CONTINUING EDUCATION

Biology of Lung Cancer With Implications for New Therapies

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Purpose/Objectives: To provide an overview of the biology of lung cancer with respect to genetic carcinogenesis and specific mutations and to discuss new therapies being developed to target lung cancer's biologic processes.

Data Sources: Published articles, abstracts, book chapters, lectures, and personal experiences with experimental agents.

Data Synthesis: Lung cancer is the number one cause of cancer deaths for men and women in the United States, with minimal changes in the five-year survival rate during the past decade. New understanding of the biologic process of lung cancer is providing potential new therapies that many hope will lead to increased survival for patients with lung cancer.

Conclusions: Exciting new therapies for lung cancer are being developed that target specific biologic processes of lung cancer.

Implications for Nursing: When nurses are familiar with the rationale behind biologic therapies, they can understand the drugs, assess toxicities, and help patients make educated decisions about therapeutic alternatives.

Key Points . . .

➤ Lung cancer continues to be a leading cause of cancer-related death in the United States for men and women, with five-year survival rates of less than 15% for all types and stages of lung cancer.

➤ Genetic carcinogenesis in lung cancer produces specific mutations in particular oncogenes and tumor suppressor genes that affect particular biologic characteristics of lung cancer.

➤ Biologic characteristics particular to lung cancer can be specifically targeted by new therapies, which have the potential to improve the outlook for future patients with lung cancer.

Goal for CE Enrollees:

To further enhance nurses' knowledge of the biology of lung cancer and implications for new therapies.

Objectives for CE Enrollees:

On completion of this CE, the participant will be able to
1. Discuss the biology of lung cancer with respect to genetic carcinogenesis and specific mutations.
2. Describe three new therapies being developed to target lung cancer's biologic processes.
3. Discuss the nurse's role in the education of patients regarding clinical trials.

L ung cancer is the leading cause of cancer mortality for men and women in the United States and second only to cardiovascular disease as a cause of death for Americans. The American Cancer Society (ACS) estimates 171,900 new cases of lung cancer for 2003 (ACS, 2003). Smoking remains the greatest contributor to the development of lung cancer; in fact, 90% of all lung cancer cases are thought to be smoking related, with very few nonsmokers developing lung cancer (Greenlee, Hill-Harmon, Murray, & Thun, 2001). Lung cancer is considered to be one of the most preventable diseases because smoking abstinence and cessation drastically reduce its incidence. However, even if 100% of smokers were to cease immediately, new cases of lung cancer would continue to appear for many years because of the long lead time associated with the development of lung cancer (Greenlee et al.).

This article will review the biology of lung cancer and provide information on genetic carcinogensis, specific mutations found in lung cancer, and cells' signaling pathways. New therapies that target the specific biologic processes found in lung cancer will be explored. Further discussion will be provided about clinical trials and nursing implications.

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