritional screening and assessment pre-operatively and postoperatively and initiation of nutritional support in those identified at risk of malnutrition.

Chemotherapy side effects are well known and those that impact on nutritional status include anorexia, nausea, vomiting, early satiety and mucositis. Nutritional deterioration during chemotherapy if not managed may lead to treatment interruptions and delays. Oesophagitis is a common side effect of thoracic radiation especially when given with concurrent chemotherapy. It develops during radiotherapy treatment and can continue to worsen up to two weeks after treatment with full recovery taking up to four to eight weeks post treatment. The resultant swallowing difficulties can compromise nutritional intake and nutritional status.

Nutritional interventions

Dietetic input to patients with lung cancer is aimed at improving nutritional status by addressing symptoms such as poor appetite and modifying nutritional intake with nutritional support techniques. These nutritional interventions can play a role in improving clinical outcome as well as quality of life. In a population where palliative management is common, dietetic input may be more focused on optimizing quality of life and symptom control than it will be on improving nutritional status. Guidelines already exist for the provision of nutritional support including those that specifically apply to cancer patients. For the majority of lung cancer patients, oral nutritional support including dietary counseling and the use of oral nutritional supplements is the preferred route of management. There is evidence that demonstrates a positive impact of nutritional support interventions in cancer patients. Dysphagia - either in the short or long term - is relatively common in this group and where oral intake is inadequate as a result of this, enteral feeding may be indicated. At our centre, we have initiated enteral feeding with ten lung cancer patients in the last 18 months. In particular EN to support patients through radical radiotherapy may be essential where severe oesophagitis occurs; previous studies demonstrate that up to 12% of these patients may require EN.

Fish oils have been shown to have anti-inflammatory properties by downregulating pro-inflammatory cytokines and have been shown to reduce muscle breakdown and potentially improve outcomes. However, evidence remains inconclusive. Research continues in this area and patients in recent randomized trials have shown positive effects of fish oils on energy, protein intakes, body composition, fatigue and inflammatory markers

CONCLUSION

Lung cancer is a disease with poor prognosis and high-symptom burden that can impact negatively on nutritional status and quality of life. Considering the prevalence of weight loss and cachexia in this group as well as treatment related nutritional toxicities we recommend that there is a dedicated dietetic service for lung cancer patients. Due to high rates of oesophagitis in patients having concurrent chemo-radiation treatment and the extent of weight loss that has been reported in this group, we recommend that all of these patients are seen by a dietitian during their treatment. The dietitian is most effective when working closely with the multidisciplinary team to ensure patient needs and concerns are appropriately prioritized and managed effectively.

REFERENCES

1 Ross P, Ashley S, Norton A, Priest K, Waters J, Eisen I, O'Brien M. Do patients with weight loss have a worse outcome when undergoing chemotherapy for lung cancer?, British Journal of Cancer 2004, 90, pp. 1905-1911.

2. Scott H, McMillan D, Forrest L, Brown D, McArdle C, Milroy, R. 'The systemic inflammatory response, weight loss, performance status and survival in patients with inoperable non-small cell lung cancer', British Journal of Cancer 2002, 87, pp. 264-267.

3. Tewari N, Martin-Ucar A, Black E, Beggs L, Beggs F, Duffy J, Morgan W. Nutritional status affects long term survival after lobectomy. Lung Cancer 2007; 57 (3), pp. 389-394.

4.Nourissat A, Vasson M, Merrouche Y, Bouteloup C, Goutte M, Mille D, Jacquin J, Collard O, Michaud P, Chauvin F. 'Relationship between nutritional status and quality of life', European Journal of Cancer 2008. 44 (9), pp. 1238-1242.

5. Fearon K , Strasser F, Anker SD, Bosaeus I, Bruera E, Fainsinger RL, Jatoi A, Loprinzi C, MacDonald N, Mantovani G, Davis M, Muscaritoli M, Ottery F, Radbruch L, Ravasco P, Walsh D, Wilcock A, Kaasa S, Baracos VE. Definition and classification of cancer cachexia: an international consensus. Lancet Oncol. 2011 May;12(5):489-95.

6. Belderbos J, Heemsbergen W, Hoogeman M, Pengel K, Rossi M, Lebesque J. Acute esophageal toxicity in non-small cell lung cancer patients after high dose conformal radiotherapy. Radiother Oncol. 2005 May;75(2):157-64.

7. White R, Palmgren E. A retrospective study investigating the impact of radical radiotherapy on the nutritional status of patients with lung cancer. Paper presented at: British Association of Parenteral and Enteral Nutrition Annual Conference, 2013 November 26-27; Harrogate, U.K.

8. Ravasco P, Monteiro-Grillo I, Vidal P, Ermelinda C. Impact of nutrition on outcome: a prospective randomized controlled trial in patients with head and neck cancer undergoing radiotherapy, Head and Neck 2005; 27, pp. 659-668.

9. Nutrition support in adults: oral nutrition support, enteral tube feeding and parenteral nutrition: National Institute for Health and care Excellence (UK); 2006 February. Clinical guidelines, CG32.

10. Arends J, Bodoky G, Bozzetti F, Fearon K, Muscaritoli M, Selga G, van Bokhorst-de van der Schueren MA, von Meyenfeldt M; DGEM (German Society for Nutritional Medicine), Zürcher G, Fietkau R, Aulbert E, Frick B, Holm M, Kneba M, Mestrom HJ, Zander A; ESPEN guidelines on enteral nutrition: non-surgical oncology. Clinical Nutrition. 2006;25:245–259

11. Baldwin C, Spiro A, Ahern R, Emery PW. Oral nutritional interventions in malnourished patients with cancer: a systematic review and meta-analysis. J Natl Cancer Inst 2012;104:371-385.

12. Kiss N, Isenring E, Gough K, Krishnasamy M. The prevalence of weight loss during (chemo)radiotherapy treatment for lung cancer and associated patient and treatment related factors. Clin Nutr. 2013 Nov 25. pii: S0261-5614(13)00319-1.
13. Dewey A, Baughan C, Dean T, Higgins B, Johnson I. Eicosapentaenoic acid EPA, an omega-3 fatty acid from fish oils for the treatment of cancer cachexia', Cochrane Database Systematic Reviews 2007, 1: CD004597.
14. Sánchez-Lara K, Turcott JG, Juárez-Hernández E, Nuñez-Valencia C, Villanueva G, Guevara P, De la Torre-Vallejo M, Mohar A, Arrieta O. Effects of an oral nutritional supplement containing eicosapentaenoic acid on nutritional and clinical outcomes in patients with advanced non-small cell lung cancer: Randomised trial.Clin Nutr. 2014 Apr 4. pii:S0261-5614(14)00081-8. doi: 10.1016/j.clnu.2014.03.006. [Epub ahead of print].
15. Finocchiaro C, Segre O, Fadda M, Monge T, Scigliano M, Schena M, Tinivella M, Tiozzo E, Catalano MG, Pugliese M, Fortunati N, Aragno M, Muzio G, Maggiora M, Oraldi M, Canuto RA. Effect of n-3 fatty acids on patients with advanced lung cancer: a double-blind, placebo-controlled study.Br J Nutr (2012) 108(2):327–3310.1017/S0007114511005551.
16. Tindale-Paul PE, Acworth G, Handford G, North E, Peat N, White R, Williams M.Development of "Living Well" – A health and wellbeing programme for thoracic cancer patients. Lung Cancer (2014) 83 Supp1(120):S44.