Opinion

Novel biomarkers for potential clinical applications in lung cancer

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INTRODUCTION

Lung cancer is a leading cause of cancer-related deaths worldwide, accounting for approximately 1.8 million deaths annually. This article provides a comprehensive overview of lung cancer, covering its types, risk factors, symptoms, diagnosis, treatment options, and ongoing research efforts. Often used for advanced stages of lung cancer, chemotherapy involves the use of drugs to kill rapidly dividing cancer cells. It can be administered before surgery (neoadjuvant therapy) or after (adjuvant therapy). Targeted therapies, such as Tyrosine Kinase Inhibitors (TKIs), are designed to attack specific genetic mutations in cancer cells. For instance, drugs targeting EGFR mutations have improved outcomes for patients with specific types of NS-CLC. Immune checkpoint inhibitors, like pembrolizumab and nivolumab, have transformed the treatment landscape for lung cancer, particularly for advanced cases. These therapies help the immune system recognize and attack cancer cells. The prognosis for lung cancer varies widely based on several factors, including cancer type, stage at diagnosis, and overall health. The five-year survival rate for lung cancer is approximately 20%, but this rate is significantly higher for localized disease (around 60%). Early detection remains critical in improving outcomes, underscoring the importance of awareness and screening in high-risk populations. Quitting smoking is the most effective way to reduce lung cancer risk.

DESCRIPTION

Programs and medications are available to assist individuals in quitting. Reducing exposure to second-hand smoke is crucial for non-smokers, especially in environments where smoking is prevalent. Testing for radon in homes, avoiding exposure to known carcinogens, and using protective measures when handling hazardous materials can help mitigate risk. Low-dose computed tomography screening is recommended for high-risk individuals, such as long-term smokers aged 50-80, to detect lung cancer at an earlier, more treatable stage. Research into lung cancer is dynamic and multifaceted, focusing on improving prevention, diagnosis, and treatment. Scientists are exploring various biomarkers to improve early detection and monitor treatment response, which could lead to more personalized therapies. Ongoing clinical trials are examining new immunotherapeutic agents and combinations to enhance efficacy and reduce side effects. Understanding the genetic landscape of lung cancer may lead to the development of novel targeted therapies tailored to individual patients. Research is also focusing on the quality of life for lung cancer patients, examining how treatments affect physical, emotional, and social well-being. Lung cancer remains a significant global health challenge, with high morbidity and mortality rates. However, advances in understanding its pathophysiology, risk factors, and treatment options provide hope for improving patient outcomes.

CONCLUSION

Increased awareness, early detection strategies, and ongoing research efforts are crucial for combating this formidable disease. By prioritizing prevention and enhancing therapeutic strategies, we can work towards reducing the burden of lung cancer in future generations. Smoking is the leading cause of lung cancer, responsible for approximately 85% of cases. The risk increases with the number of cigarettes smoked and the duration of smoking. Non-smokers who are exposed to tobacco smoke are also at risk, with studies showing increased incidences of lung cancer among this group. This naturally occurring radioactive gas is a leading cause of lung cancer in non-smokers. It can accumulate in homes, especially in basements. Occupational exposure to asbestos is a significant risk factor, particularly for those who smoke.

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CONFLICT OF INTEREST

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