

Impacts of Therapeutic Advances on the Outcome of Lung Cancer

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Lung cancer is the leading cause of cancer death in the whole world. More than 1 million of people died from lung cancer each year. Smoke cessation campaigns have lead to the decrease of lung cancer incidence and mortality in developed countries. However, the incidence of lung cancer of developing countries as well as subtypes of lung cancer not related to smoking e.g. East Asian adenocarcinoma, is still on the rise. More than two-third of patients were diagnosed with lung cancer at advanced stage when curative local treatments were not feasible. Therefore, the average 5-year survival of lung cancer patients in each region of the world was as low as 15%. More than half of lung cancer patients at late stage died within one year after diagnosis. Many therapeutic advances have improved survival and quality-of-life outcome of lung cancer patients. The advances in the local treatment technique such as thoracoscopic surgery, 3-D conformal radiotherapy etc. all resulted in higher precision of tumor ablation and less complication after treatment. The improvement of performance status of patients before and after local treatment has made the intensive and relatively toxic adjuvant treatment possible. Effective systemic chemotherapeutic agents such as platinum, taxanes, vinca alkaloids, anti-metabolites and topoisomerases inhibitors have been extensively evaluated in the past fifteen years for the treatment of advanced stage lung cancer patients. The understanding of molecular pathways leading to cancer cells proliferation, progression, apoptosis and metastasis has successfully translated into many therapeutic targeted agents that specifically attack pathways important for tumor cells. The molecular targeted agents have proven significant roles in subsets of patients who were extremely sensitive to these non-cytotoxic treatments. *The establishment of strict clinical trial conduction systems, stringent results evaluation and interpretation process, free and rapid spreading of the new information down to the individual practicing physicians have resulted in fast thrifty access and accommodation of new techniques and drugs that made differences to patients' survival and quality-of-life outcomes.* Therapeutic advances in the past twenty years have doubled the median survival of late stage patients, and increased long-term survival in 5-10% of early-stage patients. Theses achievements in the survival outcome of patients were modest but real. Prevention, early screening (e.g. genetic, spiral computerized tomography of chest) and diagnosis are still the keys to decrease the number of cancer death and increase 5-year survival of lung cancer patients. However, these therapeutic advances did not come inexpensively. Many socialized medical systems in the developed and wealthy countries even find it difficult to pay to the general public for the expensive targeted treatment that has demonstrated improvement of patients' survival in the clinical trials. As the percentage of dollars to be allocated to medical expense in each country cannot grow unlimited, pharmacoeconomical approach to the fast-expanding medical expense therefore becomes utmost important agenda for the medical and pharmaceutical societies in the molecular-targeted age to come.